Small-Scale Societies Exhibit Fundamental Variation in the Role of Intentions in Moral Judgment

Supplementary Information

H. Clark Barrett, Alexander Bolyanatz, Alyssa N. Crittenden, Daniel M.T. Fessler, Simon Fitzpatrick, Michael Gurven, Joseph Henrich, Martin Kanovsky, Geoff Kushnick, Anne Pisor, Brooke A. Scelza, Stephen Stich, Chris von Rueden, Wanying Zhao, and Stephen Laurence

Table of Contents

1. Summary of Data Analysis Strategy

Data were modeled using ordinal logistic regressions, also known as ordered logits or cumulative link mixed models (CLMM), via the R package *ordinal* (1). These models treat the dependent variable, in this case judgments on a five-point scale ranging from "very good" to "very bad," as ranked: "very bad" is the worst (most severe judgment), followed by "bad," "neither bad nor good," "good," and "very good" (in all figures, "very bad" = 2, and "neither bad nor good" = 0, such that larger numbers reflect more severe moral judgments). Ordinal regression treats subjects' judgments as ordered or ranked in this way, rather than treating them as scalar magnitudes. Thus, our statistical models are models of the probability of subjects' judgments shifting up or down a rank as a function of a given factor (e.g., experimental

condition). Standard regressions, on the other hand, would model the distance on the scale a subjects' judgments moved as a function of the factor in question. The virtue of treating judgments as ranked is that it treats them as discrete bins with probabilities of moving between them, rather than as magnitudes. Because our methodology asked subjects to make judgments that were discrete, not scalar, the statistical assumptions underlying ordinal regression are a better fit to the experimental task.

In standard regressions, effect sizes are interpreted of magnitudes on the dependent variable scale, i.e., how many units subjects' judgments shift up or down on average as a function of a change in the dependent variable in question (for standardized effect sizes, these are changes in standard deviation units). Ordinal regressions, on the other hand, model probabilities of judgments changing rank, not units of change on a magnitude scale. Like binary logistic regressions, effect sizes are expressed in terms of log odds (the logarithm of the odds of shifting rank), but generalized to, in this case, five levels of the ranked variable rather than two, as would be the case for binary data. For fixed effects in the model, exponentiating the parameter estimate $(\exp(\beta))$ gives the odds ratio of a one-unit change in a factor (the independent variable, IV, in question, e.g., High- versus Low-Intent) moving subjects' judgments one step up in the rank-ordered judgment scale (the dependent variable, DV), relative to no change in the IV. Interpretation of the estimates of random factors is less intuitive, though larger estimates correspond to greater variance in subjects' judgments as a function of the random factor in question. Here, we model most of our effects as random factors, with the exception of experimentally manipulated variables (e.g., fixed factors) such as High- versus Low-Intent, Sex, and post-hoc constructed variables for which we wished to examine the odds ratio effect of the variable on subjects' judgments (e.g., High- versus Low-Mitigation).

The purpose of fitting our data to ordinal regression models is to estimate the changes in subjects' judgments (the DV) as a function of variables of interest (the IVs). Thus, our data modeling approach is not equivalent to a null hypothesis significance testing (NHST) approach. In general, our aim is to explain variation rather than to test hypotheses about significant differences between conditions. However, we do report p values for the z scores of fixed factors in our model, and readers curious about which differences between conditions, populations, etc. are significant can examine the 95% confidence interval (CI) bars, which we provide on all plots (for more information on 95% CI bars, see below).

We used a model comparison approach, in which we modeled our data using various combinations of factors (independent variables) as predictors, and examined the model fit of the resulting models using Akaike's Information Criterion (AIC). AIC is a measure of model fit that trades off goodness of fit against model complexity (where more complex models use more variables to fit the data). Better model fit lowers the AIC score, while increasing the number of variables entered into the model increases it. Thus, AIC effectively penalizes models with a greater number of parameters, a means of reducing the risk of overfitting (since more parameters always improves model fit). The model comparison approach, then, involves constructing models with various combinations of factors, computing the AIC for each model, and selecting the model with the lowest AIC score, which is the best-fit model reported in the Main Text.

Because our study comprised two separate banks of questions, the Intentions Bank and the Mitigating Factors Bank, we conducted separate model comparisons for each bank. (Free response data, also collected as part of this project, will be reported separately in a future publication.)

2

2. Intentions Bank: Model comparisons

All models included sex, as a fixed factor, and subject, as a random factor. In all models, the 5-point judgment scale (very bad to very good) was the outcome variable (reverse coded as the variable "judgrev" where +2 equals a judgment of very bad, -2 equals a judgment of very good, and 0 is neutral).

Because our study design involved a large number of factors, we conducted our model comparison in a stage-wise process. For each stage, we selected the best-fit model and then used this as a baseline model for adding and subtracting additional factors at the next stage. Note that in many cases, the AIC scores for two models were very similar, indicating that the models were nearly equivalent in their ability to explain the data. In these cases, we selected the one with the smallest AIC score to use it as a baseline model for the next stage, recognizing that the difference between the closely tied models was small.

The stages were as follows:

Baseline. Our baseline model included only sex and subject as factors. We then added various combinations of factors to the baseline model to see whether or not these would improve model fit.

Stage 1. In the first stage we added and compared combinations of our two main framing manipulations: High- versus Low-Intent, and intentional versus motivational framing, to find the best fit combination of these factors. The best-fit model included only High- versus Low-Intent as a factor.

Stage 2. Starting with the best-fit model from Stage 1, which included High- versus Low-Intent, subject, and sex, we next asked whether adding scenario (Harm, Food taboo, etc) and / or question item (badness, punishment, reputation) improves model fit. Both did.

Stage 3. Starting with the best-fit model from Stage 2, we then asked whether intention interacts with scenario or question; adding an intent x scenario interaction improved model fit.

Stage 4. In the final stage, we added a term for society as well as interaction terms for interactions between society and intent, and society and scenario. The model with the lowest AIC score, which we selected as the best-fit model, was 4g.

Table S1a shows the parameters of the best-fit model (model 4g; also shown in Table 1A in the Main Text). Table S1b shows the AIC values associated with models in each of the stages.

Table S1a. Intentions Bank: Parameters of best-fit model (model 4g)

Random effects				
Factor	*Variance*	*Std.Dev.*		
Subject	0.80666	0.8981		
Scenario:Society	0.63814	0.7988		
Intent:Society	0.25965	0.5096		
Society	1.05226	1.0258		
Intent:Scenario	0.25048	0.5005		
Scenario	0.84837	0.9211		
Question item	0.06514	0.2552		
Fixed effects				
Factor	*Estimate*	*Std. Error*	*z value*	*Pr(>|z|)*
Sex	-0.2089	0.1226	-1.704	0.088420 .
Intent	1.6271	0.4282	3.799	0.000145 ***

Table S1b. Model comparisons for Intentions Bank. Best-fit models for each comparison stage are indicated with *.

Stage	Model	Sex (F)	Subject (R)	High versus low intent (F)	Intentional versus motivational framing (F)	Scenario (R)	Question item (badness, punishment, reputation) (R)	Intent x Scenario (R)	Intent x Question (R)	Society (R)	Intent x Society (R)	Scenario x Society (R)	AIC
Baseline	1	yes	yes										9184.81
Stage 1													
*	1a	yes	yes	yes									8815.48
	1b	yes	yes		yes								9184.99
	1c	yes	yes	yes	yes								8815.62
Stage 2													
	2a	yes	yes	yes		yes							8324.88
	2b	yes	yes	yes			yes						8793.59
*	2c	yes	yes	yes		yes	yes						8297.24
Stage 3							yes						
*	3a	yes	yes	yes		yes	yes	yes					8236.11
	3b	yes	yes	yes		yes	yes		yes				8299.24
	3c	yes	yes	yes		yes	yes	yes	yes				8238.11
Stage 4							yes						
	4a	yes	yes	yes		yes	yes	yes		yes			8069.08
	4b	yes	yes	yes		yes	yes	yes			yes		7958
	4c	yes	yes	yes		yes	yes	yes				yes	7827.57
	4d	yes	yes	yes		yes	yes	yes		yes	yes		7950.05
	4e	yes	yes	yes		yes	yes	yes		yes		yes	7812.02
	4f	yes	yes	yes		yes	yes	yes			yes	yes	7677.26
*	**4g**	**yes**	**yes**	**yes**		**yes**	yes	**yes**		**yes**	**yes**	**yes**	**7671.16**

3. Intentions Bank: Additional Plots and Analyses

3a. Description and principal component analyses of the six judgment variables

We designed our six judgment variables to fall into two basic categories: first, the three moral judgment questions (Badness, Punishment, Reputation) and second, three manipulation check questions (Intentional, Victim Outcome, Victim Reaction). While all six are relevant to moral judgment, only the first three directly measure subjects' judgments of the moral valence (goodness or badness) of the act described in the vignette. For this reason, we restrict the discussion in the main text to the moral judgment questions. Here we describe the theoretical basis for dividing our variables in this way, followed by a principal components analysis showing that our DVs do in fact cluster as proposed. We then provide mediation analyses of the three manipulation check variables, followed by plots and statistical models showing how each of the DVs was influenced by our experimental and population variables.

The moral judgment questions were designed to measure three aspects of the moral valence of the agent's action in the vignette: *Badness* ("In your opinion, how good or bad was what [Agent] did?"), *Reputation* ("When people discover what happened, what will people think of [Agent] — will they think he is a good person or a bad person?"), and *Punishment* ("In your opinion, do you think [Agent] should be rewarded or punished?"). We expected these measures to be highly correlated, because each should scale similarly with the degree (severity) and direction (good / bad) of the judged moral valence of the act. For example, one would expect an act judged at the extreme end of the scale of moral badness to also have the most extreme negative consequences for reputation, and to warrant the worst punishment. In the other direction, an act judged as morally good should merit reward, not punishment, and should improve rather than damage the agent's reputation. A morally neutral act will presumably have relatively little effect on reputation or punishment. Thus, we expected these three measures to correlate highly, and to behave as a single factor tracking the judged moral valence of the act.

In contrast, our three other judgment variables were designed as manipulation checks, to assess subjects' judgments of various aspects of the vignettes that might or might not directly correlate with subjects' judgments of moral valence. First, we measured subjects' explicit judgments of whether the act described in the vignette was performed intentionally or not ("In your opinion did [Agent] strike [Victim] on purpose, or by accident?"). We expected this variable, *Intentional,* to track our experimental manipulations of intentionality: i.e., to be high in the high-intent conditions and low in the low-intent conditions (though as a post-hoc judgment, it might not track our experimental manipulation perfectly).

Two other manipulation check variables were designed to assess judgments of the outcomes of the act for the victim of the act: *Victim Outcome* ("In your opinion, how positively or negatively was [Victim] affected?") and *Victim Reaction* ("Do you think [Victim] was pleased or angered by what happened?"). Because these items assessed judgments of outcome for the victim, we expected them to be correlated with each other, with similar strength and directionality. However, these measures of judged outcome to a victim might only partly correlate with the degree to which an observer judges an act as morally bad, and with the degree to which an observer judges the act to be intentional.

To assess the correlation structure in our six judgment variables, we performed principal components analyses on the six judgment variables. First, we performed an unrotated PCA on the 6 variables using the *princomp* function in *R.* The loadings and proportion of variance of the

first 6 components are shown in Table S2a, and a biplot of the first two components in shown in Figure S1.

Table S2a. Loadings and proportion of variance explained by first 6 components in PCA of 6 judgment variables

	Comp.1	Comp.2	Comp.3	Comp.4	Comp.5	Comp.6
Badness	0.447		−0.266	−0.372	0.765	
Intentional	0.322	0.633	0.680	0.146		
Punishment	0.459	0.113	−0.290	−0.170	−0.508	−0.636
Reputation	0.457	0.218	−0.309		−0.307	0.744
Victim outcome	0.339	−0.612	0.536	−0.415	−0.175	0.143
Victim reaction	0.402	−0.404		0.799	0.156	−0.112
Prop Variance	0.527	0.162	0.097	0.082	0.073	0.060
Cumul Prop	0.527	0.689	0.786	0.868	0.940	1.000

Figure S1. Biplot of first two components of PCA
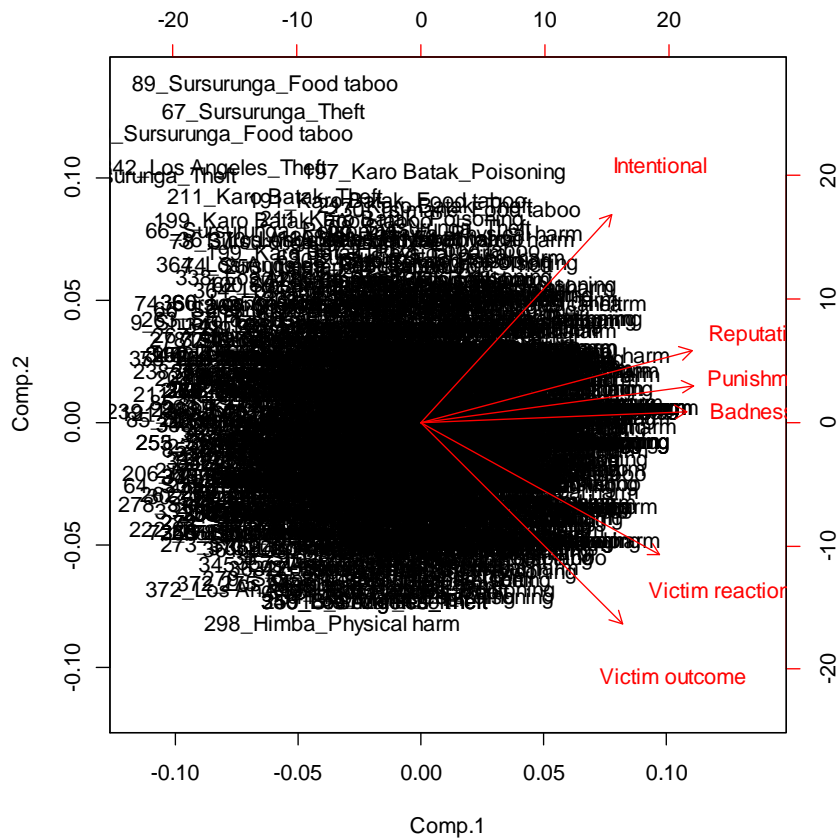
The biplot suggests that the DVs do indeed cluster into three separate groups, with the moral judgment variables (Badness, Reputation, Punishment) clustering together and the manipulation check DVs separating into one group for Intentional and another for Victim Outcome and Victim Reaction. We performed an additional PCA using the package *psych* in R (3), using a varimax rotation and specifying three factors for extraction. The loadings and proportions of variance explained are shown in Table S2b. As expected, the three moral judgment items (Badness,

Reputation and Punishment) loaded onto a single component, Victim Outcome and Victim Reaction loaded onto a second component, and Intentional onto a third component.

Table S2b. Loadings and proportion of variance explained in three-factor PCA of 6 judgment variables

```
                 PC1  PC2  PC3   h2    u2 com
Badness         0.78 0.28 0.08 0.69 0.313 1.3
Intentional     0.24 0.06 0.96 0.99 0.013 1.1
Punishment      0.79 0.23 0.21 0.72 0.279 1.3
Reputation      0.82 0.14 0.25 0.75 0.248 1.2
Victim outcome  0.15 0.92 0.08 0.88 0.120 1.1
Victim reaction 0.48 0.66 0.02 0.67 0.335 1.8

                       PC1  PC2  PC3
SS loadings           2.21 1.44 1.04
Proportion Var        0.37 0.24 0.17
Cumulative Var        0.37 0.61 0.78
Proportion Explained  0.47 0.31 0.22
Cumulative Proportion 0.47 0.78 1.00
```

3b. Intentions Bank: Plots and analyses of individual judgment measures (Badness, Reputation, Punishment, Intentional, Victim Outcome, and Victim Reaction)

The models shown in Table S1b and reported in the Main Text (best-fit model 4g) include all three moral judgment question items (Badness, Reputation, and Punishment), with Question Item as a random factor. Here we provide plots and regressions of each of the three question items independently. The effect sizes in these regressions show that results are qualitatively similar for each of the three moral judgment measures (Badness, Reputation, and Punishment), with some variations.

For each question item, we constructed an ordinal regression equivalent to the best-fit model shown in Table S1b above, i.e., model 4g, but with only the single moral judgment question item as a DV (and, correspondingly, we did not include Question Item as a random effect in these models). A table with the parameter estimates for each model follows the corresponding figure.

Badness judgments by Society

Figure S2a. Badness judgments, High- versus Low-Intent by Society, scenarios pooled. Bars indicate 95% Confidence intervals.

```
Table S3a. Intentions Bank: Parameters of best-fit model (4g) with Badness
alone as DV

Random effects:
 Groups                  Name          Variance Std.Dev.
 Subject                 (Intercept) 0.3241   0.5693
 Scenario:Society        (Intercept) 0.7254   0.8517
 Intent:Society          (Intercept) 0.2064   0.4544
 Society                 (Intercept) 1.0130   1.0065
 Intent:Scenario         (Intercept) 0.2127   0.4612
 Scenario                (Intercept) 0.6183   0.7863

Fixed effects:
          Estimate Std. Error z value Pr(>|z|)
Sex        -0.1615     0.1322  -1.222  0.22180
Intent      1.5446     0.4074   3.791  0.00015 ***
```

Punishment judgments by Society

Figure S2b. Punishment judgments, High- versus Low-Intent by Society, scenarios pooled. Bars indicate 95% Confidence intervals.

```
Table S3b. Intentions Bank: Parameters of best-fit model (4g) with
Punishment alone as DV

Random effects:
 Groups              Name          Variance  Std.Dev.
 Subject             (Intercept) 0.6537     0.8085
 Scenario:Society    (Intercept) 0.8142     0.9023
 Intent:Society      (Intercept) 0.2534     0.5034
 Society             (Intercept) 0.9985     0.9992
 Intent:Scenario     (Intercept) 0.2153     0.4640
 Scenario            (Intercept) 1.2532     1.1195

Fixed effects:
          Estimate Std. Error z value Pr(>|z|)
Sex       -0.09996    0.14915  -0.670 0.502756
Intent     1.58854    0.42053   3.778 0.000158 ***
```

Reputation judgments by Society

Figure S2c. Reputation judgments, High- versus Low-Intent by Society, scenarios pooled. Bars indicate 95% Confidence intervals.

```
Table S3c. Intentions Bank: Parameters of best-fit model (4g) with
Reputation alone as DV

Random effects:
 Groups              Name          Variance Std.Dev.
 Subject             (Intercept) 0.4352    0.6597
 Scenario:Society    (Intercept) 0.3637    0.6030
 Intent:Society      (Intercept) 0.4337    0.6586
 Society             (Intercept) 1.0770    1.0378
 Intent:Scenario     (Intercept) 0.2261    0.4755
 Scenario            (Intercept) 0.5690    0.7543

Fixed effects:
          Estimate Std. Error z value Pr(>|z|)
Sex        -0.2240     0.1381  -1.622   0.1048
Intent      1.6546     0.4674   3.540   0.0004 ***
```

In addition to the three moral judgment question items analyzed and discussed in the Main Text (Badness, Punishment, Reputation), subjects were asked three additional manipulation check items, each on a 5-point scale: the degree to which they thought the action described in the vignette was intentional ("Intentional"), the degree to which the victim was negatively affected by the event ("Victim Outcome"), and the degree to which the victim would react negatively to the event ("Victim Reaction").

Here, we provide plots of each of these items, as well as ordinal regression models with the same factors as the best-fit model reported above and in the Main Text (model 4g), but with each question item (Intentional, Victim Outcome, Victim Reaction) as a DV.
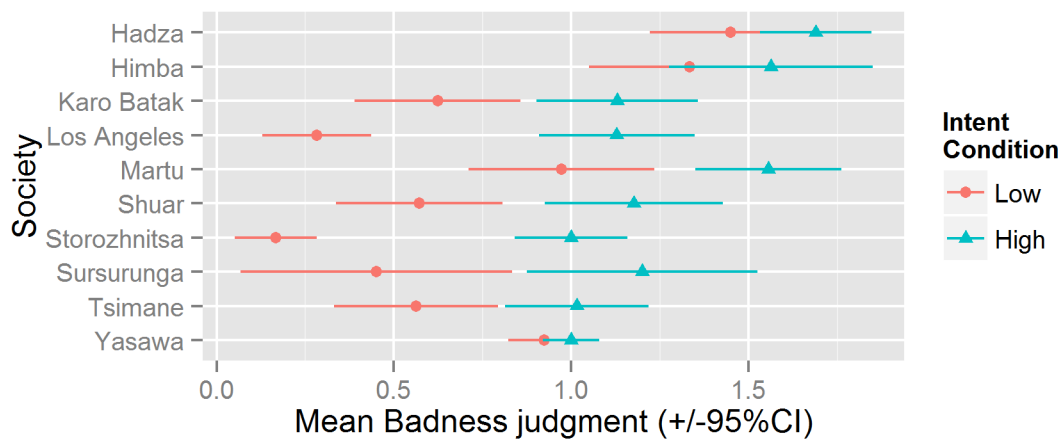
Intentional judgments by Society
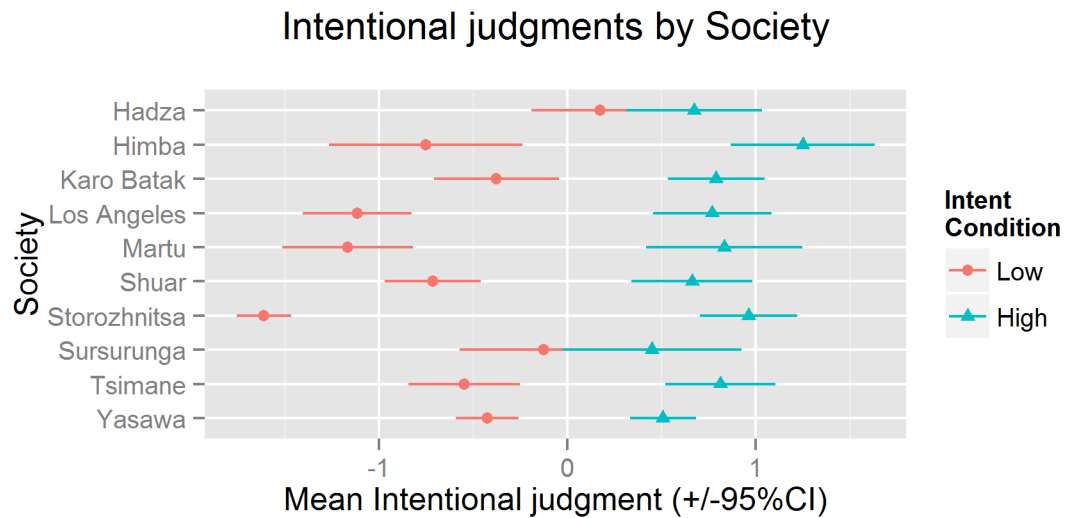
Figure S2d. Intentional judgments, High- versus Low-Intent by Society, scenarios pooled. Bars indicate 95% Confidence intervals.

```
Table S3d. Intentions Bank: Parameters of best-fit model (4g) with
Intentional alone as DV

Random effects:
 Groups              Name          Variance    Std.Dev.
 Subject             (Intercept)   1.388e-01   3.725e-01
 Scenario:Society    (Intercept)   1.766e-01   4.203e-01
 Intent:Society      (Intercept)   5.413e-01   7.357e-01
 Society             (Intercept)   2.652e-10   1.628e-05
 Intent:Scenario     (Intercept)   9.558e-02   3.092e-01
 Scenario            (Intercept)   6.304e-02   2.511e-01

Fixed effects:
          Estimate Std. Error z value Pr(>|z|)
Sex       -0.02997    0.11464  -0.261    0.794
Intent     2.41555    0.41745   5.786 7.19e-09 ***
```

Victim Outcome judgments by Society

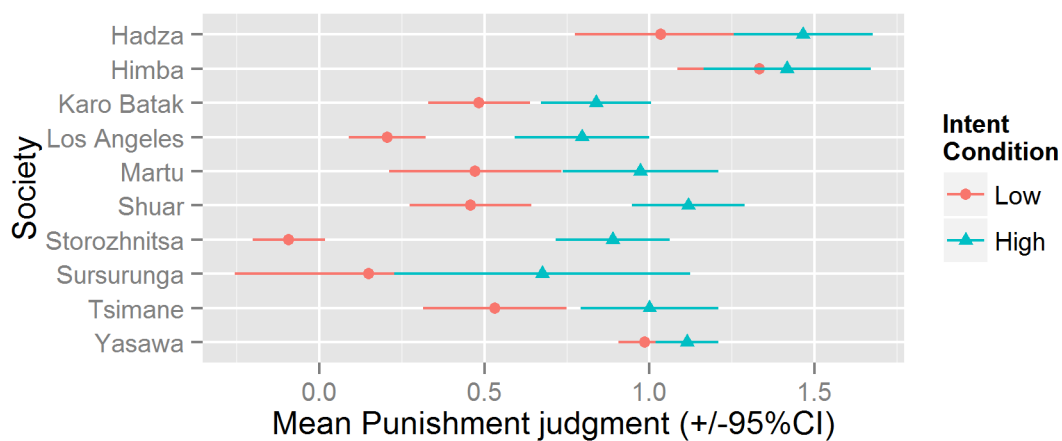Figure S2e. Victim Outcome judgments, High- versus Low-Intent by Society, scenarios pooled. Bars indicate 95% Confidence intervals.

```
Table S3e. Intentions Bank: Parameters of best-fit model (4g) with Victim
Outcome alone as DV

Random effects:
 Groups               Name           Variance Std.Dev.
 Subject              (Intercept) 1.09501  1.0464
 Scenario:Society     (Intercept) 1.00054  1.0003
 Intent:Society       (Intercept) 0.05123  0.2263
 Society              (Intercept) 1.28346  1.1329
 Intent:Scenario      (Intercept) 0.03014  0.1736
 Scenario             (Intercept) 0.67460  0.8213

Fixed effects:
          Estimate Std. Error  z value Pr(>|z|)
Sex       -0.00811    0.17915   -0.045  0.96389
Intent     0.58388    0.21199    2.754  0.00588 **
```
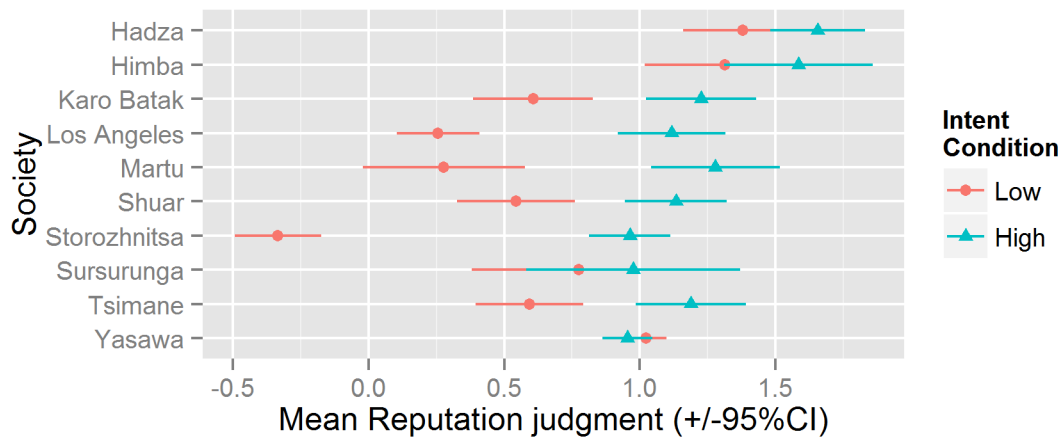
Victim Reaction judgments by Society
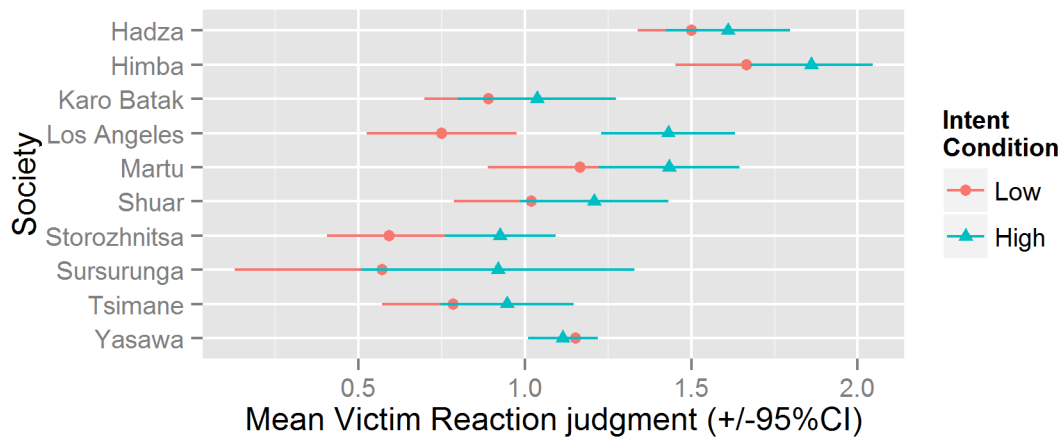
Figure S2f. Victim Reaction judgments, High- versus Low-Intent by Society, scenarios pooled. Bars indicate 95% Confidence intervals.

```
Table S3f. Intentions Bank: Parameters of best-fit model (4g) with Victim
Reaction alone as DV

Random effects:
 Groups              Name         Variance Std.Dev.
 Subject             (Intercept) 0.7429   0.8619
 Scenario:Society    (Intercept) 0.4556   0.6750
 Intent:Society      (Intercept) 0.1480   0.3847
 Society             (Intercept) 1.1424   1.0688
 Intent:Scenario     (Intercept) 0.1183   0.3440
 Scenario            (Intercept) 0.6520   0.8075

Fixed effects:
          Estimate Std. Error z value Pr(>|z|)
Sex        0.01218    0.16261   0.075   0.9403
Intent     0.79155    0.33002   2.398   0.0165 *
```

3c. Intentions Bank: Analyses by Scenario (Physical Harm, Theft, Poisoning, Food Taboo)

The models shown in Table S1b and reported in the Main Text (best-fit model 4g) include all four vignette scenarios (Physical Harm, Theft, Poisoning, Food Taboo), with Scenario as a random factor. Here we provide plots and regressions of each of the four scenarios independently.

For each scenario, we constructed an ordinal regression equivalent to the best-fit model shown in Table S1b above, i.e., model 4g, but with the factor Scenario (and interaction terms involving Scenario) removed. A table with the parameter estimates for each model follows the corresponding figure.

The plots and parameter estimates in the ordinal regressions for each scenario show that there was substantial variation across scenarios in the effect of High- versus Low-Intent on moral judgments, with Food Taboo showing the smallest effects of Intent and Theft the largest. The odds ratios ($\exp(\beta)$) associated with the Intent parameter estimate (β) in each model were: Physical Harm, $\beta = 2.67$, $\exp(\beta) = 14.4$; Theft, $\beta = 3.04$, $\exp(\beta) = 20.9$; Poisoning, $\beta = 1.96$, $\exp(\beta) = 7.10$; Food Taboo, $\beta = 0.417$, $\exp(\beta) = 1.52$. Thus, across societies, intentionally violating a food taboo increased the odds of a one-unit boost in severity of moral judgment by a factor of 1.5, whereas intentionally committing a theft increased those odds by a factor of 20.

Physical Harm

Figure S3a. Physical harm judgments in High- versus Low-Intent condition by Society, question items pooled. Bars indicate 95% Confidence intervals.

```
Table S4a. Intentions Bank: Parameters of best-fit model (4g) on Physical
Harm scenario alone

Random effects:
 Groups          Name          Variance Std.Dev.
 Subject         (Intercept) 3.38215  1.8391
 Intent:Society (Intercept) 0.44455  0.6667
 Society         (Intercept) 0.56664  0.7528
 Question item   (Intercept) 0.03841  0.1960

Fixed effects:
          Estimate Std. Error z value Pr(>|z|)
Sex        -0.2930     0.2560  -1.145    0.252
Intent      2.6708     0.4146   6.443 1.17e-10 ***
```
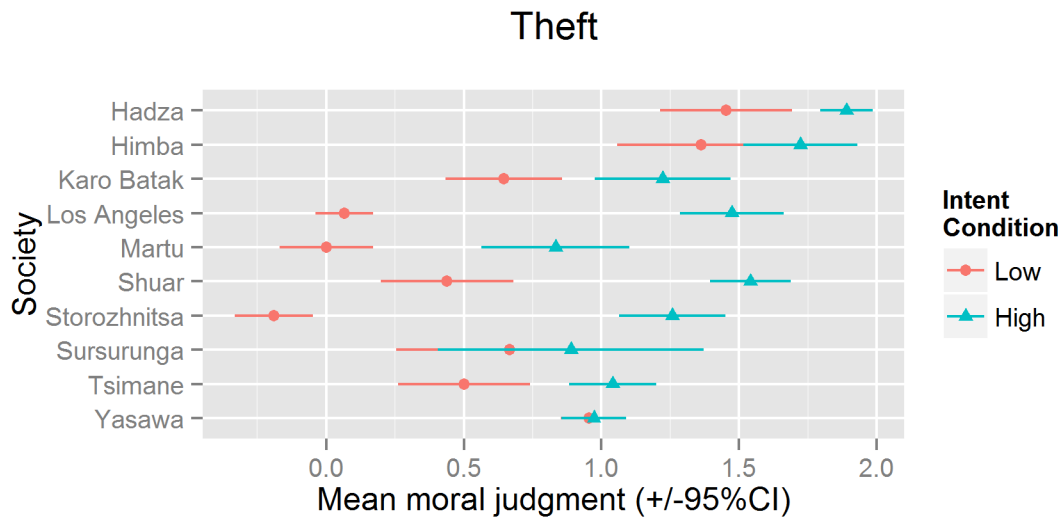
Theft

Figure S3b. Theft judgments in High- versus Low-Intent condition by Society, question items pooled. Bars indicate 95% Confidence intervals.

```
Table S4b. Intentions Bank: Parameters of best-fit model (4g) on Theft
scenario alone

Random effects:
 Groups          Name          Variance Std.Dev.
 Subject         (Intercept) 3.57802  1.8916
 Intent:Society (Intercept) 1.54275  1.2421
 Society         (Intercept) 2.15587  1.4683
 Question item  (Intercept) 0.04049  0.2012

Fixed effects:
          Estimate Std. Error z value Pr(>|z|)
Sex       -0.06695    0.26623  -0.251     0.801
Intent     3.03972    0.63575   4.781 1.74e-06 ***
```

Poisoning
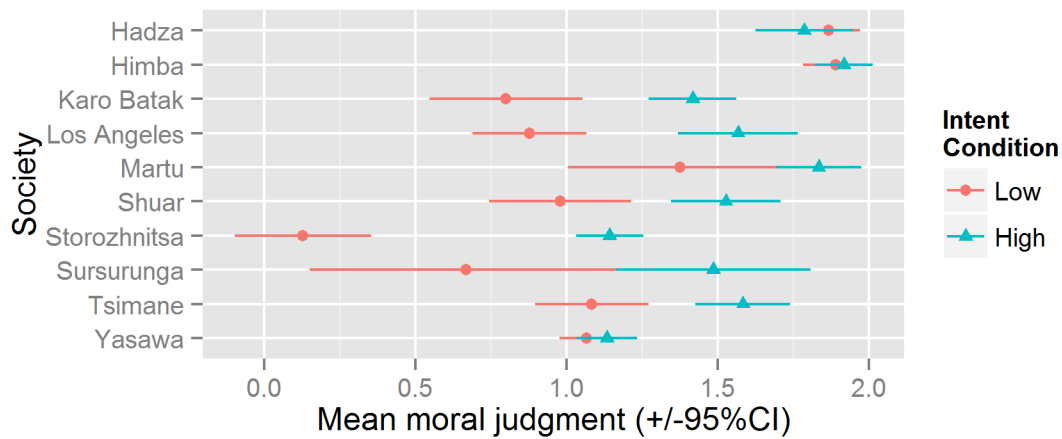
Figure S3c. Poisoning judgments in High- versus Low-Intent condition by Society, question items pooled. Bars indicate 95% Confidence intervals.

```
Table S4c. Intentions Bank: Parameters of best-fit model (4g) on Poisoning
scenario alone

Random effects:
 Groups         Name         Variance Std.Dev.
 Subject        (Intercept) 2.0251   1.4231
 Intent:Society (Intercept) 0.4976   0.7054
 Society        (Intercept) 2.6630   1.6319
 Question item  (Intercept) 0.0755   0.2748

Fixed effects:
           Estimate Std. Error z value Pr(>|z|)
Sex       -0.009582   0.228584  -0.042    0.967
Intent     1.959246   0.408074   4.801 1.58e-06 ***
```
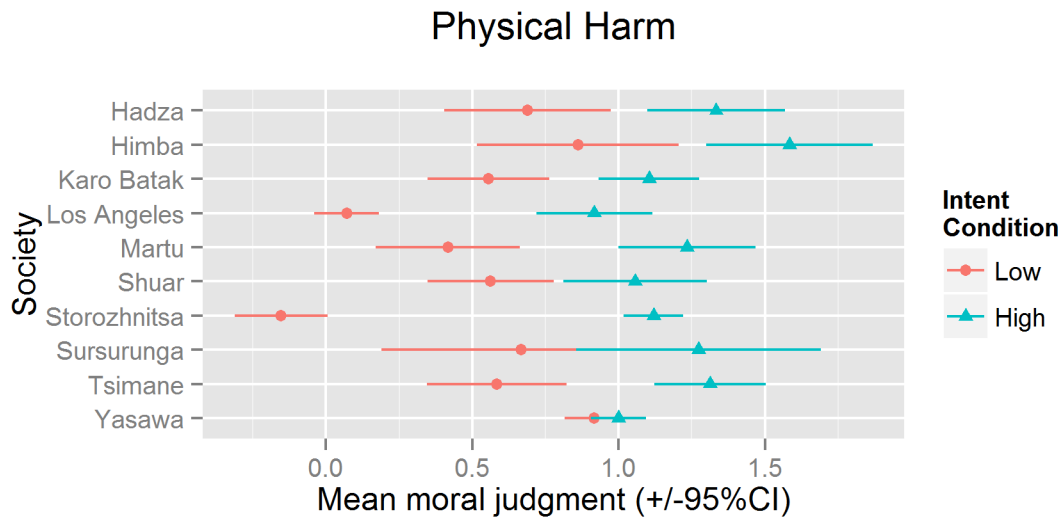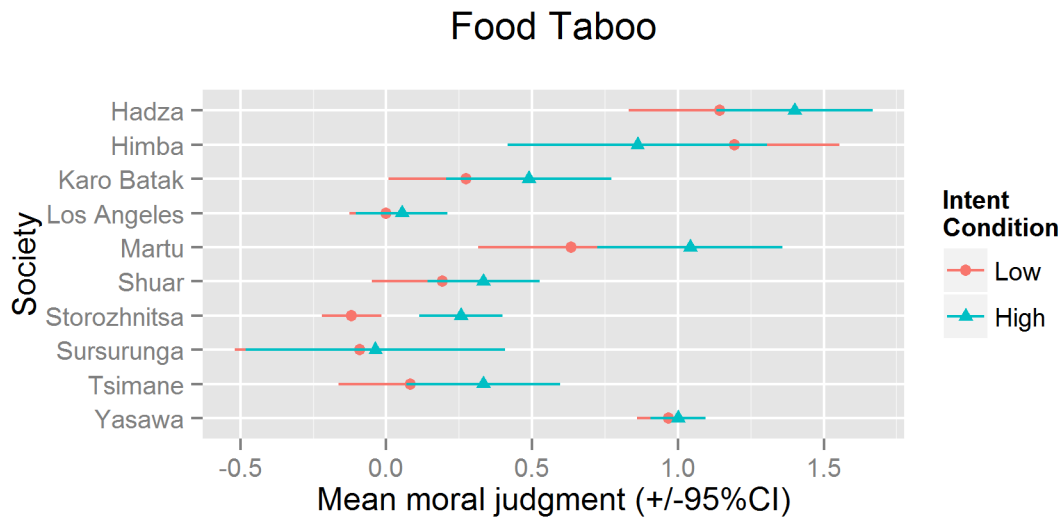
Figure S3d. Food taboo judgments in High- versus Low-Intent condition by Society, question items pooled. Bars indicate 95% Confidence intervals.

```
Table S4d. Intentions Bank: Parameters of best-fit model (4g) on Food
Taboo scenario alone

Random effects:
 Groups         Name        Variance Std.Dev.
 Subject        (Intercept) 2.3118   1.5205
 Intent:Society (Intercept) 0.0000   0.0000
 Society        (Intercept) 2.4391   1.5618
 Question item  (Intercept) 0.1757   0.4191

Fixed effects:
          Estimate Std. Error z value Pr(>|z|)
Sex        -0.4236     0.2201  -1.924   0.0543 .
Intent      0.4174     0.2175   1.919   0.0549 .
```

3d. Intentions Bank: Analysis of interactions between High- vs Low-Intent, Scenario, and Society

To assess the three-way interaction between High- vs Low-Intent, Scenario, and Society, we fit an additional model, equivalent to the best-fit omnibus model 4g in Table S1b, but with an additional three-way interaction term, High- vs Low-Intent x Scenario x Society. Parameters of this model, 4h, are shown in Table S5a.

```
Table S5a. Intentions bank: Parameters of model 4h (equivalent
to model 4g but with three-way interaction term for High- vs
Low-Intent x Scenario x Society

Random effects:
 Groups                  Name        Variance Std.Dev.
 Subject                 (Intercept) 0.83550  0.9141
```

```
Intent:Scenario:Society (Intercept) 0.23083  0.4805
Scenario:Society         (Intercept) 0.52713  0.7260
Intent:Society           (Intercept) 0.21904  0.4680
Society                  (Intercept) 1.07598  1.0373
Intent:Scenario          (Intercept) 0.26178  0.5116
Scenario                 (Intercept) 0.85496  0.9246
Question item            (Intercept) 0.06663  0.2581

Fixed effects:
          Estimate Std. Error z value Pr(>|z|)
Sex        -0.2119     0.1250  -1.695 0.090056 .
Intent      1.6305     0.4388   3.716 0.000203 ***
```

To evaluate the nature of this three-way interaction, we used the effect sizes of the interactions between High- vs Low-Intent and Society that we computed independently for each of the four scenarios, as shown in Tables S4a to S4d above. Table S5b shows these effect sizes rank-ordered in descending order of amount of variance explained, which indicate which scenario contributed most to the three-way interaction between Scenario, Society, and High- vs Low-Intent (Theft), and which scenario contributed least (Food taboo).

Table S5b. Effect sizes of interactions between Society and High- vs Low-Intent for each scenario in the Intentions Bank, in descending order of amount of variance explained

Scenario	Variance	Std Dev
Theft	1.54	1.24
Poisoning	.498	.705
Physical harm	.445	.667
Food taboo	.000	.000

3e. Intentions Bank: Victim Outcome and Victim Reaction by Scenario and Society

To assess participants' judgments of the outcome severity of our different scenarios, we computed mean Victim Outcome and Victim Reaction across societies and scenarios. Figure 4 in the main text shows mean Victim Outcome and Victim Reaction judgments for the four scenarios, pooled across societies, in descending order of mean severity. Figure S4 shows the means of these two variables broken down by society.
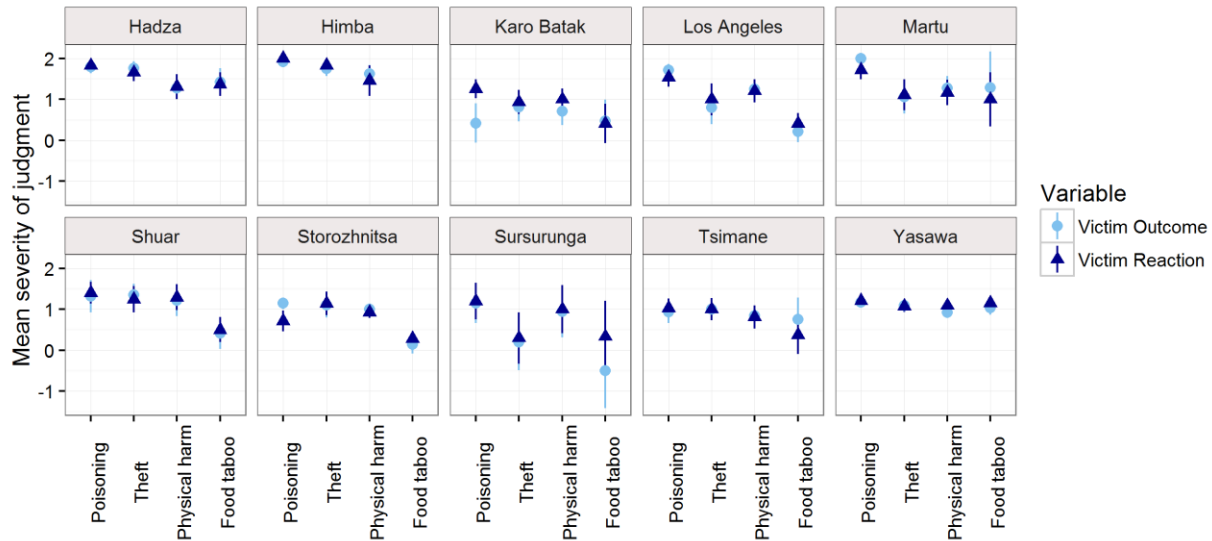
Figure S4. Mean judgments of severity of Victim Outcome and Victim Reaction by Scenario and Society. Scenarios ordered left to right in descending order of mean severity of judgments pooled across societies. Bars indicate 95% CI.

3f. Intentions Bank: Mediation analyses of effects of variables Intentional, Victim Outcome, and Victim Reaction on moral judgments

As manipulation checks, we measured three aspects of participants' judgments of the events occurring in the vignettes. Intentional measured the degree to which the act was judged as intentional or not. Victim Outcome measured the degree to which the event was judged to have negative consequences for the victim. Victim Reaction measured the degree to which the victim was judged to be angered (or pleased) by the outcome. Thus, each of these measured a different aspect of participants' perception of the events in the vignette. Principal component analysis (see Section 3a above) revealed, as expected, that Intentional was a single component, and that Victim Outcome and Victim Reaction clustered together and distinctly from Intentional (and all three clustered separately from the moral judgment variables).

There are reasons to expect some degree of causal mediation of participants' moral judgments by these variables. The intentionality effects in our vignettes were manipulated experimentally, by varying the text of the vignettes across subjects. The variable Intentional was intended as a manipulation check to see if participants' post-hoc judgments of whether the action described in the vignette was indeed intentional tracked our manipulation, which, in general, they did (see Figure S2d above). Additionally, we checked to see if the variable Intentional mediated the effects of our experimental manipulation on the moral judgment variables (Badness, Punishment, Reputation). We also examined whether our two other manipulation check variables, Victim Outcome and Victim Reaction, mediated participants' judgments of the moral badness of an act. We expected these variables to have a smaller mediating effect than the Intentional variable, which was expected to more closely track our experimental manipulation of the intentionality of the act.

We conducted separate mediation analyses for all three of the variables Intentional, Victim Outcome, and Victim Reaction. In order to obtain a single figure for the mediation effect of each variable, we modeled our outcome variable (strength of moral judgment) as a scalar rather than as a ranked variable, using the *lmer* function of the *lme4* package in R (4). Following standard procedure for mediation analysis (5), we first fit a model in which our experimental variable, High vs Low Intent, predicted the mediator variable (e.g., Intentional). We then fit a model in which both the experimental and mediator variables predicted the outcome variable (the three moral judgment items, Badness, Reputation, and Punishment). Finally, we used the *mediate* function in the *mediation* package for R (6) to obtain measures of the average causal mediation effect (ACME) and average direct effect (ADE) for each mediator (Intentional, Victim Outcome, and Victim Reaction), mediating between High- vs Low-Intent and judgments of moral valence (1000 simulations were used for each analysis). Results are shown in Table S6.

Table S6. Causal mediation of variables Intentional, Victim Outcome, and Victim Reaction between High- vs Low-Intent and moral judgments (Badness, Reputation, Punishment)

Variable	Estimate	95% CI Lower	95% CI Upper	p-value
Intentional				
ACME	0.219	0.188	0.252	<.001
ADE	0.312	0.254	0.374	<.001
Total Effect	0.531	0.479	0.583	<.001
Prop. Mediated	0.413	0.347	0.483	<.001
Victim Outcome				
ACME	0.0515	0.0359	0.0675	<.001
ADE	0.4812	0.4298	0.5318	<.001
Total Effect	0.5327	0.4795	0.5842	<.001
Prop. Mediated	0.0962	0.0691	0.1271	<.001
Victim Reaction				
ACME	0.0889	0.0681	0.1106	<.001
ADE	0.4453	0.3937	0.4970	<.001
Total Effect	0.5342	0.4778	0.5880	<.001
Prop. Mediated	0.1664	0.1290	0.2045	<.001

Mediation effects were intermediate for Intentional, with an average causal mediation effect (ACME) of .22 and a total effect of .53, with a proportion mediated of .41. Mediation effects were much smaller for Victim Outcome (ACME = .05, proportion mediated = .10) and Victim Reaction (ACME = .09, proportion mediated = .17).

4. Mitigating Factors bank: Model Comparisons

Because the design of the Mitigating Factors bank involved five potential mitigating factor scenarios plus an intentional scenario (for a total of six levels of the factor Mitigating), we performed two kinds of model comparison analyses. In the first analysis we treated mitigating

factor as a random factor with six levels. In the second analysis, we divided the mitigating factors into two categories, low and high, and treated this as a binary fixed factor, Low- versus High-Mitigating.

Model Comparison 1

Table S4a shows the parameters of the best-fit model from Model Comparison 1 (model 5; also shown in Table 2 in the Main Text). Table S7b shows the AIC values for the different models compared in Model Comparison 1.

```
Table S7a. Mitigating Factors Bank: Parameters of best-fit model with
Mitigating as random effect (model 5)

Random effects:
 Groups      Name        Variance Std.Dev.
 Subject     (Intercept) 1.60430  1.2666
 Soc:Mitig   (Intercept) 0.72466  0.8513
 Society     (Intercept) 0.36918  0.6076
 Mitigating  (Intercept) 3.13077  1.7694
 Question    (Intercept) 0.06851  0.2618

Fixed effects:
     Estimate Std. Error z value Pr(>|z|)
Sex   -0.2602     0.1731  -1.503    0.133
```

Table S7b. Model Comparison 1: Treating Mitigating Factor as a 6-level Random Effect. * = best-fit model

Model	Factor (F = fixed, R = random)						
	Sex (F)	Subject (R)	Mitigating Factor (intent) (R)	Society	Question	Mitigating x Society (R)	AIC
1	yes	yes					6934.99
2	yes	yes	Yes				6045.82
3	yes	yes	Yes	yes			6011.65
4	yes	yes	Yes	yes	yes		5990.94
*5	yes	yes	Yes	yes	yes	yes	5749.06

Model Comparison 2

Table S7c shows the parameters of the best-fit model from Model Comparison 2 (model 5a). Table S7d shows the AIC values for the different models compared in Model Comparison 2.

```
Table S7c. Mitigating Factors Bank: Parameters of best-fit model with High
versus Low Mitigating as fixedeffect (model 5)

Random effects:
 Groups         Name         Variance Std.Dev.
 Subject        (Intercept) 1.26446  1.1245
 Soc:Mitig      (Intercept) 0.45302  0.6731
 Society        (Intercept) 0.13368  0.3656
 Question       (Intercept) 0.04828  0.2197
Number of groups:  SUBNUM 297,  POP:HIGHLOWMIT 18,  POP 9,  MORQNUM 3

Fixed effects:
            Estimate Std. Error z value Pr(>|z|)
Sex          -0.2749     0.1549  -1.774   0.0761 .
Mitigating   -3.2355     0.3458  -9.357   <2e-16 ***
```

Table S7d. Model Comparison 2: Treating Mitigating Factor as a 2-level Fixed Effect: High-Mitigation (Self Defense and Necessity) versus Low-Mitigation (All other scenarios). * = best-fit model

Mo del	Factor (F = fixed, R = random)						
	Sex (F)	Subject (R)	High- versus Low-Mitigation (F)	Question item (Badness, Punishment, Reputation) (R)	Society (R)	Society x High- versus Low-Mitigation (R)	AIC
1a	yes	yes					6934.99
2a	yes	yes	yes				6255.75
3a	yes	yes	yes	yes			6224.51
4a	yes	yes	yes	yes	yes		6207.18
*5a	yes	yes	yes	yes	yes	yes	6140.01

5. Mitigating Factors Bank: Additional Plots and Analyses

As for the Intentions Bank, here we provide plots of subsets of the data for the Mitigating Factors Bank, in the common format of point-range graphs with means and 95% confidence intervals (CI). For readers interested in statistical significance at the $p < .05$ level, anything beyond the edge of the 95% CI range would be a statistically significant difference at the $p < .05$ level using conventional null hypothesis testing.

In each case, we also provide the model parameters for two models: one equivalent to the best-fit model in Table S7a, where Mitigating Factor is treated as a six-level random effect (best-fit model = 5), and another equivalent to the best-fit model in Table S7b, where Mitigating Factor is treated as a two-level, High versus Low fixed effect (best-fit model = 5a). In each case, because the model in question is fit to a subset of the data, factors and interactions not relevant to the model have been removed (e.g., for models examining Badness judgments alone as the DV, Question Item has been removed as a factor).

Note that the Mitigating Factors Bank was not administered in the Himba sample, so we report results for the nine other societies where it was administered.
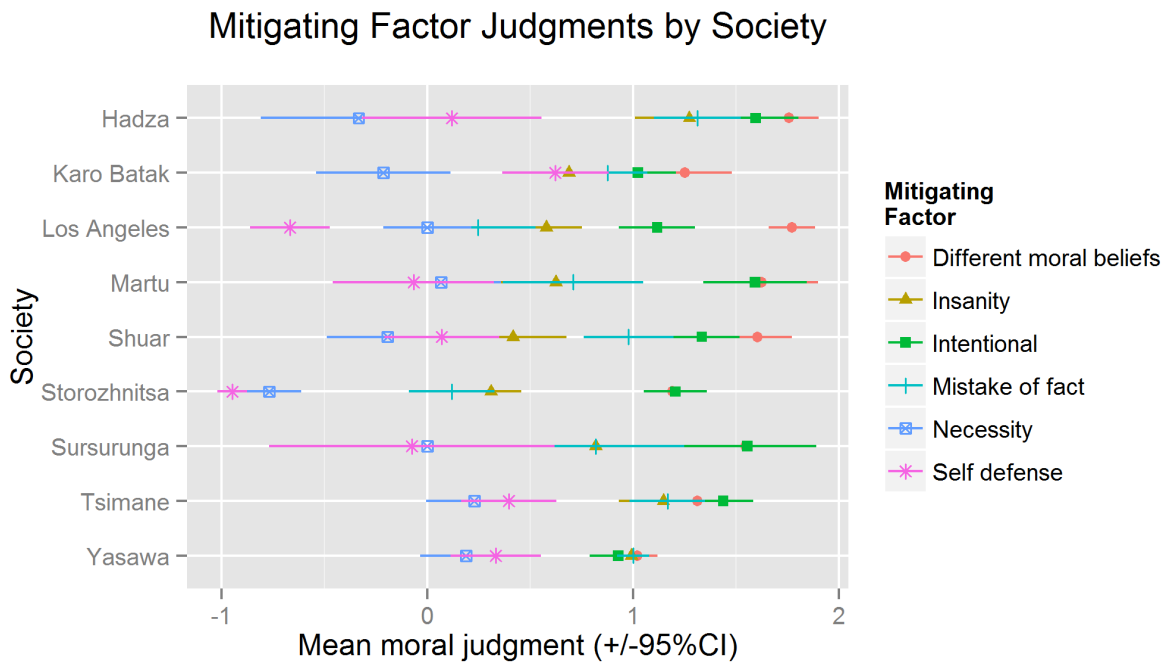
Figure S5a. Moral judgments for different Mitigating Factor scenarios by Society, all questions pooled. Bars indicate 95% Confidence intervals. (Note: this plot is equivalent to Figure 5 in the Main Text).

5a. Mitigating Factors Bank: Analyses by Question Item (Badness, Punishment, Reputation)

Figure S5b. Badness judgments for different Mitigating Factor scenarios by Society. Bars indicate 95% Confidence intervals.

```
Table S8a. Mitigating Factors Bank: Parameters of best-fit model with
Mitigating as Random Effect (5) with Badness alone as DV

Random effects:
 Groups      Name         Variance Std.Dev.
 Subject     (Intercept)  0.9769   0.9884
 Mitig:Soc   (Intercept)  0.9666   0.9831
 Society     (Intercept)  0.1875   0.4331
 Mitigating  (Intercept)  3.1768   1.7823

Fixed effects:
      Estimate Std. Error z value Pr(>|z|)
Sex   -0.2264    0.1869   -1.211    0.226


Table s8b. Mitigating Factors Bank: Parameters of best-fit model with
Mitigating as Fixed Effect (5a) with Badness alone as DV

Random effects:
 Groups        Name          Variance Std.Dev.
 Subject       (Intercept)   0.356082 0.59673
 Mitig:Soc     (Intercept)   0.353215 0.59432
 Society       (Intercept)   0.002544 0.05044

Fixed effects:
          Estimate Std. Error z value Pr(>|z|)
Sex        -0.1831    0.1526  -1.200     0.23
```

25

```
Mitigating    -2.9461      0.3535   -8.333    <2e-16 ***
```

Mitigating Factors: Reputation

Figure S5c. Reputation judgments for different Mitigating Factor scenarios by Society. Bars indicate 95% Confidence intervals.

```
Table S8c. Mitigating Factors Bank: Parameters of best-fit model with
Mitigating as Random Effect (5) with Punishment alone as DV

Random effects:
 Groups      Name        Variance Std.Dev.
 Subject     (Intercept) 0.7565   0.8698
 Mitig:Soc   (Intercept) 0.4463   0.6680
 Society     (Intercept) 0.4213   0.6491
 Mitig       (Intercept) 2.1876   1.4790

Fixed effects:
      Estimate Std. Error z value Pr(>|z|)
Sex   -0.2403      0.1737  -1.384     0.166

Table S8d. Mitigating Factors Bank: Parameters of best-fit model with
Mitigating as Fixed Effect (5a) with Punishment alone as DV

Random effects:
 Groups          Name        Variance Std.Dev.
 Subject         (Intercept) 0.3493   0.5910
 Mitig:Soc       (Intercept) 0.2000   0.4472
 Society         (Intercept) 0.2488   0.4988

Fixed effects:
           Estimate Std. Error z value Pr(>|z|)
Sex         -0.2433      0.1506  -1.616     0.106
Mitigating  -2.3223      0.2873  -8.082 6.35e-16 ***
```

26

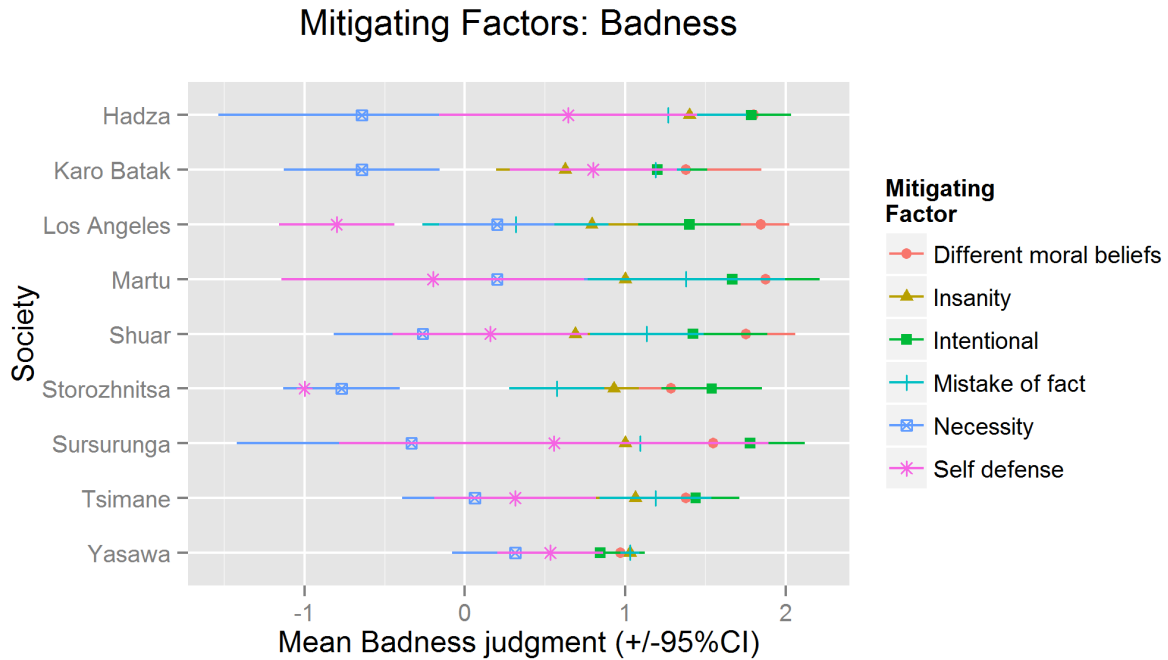Figure S5d. Punishment judgments for different Mitigating Factor scenarios by Society. Bars indicate 95% Confidence intervals.

```
Table S8e. Mitigating Factors Bank: Parameters of best-fit model with
Mitigating as Random Effect (5) with Reputation alone as DV

Random effects:
 Groups      Name         Variance  Std.Dev.
 Subject     (Intercept)  0.7931    0.8906
 Mitig:Soc   (Intercept)  0.5649    0.7516
 Society     (Intercept)  0.4868    0.6977
 Mitig       (Intercept)  2.6105    1.6157

Fixed effects:
     Estimate Std. Error z value Pr(>|z|)
Sex   -0.2927     0.1754  -1.669   0.0951 .

Table S8f. Mitigating Factors Bank: Parameters of best-fit model with
Mitigating as Fixed Effect (5a) with Reputation alone as DV

Random effects:
 Groups        Name          Variance  Std.Dev.
 Subject       (Intercept)   0.3737    0.6113
 Mitig:Soc     (Intercept)   0.1786    0.4226
 Society       (Intercept)   0.2857    0.5345

Fixed effects:
           Estimate Std. Error z value Pr(>|z|)
Sex         -0.2697     0.1512  -1.784   0.0745 .
Mitigating  -2.6413     0.2826  -9.346   <2e-16 ***
```

5b. Mitigating Factors Bank: Analyses of additional judgment items (Intentional, Victim Outcome, Victim Reaction)

       Here, we provide plots of each of our three additional question items (Intentional, Victim Outcome, Victim Reaction) on the Mitigating Factors Bank. We also provide parameter estimates for ordinal regression models with the same factors as the best-fit models reported above and in the Main Text (models 5 and 5a), but with each question item (Intentional, Victim Outcome, Victim Reaction) as a DV.
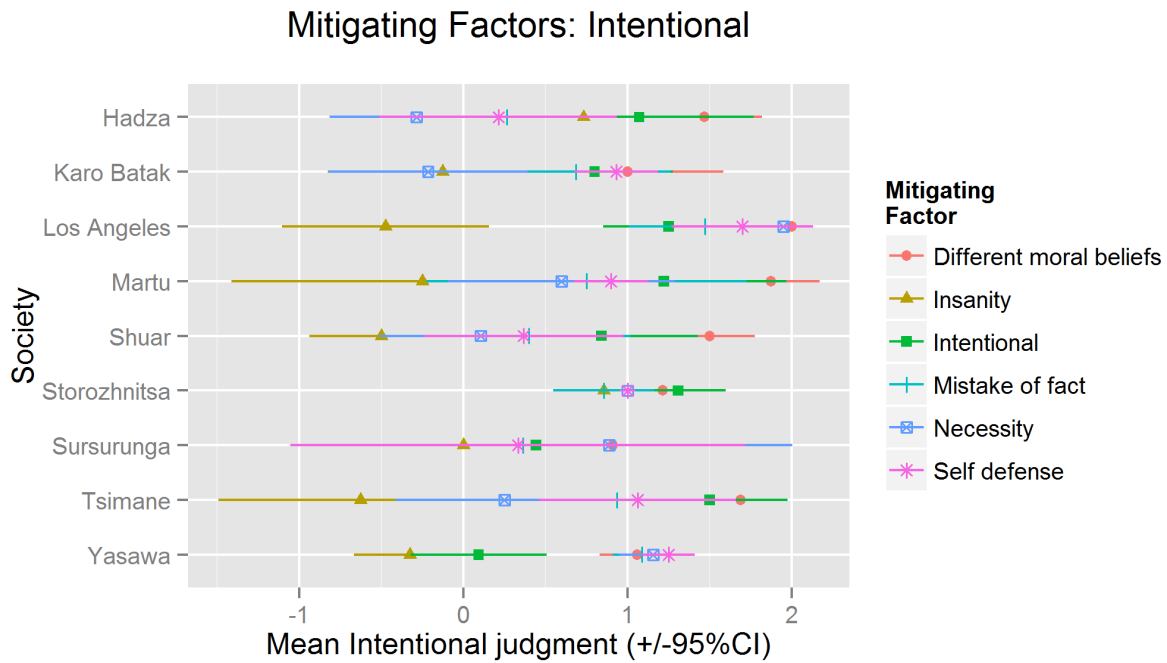
Figure S5e. Intentional judgments for different Mitigating Factor scenarios by Society. Bars indicate 95% Confidence intervals.

```
Table S8g. Mitigating Factors Bank: Parameters of best-fit model with
Mitigating as random effect (5) with Intentional alone as DV

Random effects:
 Groups      Name         Variance Std.Dev.
 Subject     (Intercept) 0.7729    0.8792
 Soc:Mitig   (Intercept) 1.0692    1.0340
 Society     (Intercept) 0.4262    0.6528
 Mitigating  (Intercept) 0.9574    0.9785

Fixed effects:
     Estimate Std. Error z value Pr(>|z|)
Sex   0.07001    0.17654   0.397     0.692

Table S8h. Mitigating Factors Bank: Parameters of best-fit model with High
versus Low Mitigating as fixed effect (5a) with Intentional alone as DV

Random effects:
 Groups         Name         Variance Std.Dev.
 Subject        (Intercept) 0.1310    0.3619
 Society:Mitig  (Intercept) 0.4389    0.6625
 Society        (Intercept) 0.2448    0.4948

Fixed effects:
           Estimate Std. Error z value Pr(>|z|)
Sex         0.05506    0.13793   0.399     0.690
Mitigating -0.07105    0.34630  -0.205     0.837
```
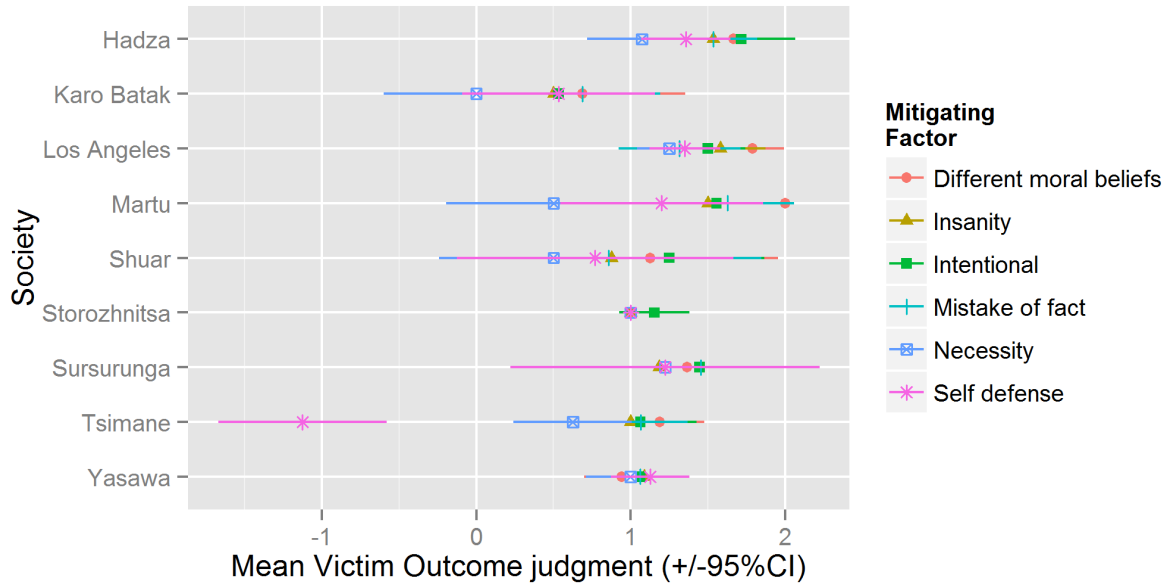
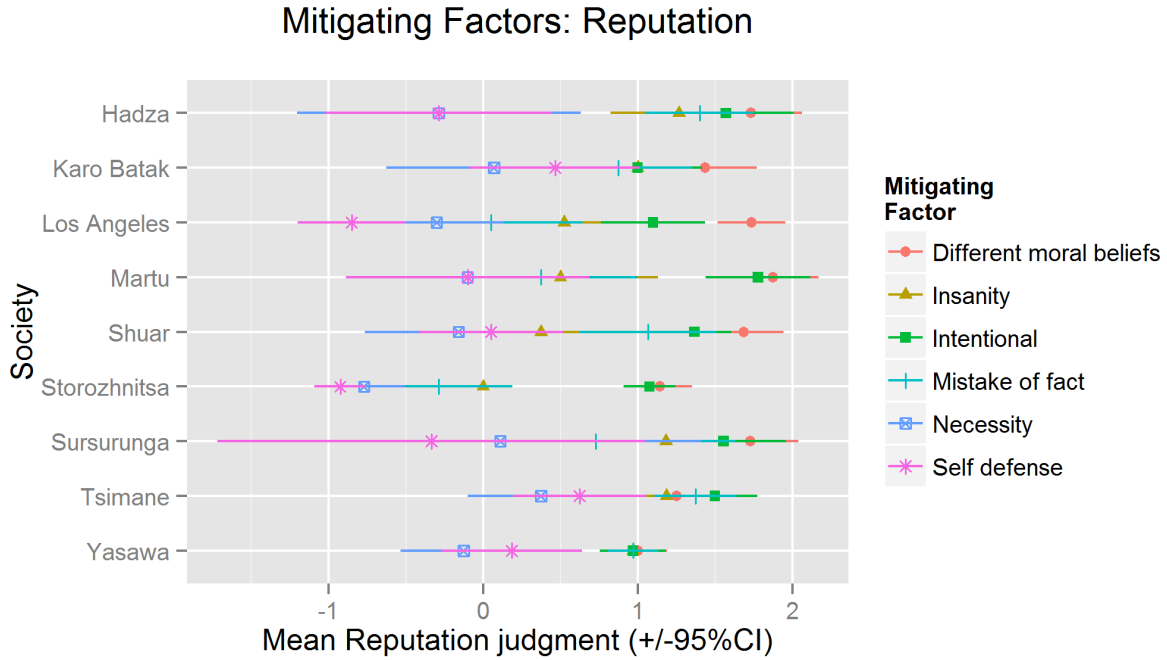Figure S5f. Victim Outcome judgments for different Mitigating Factor scenarios by Society. Bars indicate 95% Confidence intervals.

```
Table S8i. Mitigating Factors Bank: Parameters of best-fit model with
Mitigating as random effect (5) with Victim Outcome alone as DV

Random effects:
 Groups      Name         Variance Std.Dev.
 Subject     (Intercept) 1.6484    1.2839
 Soc:Mitig   (Intercept) 0.5022    0.7086
 Society     (Intercept) 1.4475    1.2031
 Mitigating  (Intercept) 0.3843    0.6199


Fixed effects:
      Estimate Std. Error z value Pr(>|z|)
Sex  -0.002198   0.224424   -0.01    0.992

Table S8j. Mitigating Factors Bank: Parameters of best-fit model with High
versus Low Mitigating as fixed effect (5a) with Victim Outcome alone as DV

Random effects:
 Groups          Name         Variance Std.Dev.
 Subject         (Intercept) 1.3493    1.1616
 Society:Mitig   (Intercept) 0.4714    0.6866
 Society         (Intercept) 1.0974    1.0476


Fixed effects:
          Estimate Std. Error z value Pr(>|z|)
Sex        -0.02345    0.21106  -0.111  0.91153
Mitigating -1.24780    0.38262  -3.261  0.00111 **
```
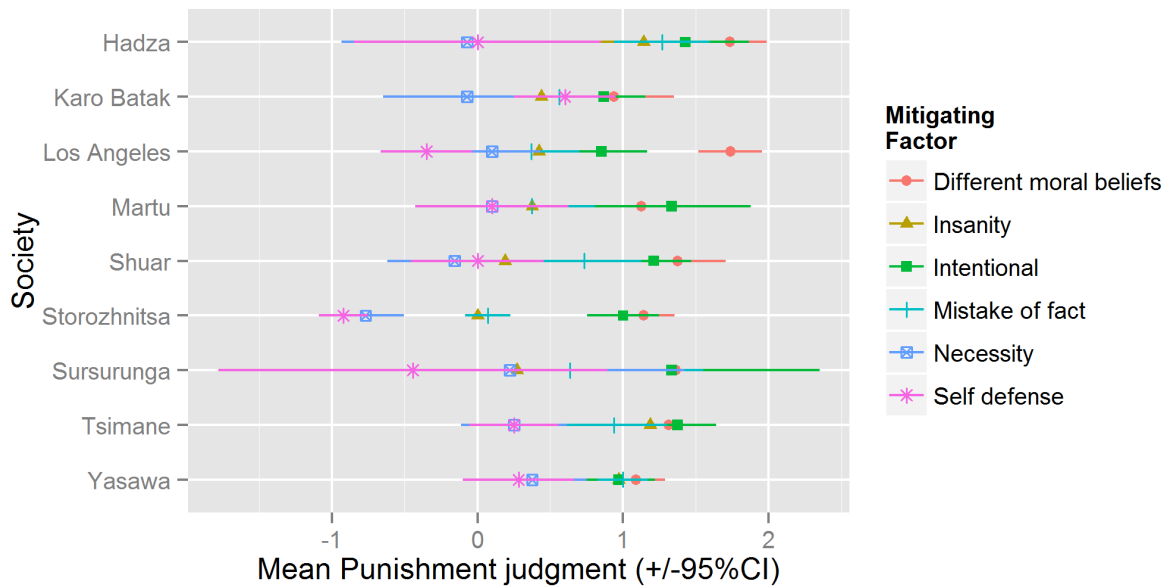
30
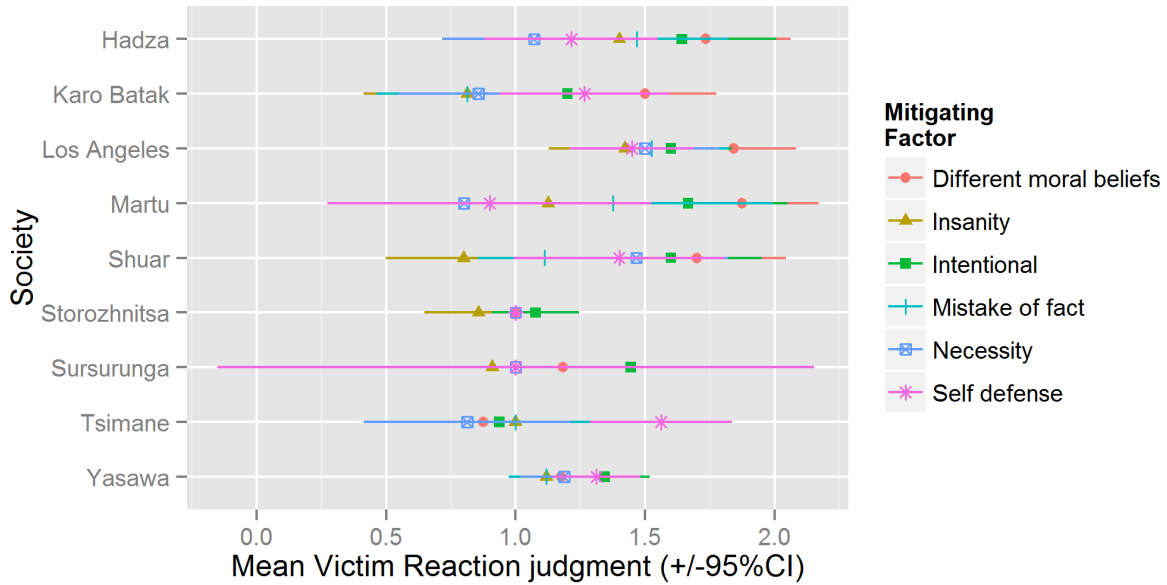
Figure S5g. Victim Reaction judgments for different Mitigating Factor scenarios by Society. Bars indicate 95% Confidence intervals.

```
Table S8k. Mitigating Factors Bank: Parameters of best-fit model with
Mitigating as random effect (5) with Victim Reaction alone as DV

Random effects:
 Groups      Name         Variance Std.Dev.
 Subject     (Intercept)  2.3348   1.5280
 Soc:Mitig   (Intercept)  0.5318   0.7292
 Society     (Intercept)  0.6230   0.7893
 Mitigating  (Intercept)  0.3786   0.6153

Fixed effects:
      Estimate Std. Error z value Pr(>|z|)
Sex    0.0692     0.2458   0.281     0.778

Table S8l. Mitigating Factors Bank: Parameters of best-fit model with High
versus Low Mitigating as fixed effect (5a) with Victim Reaction alone as
DV

Random effects:
 Groups          Name         Variance Std.Dev.
 Subject         (Intercept)  1.7701   1.3304
 Society:Mitig   (Intercept)  0.5080   0.7128
 Society         (Intercept)  0.2053   0.4531

Fixed effects:
           Estimate Std. Error z value Pr(>|z|)
Sex         0.02233    0.22318   0.100     0.920
Mitigating -0.55766    0.39320  -1.418     0.156
```

6. Society descriptions and analyses

Here we provide brief descriptions of the study sites in each society where the study was conducted. Following each description are plots of society-specific data for each of our two vignette banks, the Intentions Bank and Mitigating Factors Bank, as well as regression models parallel to the best-fit models reported for the Intentions Bank and Mitigating Factors Bank above (4g, 5, and 5a respectively).

Hadza (Tanzania)

The Hadza are a population of hunter-gatherers living in a 4000km^2 area around the shores of Lake Eyasi in a savanna mosaic environment in Northern Tanzania, East Africa. The climate is typically warm, with distinct wet and dry seasons. The total population size is approximately 1000 individuals; of this total population around 200 practice a hunting and gathering way of life where the majority of their diet is derived from wild plant foods (tubers, berries, fruits, legumes, nuts, and seeds), honeycomb (liquid honey and bee larvae), and game animals (birds and medium to large sized game animals such as dik dik, kudu, zebra, and impala). The largest percentage of the Hadza tribe (the remaining 800 of the total population of 1000) practice a mixed subsistence regime and either supplement wild foods with traded and purchased foods or have integrated with the village lifestyle and engage in wage labor.

       The majority of our experiments were conducted with individuals who continue to practice a nomadic foraging lifestyle. The bush camps where we recruited our participants are characterized by fluid residency patterns and composition; married couples may live with the kin of the wife, the husband, or any combination of extended family and friends. Camp size fluctuates depending on seasonality and/or resource availability and can expand up to 100 members if resources are freely available; when resources are scarce, camp size can contract to a mere 5-10 individuals (7). There is frequent movement between camps, which may be linked to Hadza notions of land rights, as they do not traditionally recognize control over natural resources. The amount of formal education among the Hadza is steadily increasing; approximately 20% of people under the age of 50 years old and 60% of people under the age of 30 years old have attended school for at least a year (8). While some Hadza parents value formal education for their children, others argue that learning to read and write Swahili holds little to no value for children who continue to live in the bush.

       Like most hunting and gathering populations, the Hadza are egalitarian and do not recognize a political structure at the tribal level. Labor and resources are shared widely, among both related and unrelated camp members, and Hadza women participate equally in decision making with men. The Hadza cosmology includes the sun, moon, stars and their ancestors. They do not recognize religious leaders, churches, or organized meetings of any kind and there are no shamans or medicine men or women. The Hadza have very limited access to media (either Western or African), yet a handful of individuals who spend time in both the bush and the village now have cell phones and/or short wave radios.

Intentions Bank: Hadza
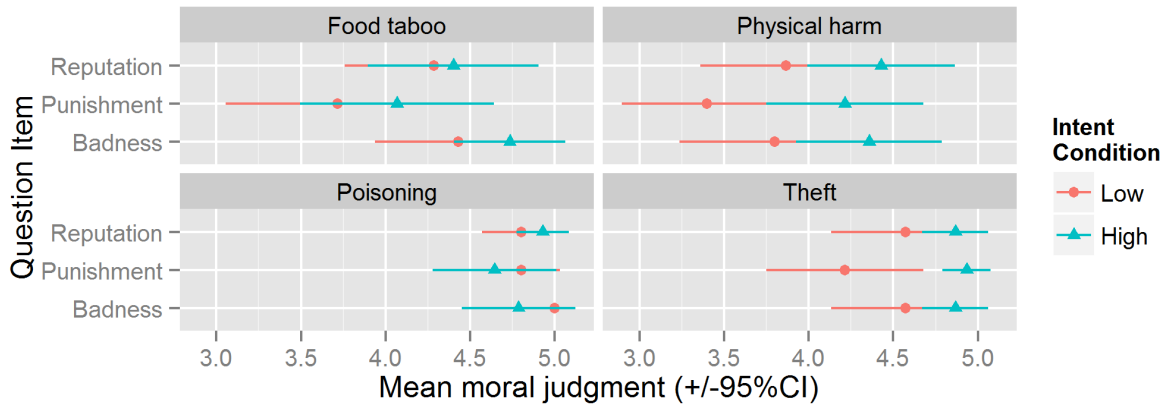
Mitigating Factors Bank: Hadza
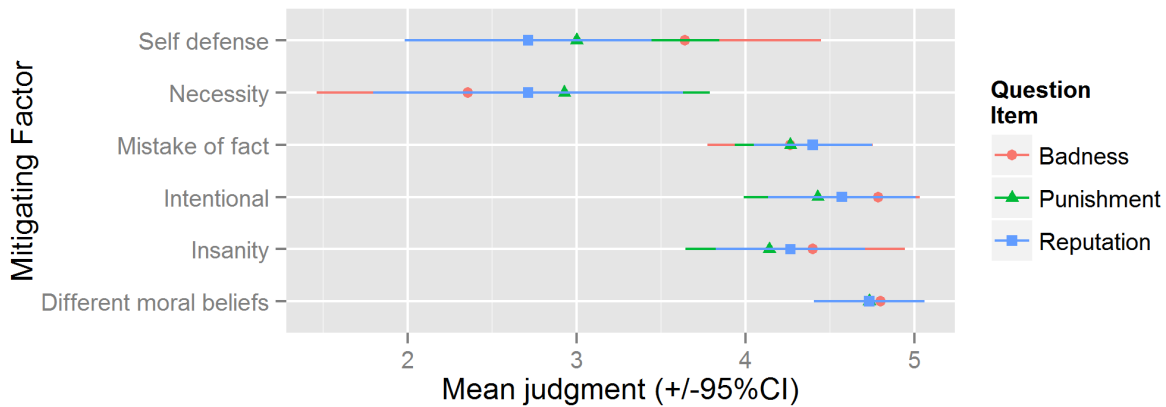

```
Intentions Bank: Society-specific model with High- versus Low-Intent

Random effects:
 Groups            Name          Variance  Std.Dev.
 Subject           (Intercept)   0.7315    0.8553
 Intent:Scenario   (Intercept)   0.1616    0.4020
 Scenario          (Intercept)   1.0609    1.0300
 Question item     (Intercept)   0.2481    0.4981

Fixed effects:
          Estimate  Std. Error  z value  Pr(>|z|)
Sex        -0.7686      0.4177   -1.840    0.0657  .
Intent      0.9789      0.3864    2.533    0.0113  *

Mitigating Factors Bank: Society-specific model with Mitigating Factor as
random effect

Random effects:
 Groups   Name          Variance   Std.Dev.
 Subject  (Intercept)   1.274e+00  1.129e+00
```

```
 Mitig    (Intercept) 2.516e+00 1.586e+00
 Q item   (Intercept) 8.847e-11 9.406e-06

Fixed effects:
     Estimate Std. Error z value Pr(>|z|)
Sex   -1.1053     0.5122  -2.158   0.0309 *
```

Mitigating Factors Bank: Society-specific model with High versus Low Mitigating as fixed effect

```
Random effects:
 Groups   Name          Variance  Std.Dev.
 Subject (Intercept) 1.049e+00 1.024e+00
 Q item  (Intercept) 3.792e-10 1.947e-05

Fixed effects:
           Estimate Std. Error z value Pr(>|z|)
Sex          -1.0582     0.4754  -2.226    0.026 *
Mitigating   -3.2222     0.4141  -7.781 7.19e-15 ***
```

Himba (Namibia)

The Himba are a semi-nomadic pastoral population living in the northwest of Namibia in an area called *Kaokoveld*. The climate is semi-arid, with periodic droughts. There are approximately 30-50,000 Himba living in northern Namibia and neighboring Angola. Our experiments were conducted in the Omuhonga Basin, alongside a seasonal tributary of the Kunene River where there is some permanent access to water and therefore a slightly more sedentary population. In addition to herding cows, sheep and goats, Himba women also keep seasonal gardens. Their diet then is mainly a combination of meat, milk and maize.

The Himba have a system of double-descent, with political inheritance occurring patrilineally and inheritance of material wealth occurring mainly through matrilateral kin. In Omuhonga, there is a chief and two subsidiary chiefs, in addition to a council of elder males who together make legal and political decisions for residents of the area. Although there is an elementary school in Omuhonga, very few adult Himba have had any formal schooling, and almost none are literate. Their access to the market economy and African or Western media is extremely limited, although some individuals have cell phones, and a select few own vehicles. The Himba are monotheistic, but they also have strong traditions of ancestor worship. The patrilineal head of each household is responsible for keeping the ancestral fire.

Note that the Mitigating Factors Bank was not administered among the Himba, so we report only data from the Intentions Bank here.

Intentions Bank: Himba
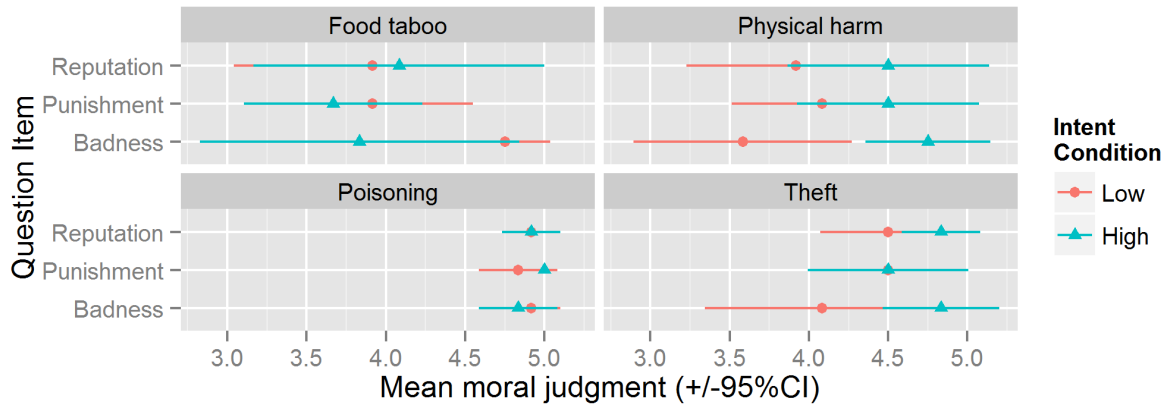
Mean moral judgment (+/-95%CI)

```
Intentions Bank: Society-specific model with High- versus Low-Intent

Random effects:
 Groups             Name          Variance Std.Dev.
 Subject            (Intercept) 0.9459    0.9726
 Intent:Scenario    (Intercept) 0.3331    0.5771
 Scenario           (Intercept) 0.9502    0.9748
 Question item      (Intercept) 0.0000    0.0000

Fixed effects:
          Estimate Std. Error z value Pr(>|z|)
Sex        -1.1252     0.5112  -2.201   0.0277 *
Intent      0.7900     0.5064   1.560   0.1187
```

Karo Batak (Indonesia)

The traditional homelands of the Karo Batak comprise both high and lowland areas of periequatorial North Sumatra, Indonesia. Our experiments were conducted in two villages where there is a tropical climate, but it is relatively cool due to elevation, and the rainy season lasts from January to June. Doulu, the first village of 1,003 residents, is located in a mountainous valley pass approximately 1,200m above sea level. Fertility rates are relatively high and the infectious disease burden is relatively low. Laubuluh, the second village of 791 residents, is located in the hilly hinterland approximately 1,030m above sea level. Fertility rates are relatively low but the burden of infectious diseases in relatively high. The villages are more-or-less ethnically homogeneous. Almost everybody in both villages practices a mix of subsistence and cash-crop agriculture, with some folks supplementing their incomes as teachers, civil servants, drivers, and shopkeepers. In Doulu, people grow wet-rice (*sawah*), vegetables, and fruits. In Laubuluh, people grow dry-rice (*ladang*), vegetables, and fruits. Karo Batak society centers around five exogamous clans (*marga*). Marriage, which is accompanied by the payment of a bridewealth, creates very specific social obligations between wife-giving (*kalimbubu*) and wife-taking (*anakberu*) families. Over the past 150 years, missionary, colonial, and national influences have changed Karo Batak lifestyles. For instance, although they practiced a traditional, animistic

religion in the past, today they are primarily Protestant or Catholic. Both villages have a primary school, but people have at least some junior high school education on average. A quarter of the residents have some senior high school, and a small minority have some college. There is some exposure to Western media, in the form of music and movies, but less than a third of the households have a television.

Intentions Bank: Karo Batak
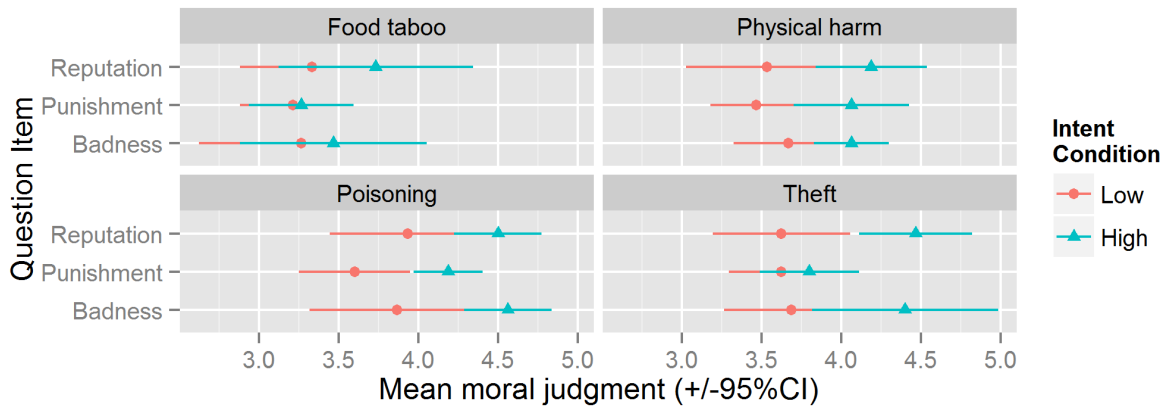
Mitigating Factors Bank: Karo Batak
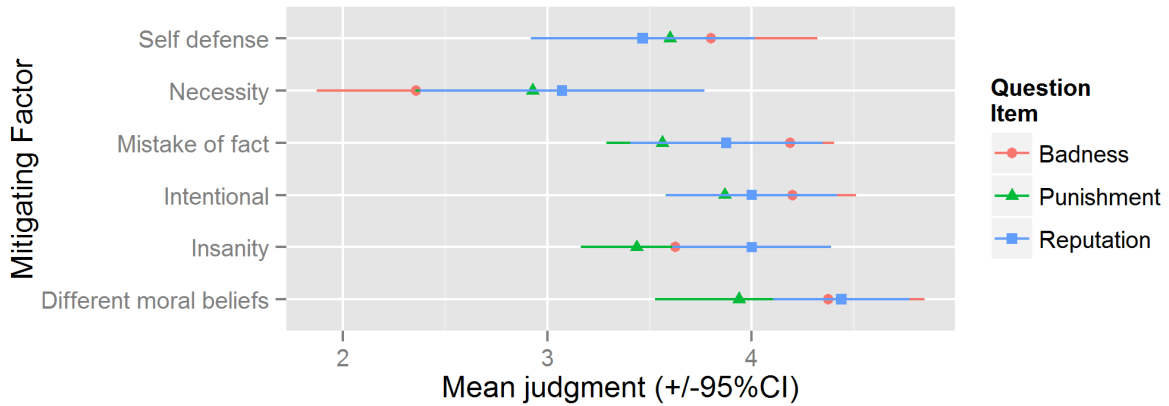

```
Intentions Bank: Society-specific model with High- versus Low-Intent

Random effects:
 Groups              Name         Variance Std.Dev.
 Subject             (Intercept)  0.8333   0.9128
 Intent:Scenario     (Intercept)  0.0414   0.2035
 Scenario            (Intercept)  0.6418   0.8011
 Question item       (Intercept)  0.1465   0.3827

Fixed effects:
          Estimate Std. Error z value Pr(>|z|)
Sex       -0.1256     0.3874  -0.324    0.746
```

```
Intent          1.4507     0.2640   5.496 3.89e-08 ***
```

Mitigating Factors Bank: Society-specific model with Mitigating Factor as random effect

```
Random effects:
 Groups  Name        Variance Std.Dev.
 Subject (Intercept) 1.0302   1.0150
 Mitig   (Intercept) 1.4624   1.2093
 Q item  (Intercept) 0.1547   0.3933

Fixed effects:
     Estimate Std. Error z value Pr(>|z|)
Sex  -0.08251    0.47646  -0.173    0.863
```

Mitigating Factors Bank: Society-specific model with High versus Low Mitigating as fixed effect

```
Random effects:
 Groups  Name        Variance Std.Dev.
 Subject (Intercept) 0.7969   0.8927
 Q item  (Intercept) 0.1010   0.3178

Fixed effects:
           Estimate Std. Error z value Pr(>|z|)
Sex         -0.1912     0.4084  -0.468     0.64
Mitigating  -1.7793     0.3341  -5.326   1e-07 ***
```

Los Angeles (USA)

Data were collected from fluent speakers of English over the age of 18, recruited in relatively cosmopolitan parts of large urban areas in California (primarily in Los Angeles, population approximately four million, with some participants recruited in San José, population approximately one million). Prospective participants were approached and invited to participate in exchange for $10 USD. Interviews were conducted in either private settings, or quiet locations in public areas where passers-by were not within earshot. All materials were read aloud by researchers who are themselves native speakers of English, and participants responded orally.

Intentions Bank: Los Angeles
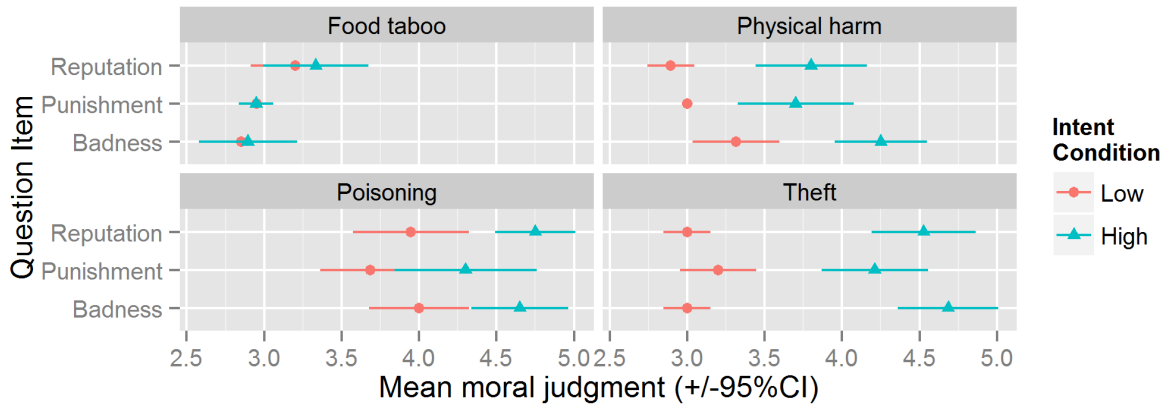
Mitigating Factors Bank: Los Angeles
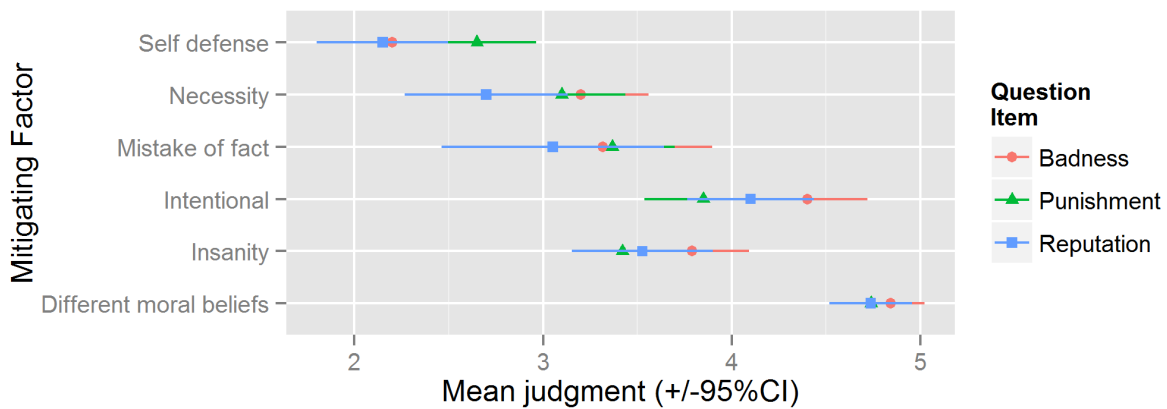
```
Intentions Bank: Society-specific model with High- versus Low-Intent

Random effects:
 Groups             Name           Variance  Std.Dev.
 Subject            (Intercept)    0.4168    0.6456
 Intent:Scenario    (Intercept)    1.2861    1.1341
 Scenario           (Intercept)    1.7188    1.3110
 Question item      (Intercept)    0.1709    0.4134

Fixed effects:
         Estimate  Std. Error  z value  Pr(>|z|)
Sex       0.2678      0.2955    0.906    0.36468
Intent    2.5668      0.8410    3.052    0.00227 **

Mitigating Factors Bank: Society-specific model with Mitigating Factor as
random effect

Random effects:
 Groups   Name          Variance  Std.Dev.
 Subject  (Intercept)   0.5377    0.7333
```

```
 Mitig   (Intercept) 4.5837   2.1410
 Q item  (Intercept) 0.1044   0.3231


Fixed effects:
     Estimate Std. Error z value Pr(>|z|)
Sex   -0.3944      0.3213  -1.228      0.22



Mitigating Factors Bank: Society-specific model with High versus Low
Mitigating as fixed effect

Random effects:
 Groups   Name          Variance Std.Dev.
 Subject (Intercept) 0.15848  0.3981
 Q item  (Intercept) 0.02192  0.1480

Fixed effects:
           Estimate Std. Error z value Pr(>|z|)
Sex         -0.2229      0.2368  -0.941    0.347
Mitigating  -2.6328      0.2824  -9.322   <2e-16 ***
```

Martu (Australia)

The Martu are a group of Aborigines living in the remote Western Desert of Australia. The Western Desert is a cultural area and therefore does not have official boundaries, but is commonly used as a general term for the area encompassing the Gibson, Great Sandy and Little Sandy deserts. These experiments took place at the outstation of Parnngurr, home to approximately 100 permanent residents. Traditionally, the Martu were full-time hunter-gatherers, and today they continue to obtain large amounts of meat through men's and women's hunting. This is supplemented by store-bought foods from a community shop. There is no formal hierarchy in the community. Decisions are made by consensus, with elders having relatively more influence. There is a school in Parnngurr, and most of the younger generations have attended for some period of time, speak some English and are variably literate. Parnngurr residents have access to broadcast television and live in homes with electricity and other modern conveniences. Traditional ritual and religion, or "Dreamtime" is still central to the lives of most Martu, although a substantial number are also members of Christian sects, mainly either the Catholic or Assembly of God Churches.

Intentions Bank: Martu
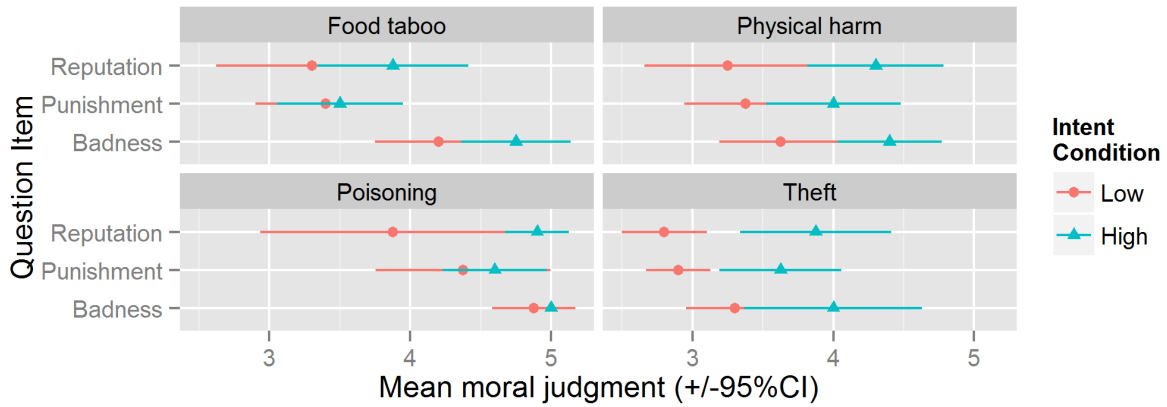
Mitigating Factors Bank: Martu
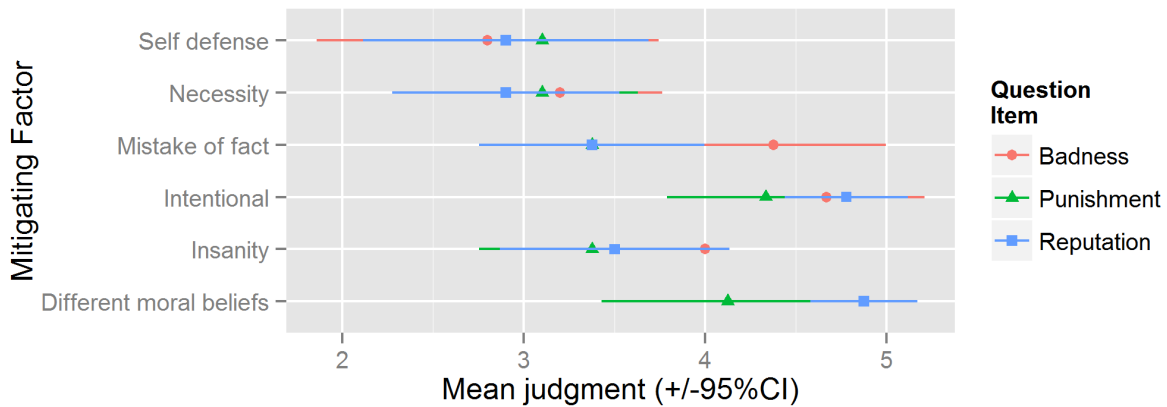
Intentions Bank: Society-specific model with High- versus Low-Intent

```
Random effects:
 Groups              Name          Variance Std.Dev.
 Subject             (Intercept) 0.02363  0.1537
 Intent:Scenario     (Intercept) 0.07091  0.2663
 Scenario            (Intercept) 2.46763  1.5709
 Question item       (Intercept) 0.85307  0.9236

Fixed effects:
         Estimate Std. Error z value Pr(>|z|)
Sex       -0.5258     0.3031  -1.735   0.0828 .
Intent     2.0909     0.3746   5.582 2.37e-08 ***
```

Mitigating Factors Bank: Society-specific model with Mitigating Factor as random effect

```
Random effects:
 Groups   Name          Variance Std.Dev.
```

```
 Subject (Intercept) 0.2864   0.5351
 Mitig   (Intercept) 3.0793   1.7548
 Q item  (Intercept) 0.2172   0.4661

Fixed effects:
     Estimate Std. Error z value Pr(>|z|)
Sex   -0.3720     0.4824  -0.771    0.441
```

Mitigating Factors Bank: Society-specific model with High versus Low
Mitigating as fixed effect

```
Random effects:
 Groups  Name          Variance Std.Dev.
 Subject (Intercept) 0.28733  0.5360
 Q item  (Intercept) 0.08776  0.2962

Fixed effects:
           Estimate Std. Error z value Pr(>|z|)
Sex          -0.8851     0.4487  -1.972   0.0486 *
Mitigating   -3.0168     0.5471  -5.514  3.5e-08 ***
```

Shuar (Ecuador)

Our Shuar participants were recruited from villages in Cantón Palora, in Morona Santiago
Province in southeastern Ecuador. This region of Ecuador is known as the "Oriente," the Eastern,
or Amazon region. The Cantón (County) of Palora is approximately 1500 km^2, with a little over
6000 inhabitants at the time of the 2001 census, and an average elevation of around 900 m. See
(9) for more details of field site.
    Traditionally, the Shuar are a hunter-horticulturalist population, living in small villages
ranging in size from a single extended family to a collection of perhaps twenty or so households.
Until the late 1960s, the Shuar of the Palora area lived in the traditional way, hunting for forest
game with blowguns, fishing with nets and plant piscicides, and maintaining household gardens
that supplied manioc, plantains, and taro, the main caloric staples of the Shuar diet. In 1967, the
town of Palora was established by Ecuadorian colonists ("Colonos") from the Sierra (Andes),
encouraged to migrate into the area. With the arrival of the Colonos, life slowly began to change
as roads were established between Palora (today a town of several thousand) and the nearby
Shuar communities. While most Shuar people continued to live in largely traditional fashion in
small villages, they gradually became more dependent on the market economy, and today many
Shuar maintain small plots of cash crops, such as sugar cane, for sale in the Palora market. In the
Shuar villages of the Palora region, the predominant language is still Shuar, though all Shuar
people in the area are bilingual (i.e., they also speak Spanish), thanks to a government-sponsored
bilingual education program. Until recently, most Shuar did not have beyond a first or second
grade education, though now it is becoming more common to continue education up to high
school.
    In many ways, the social and physical environments of children growing up in this area
are similar to those of many children growing up in small, rural villages in non-industrialized
parts of the world. Life is primarily based around families, and young children spend lots of time

with their mothers as they conduct their daily household routines, as well as mixed-age groups of older siblings. The majority of interaction is with familiar people, and children probably interact with a smaller number of daily social interactants than is typical of more urban settings. Evangelical Christianity is the most common formal religion in the area, though a minority of Shuar people practice it.

Intentions Bank: Shuar
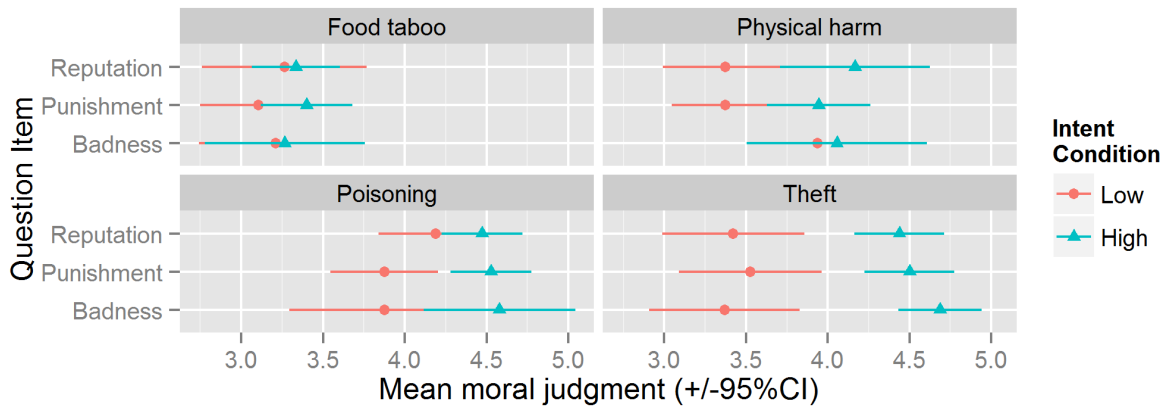
Mitigating Factors Bank: Shuar
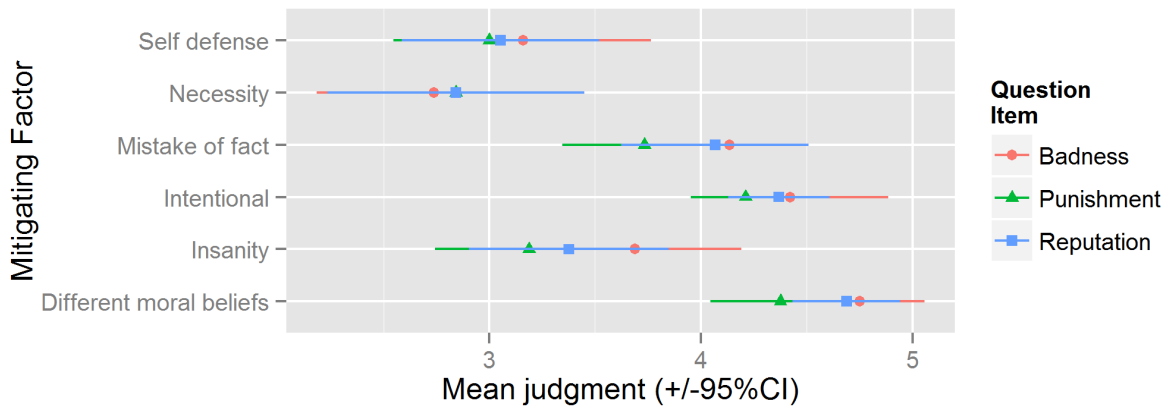

```
Intentions Bank: Society-specific model with High- versus Low-Intent

Random effects:
 Groups              Name         Variance Std.Dev.
 Subject             (Intercept)  1.22712  1.1078
 Intent:Scenario     (Intercept)  0.39345  0.6273
 Scenario            (Intercept)  0.86533  0.9302
 Question item       (Intercept)  0.01863  0.1365

Fixed effects:
          Estimate Std. Error z value Pr(>|z|)
Sex        -0.1239     0.4236  -0.292 0.769910
```

```
Intent          1.6792      0.4920    3.413 0.000643 ***
```

Mitigating Factors Bank: Society-specific model with Mitigating Factor as
random effect

```
Random effects:
 Groups  Name         Variance Std.Dev.
 Subject (Intercept) 1.17041  1.0819
 Mitig   (Intercept) 3.13443  1.7704
 Q item  (Intercept) 0.08783  0.2964

Fixed effects:
     Estimate Std. Error z value Pr(>|z|)
Sex   -0.3517      0.4322  -0.814    0.416
```

Mitigating Factors Bank: Society-specific model with High versus Low
Mitigating as fixed effect

```
Random effects:
 Groups  Name         Variance Std.Dev.
 Subject (Intercept) 0.7781   0.8821
 Q item  (Intercept) 0.0389   0.1972

Fixed effects:
            Estimate Std. Error z value Pr(>|z|)
Sex          -0.3220     0.3694  -0.872    0.383
Mitigating   -2.8277     0.3325  -8.505   <2e-16 ***
```

Storozhnitsa (Ukraine)

The village of Storozhnitsa, our field site in Western Ukraine, is located in the district of
Transcarpathia. This village is located in the middle of the southern region of the Carpathian
Mountains. The Carpathians are a crescent-shaped mountain system, the Ukrainian Carpathians
having gentle peaks fading into the plains. Storozhnitsa has a temperate climate, with winter
temperatures rarely colder than -10° C to -15° C. The region receives between 800 and 1600 mm
of precipitation, spread quite evenly throughout the year. The village of Storozhnitsa consists of
approx. 3300 people (2010), ethnically composed of roughly 61% Ukrainians, 22% Slovaks,
15% Hungarians and a small number of Romani (Gypsies), Russians, and Rusyns (Ruthenians).
Ethnically mixed marriages are not exceptional, and the vast majority of inhabitants are bilingual
or trilingual. Economically, most inhabitants rely heavily on agriculture, supplemented by work
in services and small business. Even State employees (teachers, officials, etc.) are dependent on
the land as an additional source of food to keep and/or to sell on the market, since State salaries
are not paid regularly. Since Storozhnitsa is close to the border of Western Ukraine with
Slovakia and Hungary, there is a substantial amount of unregulated cross-border trading. In the
last 15 years or so, there has been an increasing amount of migration into Storozhnitsa from the
nearby district capital, the city of Uzhgorod, located 6 km away. As a result, the village has
begun to develop into a suburb of Uzhgorod. However, Storozhnitsa remains very much a rural
village, with poor infrastructure (roads, water supply, sanitation). For example, though there is

electricity in the village, its supply is unreliable. In terms of education, there is an elementary school (through 9th grade) in the village, and literacy is close to 100 %. Children generally attend secondary educational institutions in Uzhgorod. Beyond that, some families send their children to Hungary or Slovakia for additional education. As far as their religion is concerned, approximately 60% of Storozhnitsa's residents are Greek-Catholics, 25% are Roman Catholics, and the remainder are affiliated with either Calvinism or the Eastern Orthodox Church. Television is available in the village, and people regularly watch Ukrainian, Slovakian, and Hungarian broadcasting. However, most information presented in these media is concentrated on national and local politics, with minimal coverage of world events. The contemporary separatist movement is limited to Eastern Ukraine and has no direct impact here.

Intentions Bank: Storozhnitsa
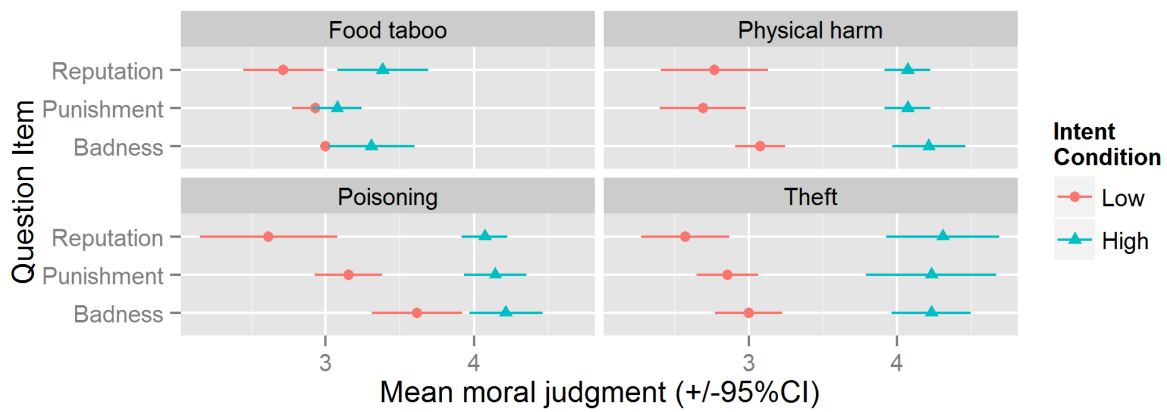
Mitigating Factors Bank: Storozhnitsa
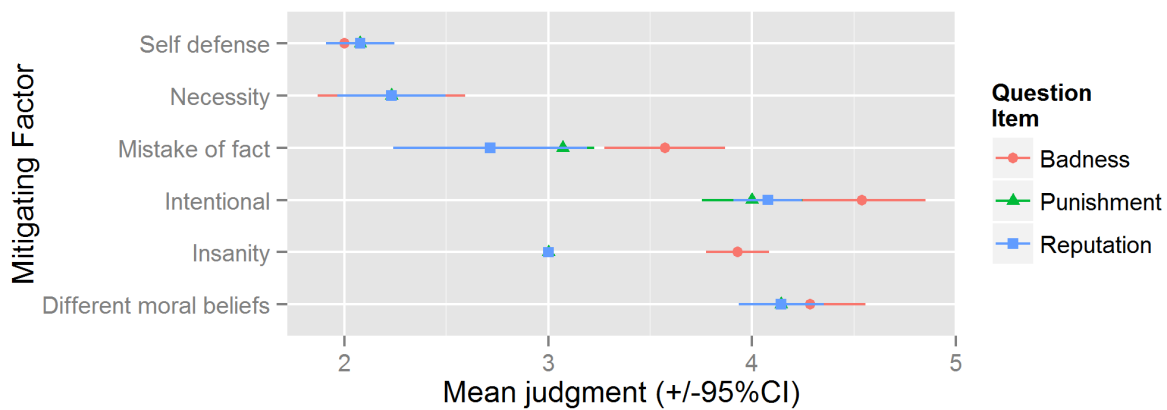

```
Intentions Bank: Society-specific model with High- versus Low-Intent

Random effects:
 Groups            Name          Variance  Std.Dev.
 Subject           (Intercept)   0.8075    0.8986
 Intent:Scenario   (Intercept)   2.4797    1.5747
 Scenario          (Intercept)   0.2908    0.5392
 Question item     (Intercept)   0.4435    0.6660
```

```
Fixed effects:
          Estimate Std. Error z value Pr(>|z|)
Sex         -0.0771     0.5139  -0.150    0.881
Intent       5.6189     1.2367   4.544 5.53e-06 ***
```

Mitigating Factors Bank: Society-specific model with Mitigating Factor as random effect

```
Random effects:
 Groups  Name         Variance Std.Dev.
 Subject (Intercept)  1.098    1.048
 Mitig   (Intercept) 24.705    4.970
 Q item  (Intercept)  1.542    1.242
```

```
Fixed effects:
     Estimate Std. Error z value Pr(>|z|)
Sex   0.04993    0.61572   0.081    0.935
```

Mitigating Factors Bank: Society-specific model with High versus Low Mitigating as fixed effect

```
Random effects:
 Groups  Name         Variance Std.Dev.
 Subject (Intercept) 1.0240    1.0120
 Q item  (Intercept) 0.4163    0.6452
```

```
Fixed effects:
           Estimate Std. Error z value Pr(>|z|)
Sex          0.3119     0.5595   0.557    0.577
Mitigating  -6.7842     0.7654  -8.864   <2e-16 ***
```


Sursurunga (New Ireland)

The east coast of southern New Ireland is home to most of the 4000 speakers of Sursurunga, an Austronesian language. Sursurunga territory is spread across nineteen nucleated settlements spanning 70 kilometers of coastline and includes the primary research sites of Tekedan, Himaul, and Nokon villages which are situated in the middle of that 70 kilometer stretch. Most inhabitants of these villages rely primarily on horticulture—tubers such as sweet potato, yams, and taro are grown in swidden gardens. Cacao and copra holdings provide some cash. Matrilineal descent regulates inheritance and the sequence of mortuary feasts; matrilineal moieties are exogamous. The median number of years of formal schooling is six, and the mean is slightly above that. Indigenous beliefs (especially those related to illness, healing, and gardening) are common, although the United Church (an amalgam of Methodism and Congregationalism) is the dominant religious institution in these three villages, and there is a small but growing Pentecostal movement in the area. See (10) for a more thoroughgoing description of this society.

Intentions Bank: Sursurunga
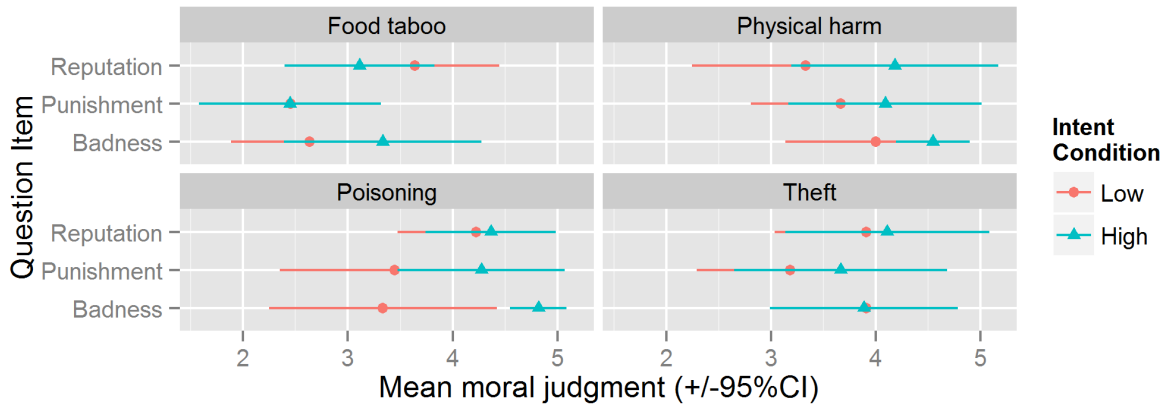
Mitigating Factors Bank: Sursurunga
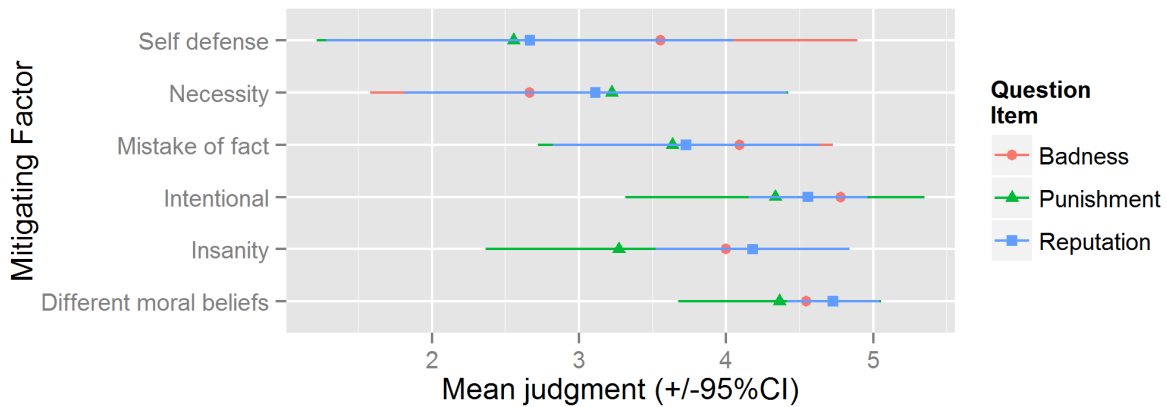

```
Intentions Bank: Society-specific model with High- versus Low-Intent

Random effects:
 Groups            Name          Variance  Std.Dev.
 Subject           (Intercept)   0.8343    0.9134
 Intent:Scenario   (Intercept)   0.0000    0.0000
 Scenario          (Intercept)   0.7124    0.8440
 Question item     (Intercept)   0.1500    0.3872

Fixed effects:
          Estimate  Std. Error  z value  Pr(>|z|)
Sex        0.1120    0.4804      0.233    0.815695
Intent     0.9469    0.2544      3.721    0.000198 ***

Mitigating Factors Bank: Society-specific model with Mitigating Factor as
random effect

Random effects:
 Groups   Name          Variance Std.Dev.
```

```
 Subject (Intercept) 3.04999  1.7464
 Mitig   (Intercept) 1.90202  1.3791
 Q item  (Intercept) 0.06365  0.2523

Fixed effects:
     Estimate Std. Error z value Pr(>|z|)
Sex    1.1498     0.8601   1.337    0.181
```

Mitigating Factors Bank: Society-specific model with High versus Low
Mitigating as fixed effect

```
Random effects:
 Groups  Name          Variance Std.Dev.
 Subject (Intercept) 3.00089  1.7323
 Q item  (Intercept) 0.05416  0.2327

Fixed effects:
           Estimate Std. Error z value Pr(>|z|)
Sex          0.9441     0.8493   1.112    0.266
Mitigating  -3.1319     0.5738  -5.459  4.8e-08 ***
```

Tsimane (Bolivia)

Tsimane' Amerindians live in the central lowlands of Bolivia in the Beni Department, along the Maniqui River and surrounding tributaries. The study was conducted in the village of Tacuaral de Mato (population: 376). Tacuaral is located 27 km from the town of San Borja (population 24,000). The Tsimane' Health and Life History Project, of which MG, CVR, and AP are a part, has been pursuing research in Tacuaral since 2003. The Tsimane' economy is based on slash-and-burn horticulture, fishing, and hunting. They eat plantains, sweet manioc, and rice, supplemented by fish, wild game, and both gathered and planted fruits. Cash cropping of rice is not uncommon in Tacuaral, as is purchase of market foods like bread, salt, sugar and dried meat from itinerant merchants and from town. Village unity is weak and the village's elected chief does not wield any substantial power. The social structure is dominated by extended family clusters with a mix of matrilocal and patrilocal residence. Older adults have received little or no schooling. Since 2006, Tacuaral has been one of the rare villages to have non-Tsimane' teachers and a secondary school that goes beyond the usual fifth grade (up to eighth grade). Its elementary education has existed for two decades. Traditional Tsimane' religion is animistic, but has syncretized with evangelistic Christianity after the New Tribes Mission established a presence in the 1950s. Belief in sorcery and malevolent spirits is still common. As in other Tsimane villages, Tacuaral households lack electricity and plumbing. Exposure to Western media is limited in large part to Christian radio broadcasts (via battery-powered radios) and the action hero movies or soap operas that may be playing in the shops of San Borja.

Intentions Bank: Tsimane
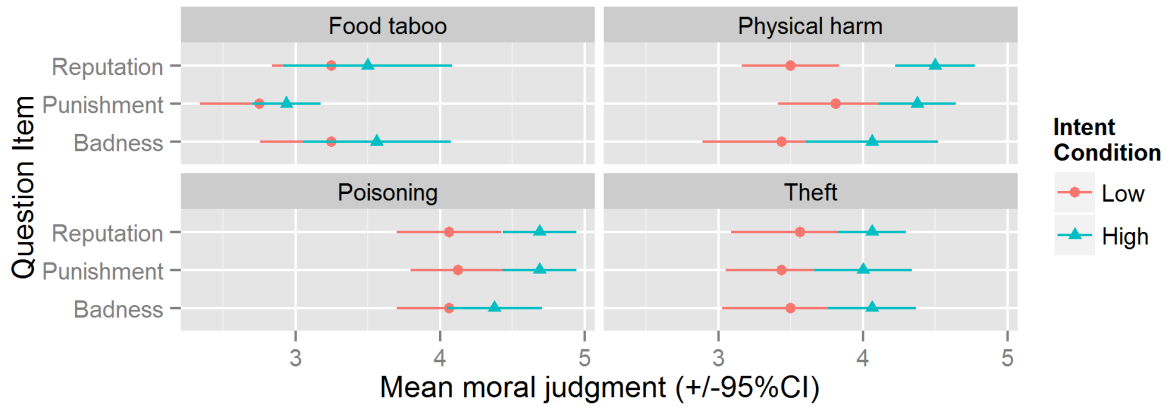
Mitigating Factors Bank: Tsimane
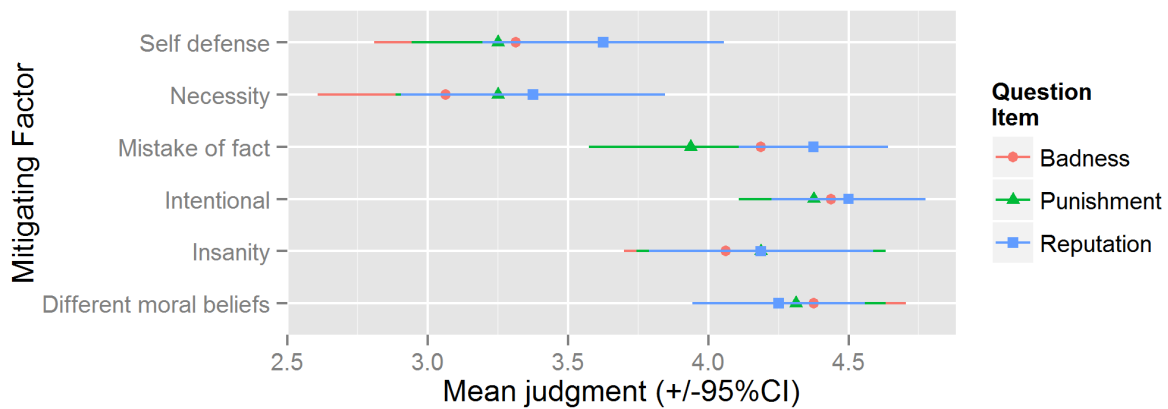

```
Intentions Bank: Society-specific model with High- versus Low-Intent

Random effects:
 Groups              Name          Variance Std.Dev.
 Subject             (Intercept)   1.029136 1.01446
 Intent:Scenario     (Intercept)   0.001365 0.03695
 Scenario            (Intercept)   1.573550 1.25441
 Question item       (Intercept)   0.018245 0.13507

Fixed effects:
           Estimate Std. Error z value Pr(>|z|)
Sex          0.0624     0.4178   0.149    0.881
Intent       1.6104     0.2267   7.104 1.21e-12 ***

Mitigating Factors Bank: Society-specific model with Mitigating Factor as
random effect

Random effects:
 Groups   Name          Variance Std.Dev.
```

```
 Subject (Intercept) 1.80370  1.3430
 Mitig   (Intercept) 2.17194  1.4737
 Q item  (Intercept) 0.06026  0.2455

Fixed effects:
     Estimate Std. Error z value Pr(>|z|)
Sex    1.0259     0.5622   1.825    0.068 .

Mitigating Factors Bank: Society-specific model with High versus Low
Mitigating as fixed effect

Random effects:
 Groups  Name         Variance Std.Dev.
 Subject (Intercept) 1.83087  1.3531
 Q item  (Intercept) 0.04498  0.2121

Fixed effects:
           Estimate Std. Error z value Pr(>|z|)
Sex          0.7529     0.5495   1.370    0.171
Mitigating  -3.5666     0.4260  -8.372   <2e-16 ***
```

Yasawa (Fiji)

Yasawa Island lies in the northwest corner of the Fijian archipelago, and is about 10 kilometers long and only 1 kilometer wide. This tropical climate has pronounced wet summers and dry winters. Our experiments were conducted in the villages of Teci and Dalomo, which lie about mid-way along the length of Yasawa Island on the windward side. Economically, these communities subsist on a combination of horticulture, littoral gathering, and fishing. Most calories come from cassava and yam, along with bananas and coconuts. These are supplemented with a small number of market goods such as canned tuna, sugar, and flour from the main island. Social and political life is organized by a complex kinship system based on patrilineal clans. In these communities, five clans comprise a Yavusa, which is governed by a heredity chief. Formal education is provided by primary school in Teci, which has roughly 30 students across all grades. Until recently, most people completed their education after finishing primary school, though recently an increasing number of adolescents have begun attending boarding schools on other islands. Villagers have few books, except for the bible, and no access to broadcast television. The anthropologists do occasionally show American movies on their laptops, and a few households have television set that is used to watch recorded rugby matches. Religion in these villages is syncretic mix of Christianity, including both Methodist and Assemblies of God Churches, as well as ancestor beliefs, and some witchcraft (11). More details on these villages can be found in the supplemental materials of (12).

Intentions Bank: Yasawa
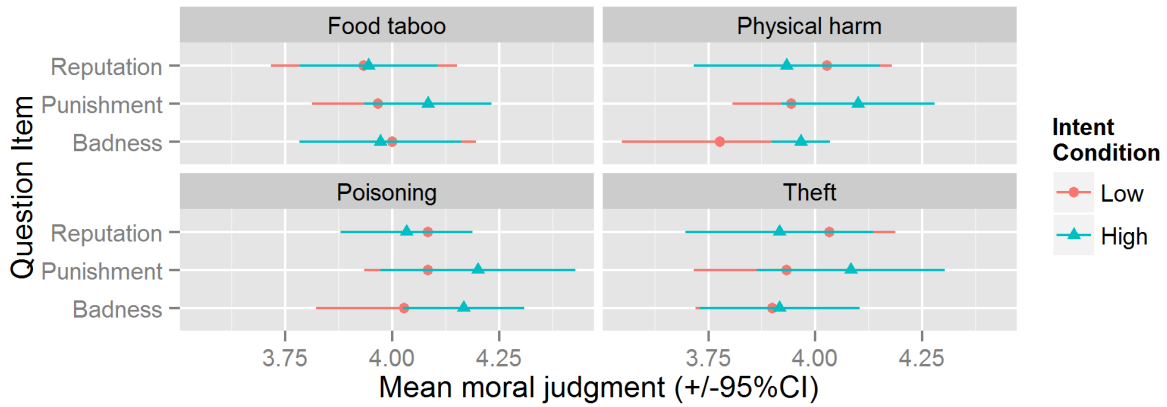
Mitigating Factors Bank: Yasawa
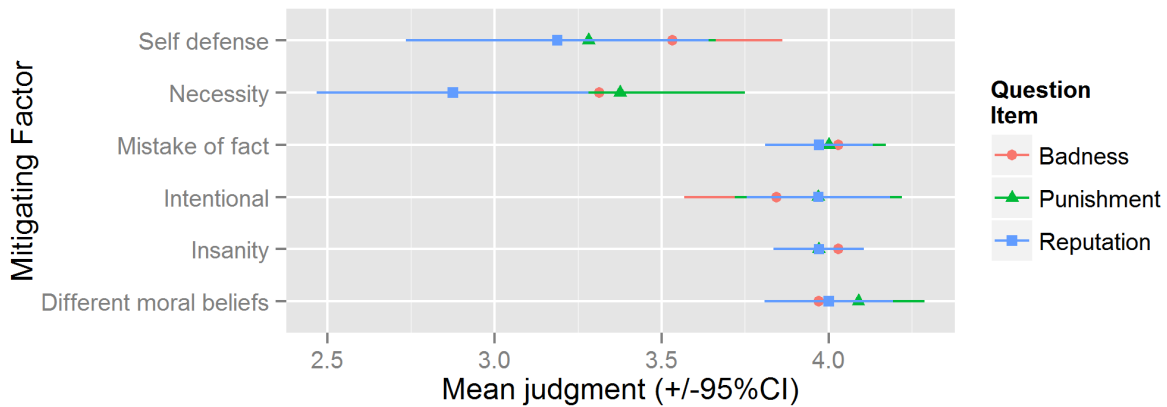

```
Intentions Bank: Society-specific model with High- versus Low-Intent

Random effects:
 Groups            Name          Variance  Std.Dev.
 Subject           (Intercept)   0.98347   0.9917
 Intent:Scenario   (Intercept)   0.00000   0.0000
 Scenario          (Intercept)   0.10730   0.3276
 Question item     (Intercept)   0.02922   0.1710

Fixed effects:
         Estimate Std. Error z value Pr(>|z|)
Sex       -0.1867     0.3175  -0.588    0.557
Intent     0.3285     0.2026   1.621    0.105


Mitigating Factors Bank: Society-specific model with Mitigating Factor as
random effect

Random effects:
```

```
Groups   Name            Variance Std.Dev.
 Subject (Intercept) 1.75428  1.3245
 Mitig   (Intercept) 1.57724  1.2559
 Q item  (Intercept) 0.03425  0.1851


Fixed effects:
     Estimate Std. Error z value Pr(>|z|)
Sex   -0.8718     0.3950  -2.207   0.0273 *


Mitigating Factors Bank: Society-specific model with High versus Low
Mitigating as fixed effect


Random effects:
 Groups   Name            Variance Std.Dev.
 Subject (Intercept) 1.67842  1.296
 Q item  (Intercept) 0.02691  0.164


Fixed effects:
           Estimate Std. Error z value Pr(>|z|)
Sex          -0.8754     0.3888  -2.251   0.0244 *
Mitigating   -2.7141     0.3265  -8.314   <2e-16 ***
```

7. Methods and Stimulus Materials

Participants at each site were presented with a selection of vignettes, consisting of one vignette of each of the four basic content types (Physical Harm vignette, Theft vignette, Poisoning vignette, and Food Taboo vignette) crossed with each of the four basic act types (Intentional, Accidental, Motivated, Anti-motivated) from the Intentions Bank, followed by a sample of three of the vignette types in the Mitigating Factors Bank. Subjects thus saw one of the following eight randomized vignette sets, which were balanced between participants.

Vignette Set 1	Vignette Set 2	Vignette Set 3	Vignette Set 4
1. Physical Harm – Intentional	1. Physical Harm – Anti-Motivated	1. Physical Harm – Motivated	1. Physical Harm – Accidental
2. Theft – Accidental	2. Theft – Intentional	2. Theft – Anti-Motivated	2. Theft – Motivated
3. Poisoning – Motivated	3. Poisoning – Accidental	3. Poisoning – Intentional	3. Poisoning – Anti-Motivated
4. Food Taboo – Anti-Motivated	4. Food Taboo – Motivated	4. Food Taboo – Accidental	4. Food Taboo – Intentional
5. Battery - Intentional	5. Battery - Insanity	5. Battery - Intentional	5. Battery - Insanity
6. Battery - Self-Defence	6. Battery - Matter of Fact	6. Battery - Self-Defence	6. Battery - Matter of Fact
7. Battery - Necessity	7. Battery - Different Moral Beliefs	7. Battery - Necessity	7. Battery - Different Moral Beliefs

Vignette Set 5	Vignette Set 6	Vignette Set 7	Vignette Set 8
1. Physical Harm – Intentional	1. Physical Harm – Anti-Motivated	1. Physical Harm – Motivated	1. Physical Harm – Accidental
2. Theft – Accidental	2. Theft – Intentional	2. Theft – Anti-Motivated	2. Theft – Motivated
3. Poisoning – Motivated	3. Poisoning – Accidental	3. Poisoning – Intentional	3. Poisoning – Anti-Motivated
4. Food Taboo – Anti-Motivated	4. Food Taboo – Motivated	4. Food Taboo – Accidental	4. Food Taboo – Intentional
5. Battery - Insanity	5. Battery - Intentional	5. Battery - Insanity	5. Battery - Intentional
6. Battery - Matter of Fact	6. Battery - Self-Defence	6. Battery - Matter of Fact	6. Battery - Self-Defence
7. Battery - Different Moral Beliefs	7. Battery - Necessity	7. Battery - Different Moral Beliefs	7. Battery - Necessity

Following each vignette, subjects were asked a set of Comprehension Questions (these appear after each vignette below), followed by a set of Inferential Questions (these appear after all the vignettes below).

[Preamble Read to All Participants][1]

In this task I would like to read you some stories about events that occur in a [*insert language/ethnic community name, e.g., Shuar*] community like this one but not this one, and then ask you some questions about each story. You do not have to participate, or we can schedule for later if you do not have time now. If we start and then you decide that you would prefer not participate, that is fine, and we can stop whenever you want. Are you willing to participate?

_____

[INTENTIONS BANK]

[Physical Harm — Intentional]

Two [insert locally appropriate ethnic group] men, [Agent—use locally appropriate male name] and [Victim—use locally appropriate male name], who did not know one another, were at a party. There were lots of people there, and everyone was having a good time. It was very crowded and there was not very much room to walk through the crowd. [Victim] was sitting down and suddenly [Agent] turned and struck [Victim] in the face with his hand severely bruising his eye.

[Comprehension Questions][2]

Because it is important that I make myself clear, I'd like to make sure that you understood me. Could you please tell me what happened in the story I just told you?

Concept	Question if Not mentioned
[Victim] was hurt	What happened to [Victim]?
[Agent] struck [Victim]	How did [Victim] get hurt?
[Agent] and [Victim] did not know one another	Did [Agent] and [Victim] know each other?

[Physical Harm — Accidental]

Two [insert locally appropriate ethnic group] men, [Agent—use locally appropriate male name] and [Victim—use locally appropriate male name], who did not know one another, were at a party. There were lots of people there, and everyone was having a good time. It was very crowded and there was not very much room to walk through the crowd. [Victim]

---

[1] Material in brackets involves framing, and notes/instructions for experimenters and was not read to participants.

[2] [Notes for RA for all Comprehension Questions: Listen to the participant's response, and check off any of the three concepts that are present in the participant's initial summary of the story (R1). Use 1 for mentioned and a 0 for not mentioned. For each item that is not present in the initial summary, ask the corresponding probe question, and record on the Datasheet whether the participant answered the question correctly (also under R1). Use a 1 for correct and a 0 for incorrect.] [RA: If the participant gets one or more of the probes wrong (R1), return to the story and re-read it once more. Then, go through the probes that the subject got wrong again and record on the Datasheet whether the participant answered the question correctly (under R2). Use a 1 for correct and a 0 for incorrect. After round 2, regardless of whether they still make mistakes proceed to Inferential Questions given on the Datasheet.]

was sitting down and suddenly [Agent] tripped and fell forward and his hand accidentally struck [Victim] in the face, severely bruising his eye.

[Comprehension Questions]

Because it is important that I make myself clear, I'd like to make sure that you understood me. Could you please tell me what happened in the story I just told you?

Concept	Question if Not mentioned
[Victim] was hurt	What happened to [Victim]?
[Agent] struck [Victim]	How did [Victim] get hurt?
[Agent] and [Victim] did not know one another	Did [Agent] and [Victim] know each other?

[Physical Harm — Motivated]

Two [insert locally appropriate ethnic group] men, [Agent—use locally appropriate male name] and [Victim—use locally appropriate male name], were at a party. [Agent] had hated [Victim] for a long time because [Victim] would not let [Agent] marry his daughter. There were lots of people at the party, and everyone was having a good time. It was very crowded and there was not very much room to walk through the crowd. As he was walking through the crowd, [Agent] recognized [Victim]. When he was walking by [Victim], [Agent]'s hand struck [Victim] in the face, severely bruising his eye. [Agent] said "please forgive me, I tripped."

[Comprehension Questions]

Because it is important that I make myself clear, I'd like to make sure that you understood me. Could you please tell me what happened in the story I just told you?

Concept	Question if Not mentioned
[Victim] was hurt	What happened to [Victim]?
[Agent] struck [Victim]	How did [Victim] get hurt?
[Agent] hated [Victim]	Did [Agent] like [Victim]?

[Physical Harm — Anti-motivated]

Two [insert locally appropriate ethnic group] men, [Agent—use locally appropriate male name] and [Victim—use locally appropriate male name], were at a party. [Agent] wanted to marry [Victim]'s daughter and wanted to make a good impression on [Victim]. There were lots of people at the party, and everyone was having a good time. It was very crowded and there was not very much room to walk through the crowd. As he was walking through the crowd, [Agent] recognized [Victim]. When he was walking by [Victim], [Agent]'s hand struck [Victim] in the face, severely bruising his eye. [Agent] said "please forgive me, I tripped."

[Comprehension Questions]

Because it is important that I make myself clear, I'd like to make sure that you understood me. Could you please tell me what happened in the story I just told you?

Concept	Question if Not mentioned
[Victim] was hurt	What happened to [Victim]?
[Agent] struck [Victim]	How did [Victim] get hurt?
[Agent] wanted to make good impression on [Victim]	What did [Agent] want to do at the party?

[Theft — Intentional]

Two [insert locally appropriate ethnic group] men, [Agent—use locally appropriate male name] and [Victim—use locally appropriate male name], who did not know one another, were at a very busy outdoor market [*if market does not work for your site, substitute other outdoor busy event*]. There were lots of people there. It was very crowded and there was not very much room to walk through the crowd. [Victim] was walking along and stopped to look at some items on display, placing a bag that he was carrying on the ground. [Agent] noticed [Victim]'s bag on the ground. While [Victim] was distracted, [Agent] leaned down and picked up [Victim]'s bag and walked away with it.

[Comprehension Questions]

Because it is important that I make myself clear, I'd like to make sure that you understood me. Could you please tell me what happened in the story I just told you?

Concept	Question if Not mentioned
[Victim]'s bag was taken	What happened to [Victim]?
[Agent] picked up [Victim]'s bag	Who picked up [Victim]'s bag?
[Agent] walked away with [Victim]'s bag	Where did [Victim]'s bag go?

[Theft — Accidental]

Two [insert locally appropriate ethnic group] men, [Agent—use locally appropriate male name] and [Victim—use locally appropriate male name], who did not know one another, were at a very busy outdoor market [*if market does not work for your site, substitute other outdoor busy event*]. There were lots of people there. It was very crowded and there was not very much room to walk through the crowd. [Agent] was walking along and stopped to look at some items on display, placing a bag that he was carrying on the ground. Another very similar bag was sitting right next to [Agent]'s bag. The bag was owned by [Victim], whom [Agent] did not know. When [Agent] turned to pick up his bag he accidentally picked up [Victim]'s bag and walked away with it.

[Comprehension Questions]

Because it is important that I make myself clear, I'd like to make sure that you understood me. Could you please tell me what happened in the story I just told you?

Concept	Question if Not mentioned
[Victim]'s bag was taken	What happened to [Victim]?
[Agent] picked up [Victim]'s bag	Who picked up [Victim]'s bag?
[Agent] left his own bag	Where did [Agent]'s bag go?

[Theft — Motivated]

Two [*insert locally appropriate ethnic group*] men, [Agent—use locally appropriate male name] and [Victim—use locally appropriate male name], who did not know one another, were at a very busy outdoor market [*if market does not work for your site, substitute other outdoor busy event*]. There were lots of people there. It was very crowded and there was not very much room to walk through the crowd. [Agent] was walking along and stopped to look at some items on display, placing a bag of [*insert plausible, low value vegetable contents*] that he had just bought on the ground. Another very similar bag was sitting right next to [Agent]'s bag. The bag was owned by [Victim]. Earlier that day, [Agent] had seen [Victim] buying some expensive jewellery [*or insert plausible, high value item*] and putting it in his bag. [Agent] reached down and picked up [Victim]'s bag instead of his own bag and walked away with it.

[Comprehension Questions]

Because it is important that I make myself clear, I'd like to make sure that you understood me. Could you please tell me what happened in the story I just told you?

Concept	Question if Not mentioned
[Victim]'s bag was taken	What happened to [Victim]?
[Agent] picked up [Victim]'s bag	Who picked up [Victim]'s bag?
[Agent] saw [Victim] put jewellery in his bag	What did [Agent] see [Victim] do?

[Theft — Anti-motivated]

Two [*insert appropriate local ethnic group*] men, [Agent—use locally appropriate male name] and [Victim—use locally appropriate male name], who did not know one another, were at a very busy outdoor market [*if market does not work for your site, substitute other outdoor busy event*]. There were lots of people there. It was very crowded and there was not very much room to walk through the crowd. [Agent] was walking along and stopped to look at some items on display, placing a bag that contained expensive jewellery [*or insert plausible, high value item*] that he had just bought on the ground. Another very similar bag was sitting right next to [Agent]'s bag. The bag was owned by [Victim]. Earlier that day, [Agent] had seen [Victim] buying [*insert plausible, low value vegetable item*] and putting it in his bag. [Agent] reached down and picked up [Victim]'s bag instead of his own bag and walked away with it.

[Comprehension Questions]

Because it is important that I make myself clear, I'd like to make sure that you understood me. Could you please tell me what happened in the story I just told you?

Concept	Question if Not mentioned
[Victim]'s bag was taken	What happened to [Victim]?
[Agent] picked up [Victim]'s bag	Who picked up [Victim]'s bag?
[Agent] saw [Victim] put vegetables in his bag	What did [Agent] see [Victim] do?

[Poisoning — Intentional]

Two [*insert appropriate local ethnic group*] men, [Agent—use locally appropriate male name] and [Victim—use locally appropriate male name], lived in a remote village where most people got their water from a [*well / stream*]. [Agent] got his water from another source, but there was a swampy area near his house that fed into the community [*well / stream*]. One day [Agent] poured poisonous insecticide into the water that fed into the community [*well / stream*]. Even though [Agent] knew that there were instructions on the insecticide bottle that said "WARNING – POISON – Do not use near drinking water," [Agent] poured the insecticide into the water. As a result, over the next week many people in the village got very sick. [Victim], one of [Agent]'s neighbours, almost died.

[Comprehension Questions]

Because it is important that I make myself clear, I'd like to make sure that you understood me. Could you please tell me what happened in the story I just told you?

Concept	Question if Not mentioned
[Victim] got sick	What happened to [Victim]?
[Victim] got sick because [Agent] put something in the well/stream that poisoned it	Why did [Victim] get sick?
[Agent] knew insecticide in the bottle was poisonous	What did [Agent] know about the bottle?

[Poisoning — Accidental]

Two [*insert appropriate local ethnic group*] men, [Agent—use locally appropriate male name] and [Victim—use locally appropriate male name], lived in a remote village where most people got their water from a [*well / stream*]. [Agent] got his water from another source, but there was a swampy area near his house that fed into the community [*well / stream*]. [Agent] wanted to kill the mosquitoes that bred in the swamp, so one day he poured insecticide into the water that fed into the community [*well / stream*]. He believed the insecticide was not harmful to people, because the merchant he bought the insecticide from assured him that it was safe, and the merchant had always been reliable in the past. So he poured it into the water. As a result, over the next week many people in the village got very sick. [Victim], one of [Agent]'s neighbours, almost died.

[Comprehension Questions]

Because it is important that I make myself clear, I'd like to make sure that you understood me. Could you please tell me what happened in the story I just told you?

Concept	Question if Not mentioned
[Victim] got sick	What happened to [Victim]?
[Victim] got sick because [Agent] put something in the well/stream that poisoned it	Why did [Victim] get sick?
[Agent] believed the insecticide was not harmful	What did [Agent] know about the insecticide?

[Poisoning — Motivated]

Two [*insert appropriate local ethnic group*] men, [Agent—use locally appropriate male name] and [Victim—use locally appropriate male name], lived in a remote village where most people got their water from a [*well / stream*]. [Agent] got his water from another source, but there was a swampy area near his house that fed into the community [*well / stream*]. [Victim] lived close to [Agent] and got his water from the community [*well / stream*]. [Agent] and [Victim] had many disputes over the years and [Agent] hated [Victim] deeply. One day [Agent] went to his [*shed / cabinet*], where he kept several [*bottles / containers*] of things he used around the house. Many of these [*bottles / containers*] were very similar. One [*bottle / container*] contained an insecticide that kills mosquitoes but was also very harmful to people. Another [*bottle / container*] contained an additive that makes water safe for people to drink. The [*bottles / containers*] looked almost exactly the same. [Agent] took the [*bottle / container*] containing the poisonous insecticide and poured it into the water feeding the well. As a result, over the next week many people in the village got very sick. [Victim], [Agent]'s neighbour, almost died.

[Comprehension Questions]

Because it is important that I make myself clear, I'd like to make sure that you understood me. Could you please tell me what happened in the story I just told you?

Concept	Question if Not mentioned
[Victim] got sick	What happened to [Victim]?
[Victim] got sick because [Agent] put something in the well/stream that poisoned it	Why did [Victim] get sick?
Bottles/containers were very similar	Did the bottles of insecticide and water purifier look similar, or different?
[Agent] hated [Victim]	Did [Agent] like [Victim]?

[Poisoning — Anti-motivated]

Two [*insert appropriate local ethnic group*] men, [Agent—use locally appropriate male name] and [Victim—use locally appropriate male name], lived in a remote village where most people got their water from a [*well / stream*]. [Agent] got his water from another source, but there was a swampy area near his house that fed into the well. [Victim], [Agent]'s eldest and most beloved son, lived close to [Agent] and got his water from the community [*well / stream*]. One day [Agent] went to his [*shed, cabinet*], where he kept several [*bottles / containers*] of things he used around the house. Many of these [*bottles / containers*] were very similar. One [*bottle / container*] contained an insecticide that kills mosquitoes and was also very harmful to people. Another [*bottle / container*] contained an additive that makes water safe for people to drink. The bottles looked almost exactly the same. [Agent] took the [*bottle / container*] containing the poisonous insecticide and poured it into the water feeding the well. As a result, over the next week many people in the village got very sick. [Victim], [Agent]'s son, almost died.

[Comprehension Questions]

Because it is important that I make myself clear, I'd like to make sure that you understood me. Could you please tell me what happened in the story I just told you?

Concept	Question if Not mentioned
[Victim] got sick	What happened to [Victim]?
[Victim] got sick because [Agent] put something in the well/stream that poisoned it	Why did [Victim] get sick?
Bottles/containers were very similar	Did the bottles of insecticide and water purifier look similar, or different?
[Agent] loved [Victim]	Did [Agent] like [Victim]?

[Food Taboo — Intentional]

A [*insert appropriate local ethnic group name, e.g., Shuar*] man, [Agent—use locally appropriate male name], was at a feast in a village not far from his village. There were many people there, walking around visiting kin and friends. [Agent] was talking to a young woman who was serving food and learned that one of the new dishes contained [*insert **taboo food name** = name for type of food which is either taboo or considered disgusting even though it would not be harmful to eat, e.g. shark meat*], which is taboo for people from [Agent]'s village (but not for those in the village they were eating at). In fact, [*insert title of appropriate authority on taboo foods — e.g., "the chief of their village"*] had recently reminded everyone of the taboo on [*insert **taboo food name***].[3] Knowing that the new dish contained [*insert **taboo food name***], [Agent] asked the young woman for a serving of the dish and ate it.

[Comprehension Questions]

Because it is important that I make myself clear, I'd like to make sure that you understood me. Could you please tell me what happened in the story I just told you?

Concept	Question if Not mentioned
[Agent] ate taboo food	What did [Agent] do?
[Agent] knew the dish contained taboo food	Did the woman say the dish contained [insert name of taboo food]?
Food was taboo	What did the chief say about the food?

[Food Taboo — Accidental]

A [*insert appropriate local ethnic group name, e.g., Shuar*] man, [Agent—use locally appropriate male name], was at a feast in a village not far from his village. There were many people there, walking around visiting kin and friends. [Agent] was talking to a young woman who was serving food. Though [Agent] could not tell this, and the woman did not mention it, one of the new dishes contained [*insert **taboo food name** = name for type of food*

---

[3] [Use this sentence only if the food is actually taboo. If it is not taboo, but just very disgusting, like eating dog in the USA, and/or there is no appropriate authority to speak to this, then substitute the following sentence instead: "In fact, [Agent]'s family had recently been talking about a case of someone having eaten [*insert type of food which is either taboo or considered disgusting even though it would not be harmful to eat*], and everyone said how disgusting this was."].

which is either taboo or considered disgusting even though it would not be harmful to eat, e.g. shark meat], which is taboo for people from [Agent]'s village (but not for those in the village they were eating at). In fact, [*insert title of appropriate authority on taboo foods — e.g., "the chief of their village"*] had recently reminded everyone of the taboo on [*insert **taboo food name**].[4] Not knowing that the new dish contained [insert **taboo food name**], [Agent] asked the young woman for a serving of the dish and ate it.

[Comprehension Questions]

Because it is important that I make myself clear, I'd like to make sure that you understood me. Could you please tell me what happened in the story I just told you?

Concept	Question if Not mentioned
[Agent] ate taboo food	What did [Agent] do?
[Agent] did not know the dish contained taboo food	Did the woman say the dish contained [insert name of taboo food]?
Food was taboo	What did the chief say about the food?

[Food Taboo — Motivated]

Two [*insert appropriate local ethnic group name, e.g., Shuar*] men, [Agent—use locally appropriate male name] and [Observer—use locally appropriate male name], were at a feast at a village not far from where they lived. [Agent] and [Observer] heard that one of the new dishes contained [*insert **taboo food name** = name for type of food which is either taboo or considered disgusting even though it would not be harmful to eat, e.g. shark meat*], which is taboo for people from their village (but not for those in the village they were eating at). In fact, the chief of their village had recently reminded everyone of the taboo on [*insert **taboo food name**].[5] [Agent] believed that the strictures of traditional life caused a variety of problems for [*insert appropriate local ethnic group name, e.g., Shuar, or Fijians*], and was therefore contemptuous of traditions. The young woman serving the food set down two very similar looking bowls, both with new dishes that had been specially prepared for the feast. Looking at them it was impossible to tell what type of fish each contained. Pointing, the woman said, "this one contains [*insert **taboo food name**], but this one does not". Just then there was a commotion, and another woman moved the two bowls around. When things settled down again, [Agent] reached for one of the two bowls, took a serving, and ate it. The bowl he took turned out to be the one that contained [*insert **taboo food name**]. [Observer] said, "that dish has [*insert **taboo food name**] in it". [Agent] replied, "I didn't know".

[Comprehension Questions]

Because it is important that I make myself clear, I'd like to make sure that you understood me. Could you please tell me what happened in the story I just told you?

Concept	Question if Not mentioned
[Observer] saw [Agent] eat food	What did [Observer] see?
Food was taboo	What kind of food was it?

---

[4] [See note 3].
[5] [See note 3].

[Agent] is contemptuous of traditions	What is [Agent]'s attitude towards traditions?

[Food Taboo — Anti-Motivated]

Two [*insert appropriate local ethnic group name, e.g., Shuar*] men, [Agent—use locally appropriate male name] and [Observer—use locally appropriate male name], were at a feast at a village not far from where they lived. [Agent] and [Observer] heard that one of the new dishes contained [*insert **taboo food name** = name for type of food which is either taboo or considered disgusting even though it would not be harmful to eat, e.g. shark meat*], which is taboo for people from their village (but not for those in the village they were eating at). In fact, the chief of their village had recently reminded everyone of the taboo on [*insert **taboo food name**].[6] [Agent] believed that the people's abandonment of traditional life caused a variety of problems for [*insert appropriate local ethnic group name, e.g., Shuar, or Fijians*], and was therefore very respectful of tradition. The young woman serving the food set down two very similar looking bowls, both with new dishes that had been specially prepared for the feast. Looking at them it was impossible to tell what type of fish each contained. Pointing, the woman said, "this one contains [*insert **taboo food name**], but this one does not". Just then there was a commotion, and another woman moved the two bowls around. When things settled down again, [Agent] reached for one of the two bowls, took a serving, and ate it. The bowl he took turned out to be the one that contained [*insert **taboo food name**]. [Observer] said, "that dish has [*insert **taboo food name**] in it". [Agent] replied, "I didn't know".

[Comprehension Questions]

Because it is important that I make myself clear, I'd like to make sure that you understood me. Could you please tell me what happened in the story I just told you?

Concept	Question if Not mentioned
[Observer] saw [Agent] eat food	What did [Observer] see?
Food was taboo	What kind of food was it?
[Agent] is very respectful of traditions	What is [Agent]'s attitude towards traditions?

[MITIGATING FACTORS BANK]

[Battery — Intentional]

Two [*insert appropriate local ethnic group*] men, [Agent—use locally appropriate male name] and [Victim—use locally appropriate male name], who did not know one another, were at a busy outdoor market. There were lots of people at the market that day and there was not much room to move through the crowd. [Agent] was looking at what was for sale on one of

---

[6] [See note 3].

the stalls when [Victim] walked past behind him. Suddenly, [Agent] turned and punched [Victim] hard in the face. [Victim] was badly hurt and fell down, bleeding heavily from his nose.

[Comprehension Questions]

Because it is important that I make myself clear, I'd like to make sure that you understood me. Could you please tell me what happened in the story I just told you?

Concept	Question if Not mentioned
[Victim] was hurt	What happened to [Victim]?
[Agent] struck [Victim]	How did [Victim] get hurt?
[Agent] and [Victim] did not know one another	Did [Agent] and [Victim] know each other?

[Battery — Self-Defence]

Two [*insert appropriate local ethnic group*] men, [Agent—use locally appropriate male name] and [Victim—use locally appropriate male name], who did not know one another, were at a busy public festival. There were lots of people at the festival and everyone was having a good time. [Victim] was watching the entertainment at the festival when [Agent] walked past behind him. Suddenly, [Victim] pulled out a knife and attacked [Agent] with it. After dodging several blows [Agent] punched [Victim] hard in the face. [Victim] was badly hurt and fell down, bleeding heavily from his nose.

[Comprehension Questions]

Because it is important that I make myself clear, I'd like to make sure that you understood me. Could you please tell me what happened in the story I just told you?

Concept	Question if Not mentioned
[Victim] attacked [Agent] with knife	What did [Victim] do?
[Victim] was hurt	What happened to [Victim]?
[Agent] struck [Victim]	How did [Victim] get hurt?

[Battery — Necessity]

Two [*insert appropriate local ethnic group*] men, [Agent—use locally appropriate male name] and [Victim—use locally appropriate male name] were at a busy outdoor market. There were lots of people at the market that day and there was not much room to move through the crowd. [Agent] was looking at what was for sale on one of the stalls when he saw that a dangerous fire had started on the next stall. No one else had noticed it and if it was not put out quickly the fire would spread and many people would be hurt. [Agent] saw a container full of water nearby and tried to get to it, but [Victim] was standing in his way with his back turned. [Agent] shouted to [Victim] to get out of his way, but he didn't hear because of the noise of the crowd. [Agent] tried to push [Victim] out of his way, but [Victim] merely turned round and looked very angry with [Agent]. Again, [Agent] tried to tell [Victim] to get out of the way, but again he didn't hear because of the noise. [Agent] then punched [Victim] hard in the

face. [Victim] was badly hurt and fell down, bleeding heavily from his nose. [Agent] immediately ran towards the water. However, before [Agent] could get to the water someone else noticed the fire and poured the water over it, putting it out.

[Comprehension Questions]

Because it is important that I make myself clear, I'd like to make sure that you understood me. Could you please tell me what happened in the story I just told you?

Concept	Question if Not mentioned
[Agent] was trying to get to water	What was [Agent] trying to do?
[Agent] wanted to put out fire	What did [Agent] want to do with the water?
[Agent] struck [Victim]	What happened to [Victim]?

[Battery — Insanity]

Two [*insert appropriate local ethnic group*] men, [Agent—use locally appropriate male name] and [Victim—use locally appropriate male name], who did not know one another, were at a busy outdoor market. When he was a child, [Agent] fell from a tree and received a serious head injury. As a result of this, Agent is now [*insert locally appropriate term for mental illness*] and often behaves very strangely. [Agent]'s family, who take care of him, have noticed that he can get very angry and sometimes violent when he is upset. However, they know that [Agent] can't control himself when he is like this and that he doesn't mean to hurt anyone. [Agent] likes the market and his brother, [Neutral—use locally appropriate male name], was there to look after him. [Agent] was having a good time until suddenly a very loud noise came from one of the nearby stalls. [Agent] became very upset and started screaming and shouting. [Victim] approached [Agent] and asked him if he was ok. Suddenly, [Agent] punched [Victim] hard in the face. [Victim] was badly hurt and fell down, bleeding heavily from his nose. [Agent] ran off, screaming and shouting.

[Comprehension Questions]

Because it is important that I make myself clear, I'd like to make sure that you understood me. Could you please tell me what happened in the story I just told you?

Concept	Question if Not mentioned
[Agent] is mentally ill	What is unusual about [Agent]?
[Agent] doesn't mean to hurt anyone when he gets upset	What do [Agent]'s family know about what he does when he is upset?
[Agent] struck [Victim]	What happened to [Victim]?

[Battery — Mistake of Fact]

Two [*insert appropriate local ethnic group*] men, [Agent—use locally appropriate male name] and [Victim—use locally appropriate male name], who did not know one another, were at a party. [Agent] was getting a drink when he noticed his grown-up son, [Neutral—use locally appropriate male name], and [Victim], who was about the same age as [Neutral], shouting very loudly at each other. Suddenly, [Victim] started pushing [Neutral]. [Neutral] fell over onto the ground and seemed hurt. [Victim] then started to raise his foot as if to kick [Neutral]. [Agent] immediately ran in and punched [Victim] hard in the face. [Victim] was

badly hurt and fell down, bleeding heavily from his nose. [Neutral] then shouted at [Agent]: "Why did you do that? We were just pretending to fight as a joke, we weren't actually fighting!"

[Comprehension Questions]

Because it is important that I make myself clear, I'd like to make sure that you understood me. Could you please tell me what happened in the story I just told you?

Concept	Question if Not mentioned
[Neutral] is [Agent]'s son	What is the relationship between [Agent] and [Neutral]?
[Agent] saw [Victim] push [Neutral]	What did [Agent] see [Victim] do?
[Agent] struck [Victim]	What happened to [Victim]?

[Battery — Different Moral Beliefs]

Two [*insert appropriate local ethnic group*] men, [Agent—use locally appropriate male name] and [Victim—use locally appropriate male name], who did not know one another, were at a busy public festival. [Agent] believes that it is ok for strong men to attack weaker men because this helps to toughen them up and make them manlier. While [Agent] knows that other people in the community disapprove of this behaviour he still believes that it is ok for him to attack other men when he sees that they need toughening up. [Agent] saw [Victim] walking nearby and thought that [Victim] was weak and needed toughening up. Suddenly, [Agent] punched [Victim] hard in the face. [Victim] was badly hurt and fell down, bleeding heavily from his nose.

[Comprehension Questions]

Because it is important that I make myself clear, I'd like to make sure that you understood me. Could you please tell me what happened in the story I just told you?

| Concept	Question if Not mentioned
[Agent] thought it was ok for him to attack weaker men in order to toughen them up	What did [Agent] think it was ok for him to do?
[Agent] knows that the community disapproves of this behaviour	What does [Agent] know about what others in the community think about attacking weaker men to toughen them up?
[Agent] struck [Victim]	What happened to [Victim]?

[Inferential Questions]

[Each participant was asked the same seven inferential questions below after each vignette. The wording for inferential question 2 varied slightly across vignette types as specified below. All

other inferential questions had the same wording for each vignette. For inferential questions 1-6, participants were presented with the following unlabeled Response Scale, printed by itself on a sheet of paper:]
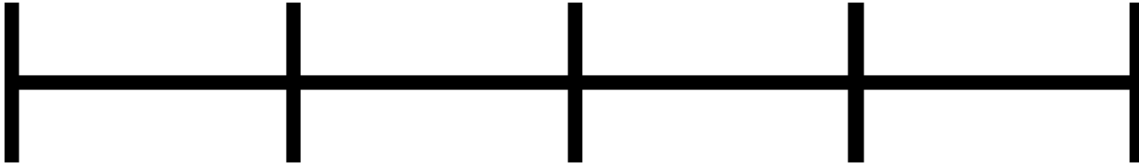
[Note to RA: Present this scale to the participant and verbally indicate the labels for each point on the scale. These labels are indicated below the text for each question. Note that these labels are different for different questions. Then mark the participant's response on the copy of the bar scale that appears in the Datasheet.]

[Inferential Question 1: Badness]
In your opinion, how good or bad was what [Agent] did? Please show me on this line.

[**Note**: The numbered scales below are for experimenter use only:

-2	-1	0	+1	+2
Extremely Bad	Bad	Neither	Good	Extremely Good

show subjects the unlabelled Response Scale given as a separate file and indicate the labels for each point on the scale for each question. Circle responses here - *only circle one option*.]

[Inferential Question 2: Intentional]

[**Note**: For IQ2 you will need to read the Vignette appropriate phrase in this question]

[Physical Harm]: In your opinion did [Agent] strike [Victim] on purpose, or by accident? Please show me on this line.

[Theft]: In your opinion did [Agent] take [Victim]'s bag on purpose, or by accident? Please show me on this line.

[Poisoning] In your opinion did [Agent] poison the *well/stream* on purpose, or by accident? Please show me on this line.

[Food Taboo] In your opinion did [Agent] eat [insert name of taboo food] on purpose, or by accident? Please show me on this line.

[Battery] In your opinion did [Agent] strike [Victim] on purpose, or by accident? Please show me on this line. (***Note**: this item assesses "Intentional" for the Intentional scenario in the Mitigating Factors Bank*).

[**Note**: The numbered scales below are for experimenter use only:

-2	-1	0	+1	+2
Definitely	On Purpose	Neither	Accidental	Definitely
on Purpose				Accidental

show subjects the unlabelled Response Scale given as a separate file and indicate the labels for each point on the scale for each question. Circle responses here - *only circle one option*.]

[Inferential Question 3: Victim Outcome]

In your opinion, how positively or negatively was [Victim] affected? Please show me on this line.

[**Note**: The numbered scales below are for experimenter use only:

-2	-1	0	+1	+2
Very	Negatively	Neither	Positively	Very Positively
Negatively	Affected		Affected	Affected
Affected				

show subjects the unlabelled Response Scale given as a separate file and indicate the labels for each point on the scale for each question. Circle responses here - *only circle one option*.]

[Inferential Question 4: Victim Reaction]

Do you think [Victim] was pleased or angered by what happened? Please show me on this line.

[**Note**: The numbered scales below are for experimenter use only:

-2	-1	0	+1	+2
Very	Angered	Neither	Pleased	Very
Angered				Pleased

show subjects the unlabelled Response Scale given as a separate file and indicate the labels for each point on the scale for each question. Circle responses here - *only circle one option*.]

[Inferential Question 5: Reputation]

When people discover what happened, what will people think of [Agent] — will they think he is a good person or a bad person? Please show me on this line.

[**Note**: The numbered scales below are for experimenter use only:

-2	-1	0	+1	+2
Extremely	Bad	Neither	Good	Extremely
Bad				Good

show subjects the unlabelled Response Scale given as a separate file and indicate the labels for each point on the scale for each question. Circle responses here - *only circle one option*.]

[Inferential Question 6: Punishment]

In your opinion, do you think [Agent] should be rewarded or punished? Please show me on this line.

[**Note**: The numbered scales below are for experimenter use only:

-2	-1	0	+1	+2
Highly Punished	Punished	Neither	Rewarded	Highly Rewarded

show subjects the unlabelled Response Scale given as a separate file and indicate the labels for each point on the scale for each question. Circle responses here - *only circle one option*.]

[Inferential Question 7: Free Response]
What do you think about [Agent]'s action?

[Record notes on participant's response on datasheet.]

8. Protocol Modifications by Field Site and Site Specific Information

Hadza (Tanzania)

Low value item used in Theft Scenario: Very small bag of maize flour

High value item used in Theft Scenario: Large bag of glass beads and tobacco

Taboo/Disgusting Food: Snake meat

Chief decreed taboo v. Family discussion of disgustingness of food: Family discussion

Participant Compensation: Participants were given a knife and blanket (men) and beads and a cooking pot (women) in exchange for participation in this study and several unrelated studies.

Site Specific Protocol Variations: None

Himba (Namibia)

Low value item used in Theft Scenario: Maize

High value item used in Theft Scenario: Jewelry

Taboo/Disgusting Food: Donkey meat

Chief decreed taboo v. Family discussion of disgustingness of food: Chief

Participant Compensation: Choice of maize or sugar

Site Specific Protocol Variations: The Mitigating Factors Bank was not administered at this field site.

Karo Batak (Indonesia)

Low value item used in Theft Scenario: Sweet potato greens

High value item used in Theft Scenario: Expensive jewelry

Taboo/Disgusting Food: Earthworms

Chief decreed taboo v. Family discussion of disgustingness of food: Village head

Participant Compensation: Participants were paid 15,000 Indonesian Rupiah (~$1.85 US), to participate in this study and two further unrelated studies.

Site Specific Protocol Variations: None

Los Angeles (USA)

Low value item used in Theft Scenario: A bag of lettuce

High value item used in Theft Scenario: Some expensive jewelry

Taboo/Disgusting Food: Dog meat

Chief decreed taboo v. Family discussion of disgustingness of food: Family discussion

Participant Compensation: Participants were paid $10 USD to participate in this study.

Site Specific Protocol Variations: None

Martu (Australia)

Low value item used in Theft Scenario:	Apples
High value item used in Theft Scenario:	iPod
Taboo/Disgusting Food:	Kangaroo meat during mourning period
Chief decreed taboo v. Family *discussion of disgustingness of food*:	Father, as authority figure, reminds family of Dreamtime law prohibiting eating kangaroo meat during mourning period
Participant Compensation:	None
Site Specific Protocol Variations:	For the Food Taboo Scenario, Inferential Question 3 (Victim Outcome) and Inferential Question 4 (Victim Reaction) were omitted.

Shuar (Ecuador)

Low value item used in Theft Scenario:	Lettuce
High value item used in Theft Scenario:	Expensive watch
Taboo/Disgusting Food:	Anteater meat
Chief decreed taboo v. Family *discussion of disgustingness of food*:	Family discussion
Participant Compensation:	Participants received the equivalent of $10 USD in exchange for their participation this study and several unrelated studies. At the time, this was approximately equivalent to a day's wage for individuals engaged in market activities.
Site Specific Protocol Variations:	None

Storozhnitsa (Ukraine)

Low value item used in Theft Scenario:	Bag of potatoes
High value item used in Theft Scenario:	Expensive jewelry
Taboo/Disgusting Food:	Eating meat on Good Friday
Chief decreed taboo v. Family *discussion of disgustingness of food*:	Family discussion
Participant Compensation:	Participants were given 10 UKH (= approximately 6 USD at the time of the study = daily wage) in exchange for participation in this study and several unrelated studies.
Site Specific Protocol Variations:	None

Sursurunga (New Ireland)

Low value item used in Theft Scenario:	Bundle of peanuts
High value item used in Theft Scenario:	Large amount of cash
Taboo/Disgusting Food:	Dog meat
Chief decreed taboo v. Family *discussion of disgustingness of food*:	Family Discussion
Participant Compensation:	None
Site Specific Protocol Variations:	The protocol was slightly modified after an initial set of participants as follows: Inferential Question

3 (Victim Outcome) was prefaced by "Now I want to ask you some questions about [Victim]." and Inferential Question 5 (Reputation) was prefaced by "Okay; now let's return to talking about [Agent]." This was done to avoid potential confusion over who participants were being asked about in a given question.

Tsimane (Bolivia)

Low value item used in Theft Scenario:	Head of lettuce
High value item used in Theft Scenario:	Watch
Taboo/Disgusting Food:	Dog meat
Chief decreed taboo v. Family discussion of disgustingness of food:	Family discussion
Participant Compensation:	No direct compensation was offered. However, members of the community receive periodic medical care from the investigators, as well as fishhooks, soap, and other amenities given as gifts.
Site Specific Protocol Variations:	For Inferential Question 3 (Victim Outcome) and Inferential Question 4 (Victim Reaction) additional data was collected from participants by asking them about both the Victim and the Agent. So Inferential Question 3 (Victim Outcome) was followed by "In your opinion, how positively or negatively was [Agent] affected? Please show me on this line." (using the same scale as Inferential Question 3) and Inferential Question 4 (Victim Reaction) was followed by "Do you think [Victim] was pleased or angered by what happened? Please show me on this line." (using the same scale as Inferential Question 4).

Yasawa (Fiji)

Low value item used in Theft Scenario:	A small piece of cassava
High value item used in Theft Scenario:	An expensive watch
Taboo/Disgusting Food:	Shark meat
Chief decreed taboo v. Family discussion of disgustingness of food:	The village chief
Participant Compensation:	None
Site Specific Protocol Variations:	Some subjects did the full protocol in a single session, others did it over two sessions, with the Intentions Bank in one session and the Mitigating Factors Bank in the other.

9. References for Supporting Information Appendix

1. Christensen RHB (2015) ordinal: Regression models for ordinal data. R package version 2015.6-28. http://www.cran.r-project.org/package=ordinal/.

2. Greene J, Haidt J (2002) How (and where) does moral judgment work? *Trends Cog Sci* 6(12): 517-523.

3. Revelle W (2015) psych: Procedures for personality and psychological research. R package version 1.5.8. http:// www.cran.r-project.org/package=psych/.

4. Bates D, Maechler M, Bolker B, Walker S (2015) Fitting linear mixed-effects models using lme4. *J Stat Software* 67(1): 1-48.

5. Baron RM, Kenny DA (1986) The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *J Pers Soc Psych* 51(6): 1173–1182.

6. Tingley D, Yamamoto T, Hirose K, Keele L, Imai K (2014) mediation: R package for causal mediation analysis. *J Stat Software* 59(5): 1-38.

7. Crittenden AN, Marlowe FW (2008) Allomaternal care among the Hadza of Tanzania. *Hum Nat* 19(3): 249-262.

8. Marlowe F (2010) *The Hadza: Hunter-Gatherers of Tanzania* (Univ. of California Press, Berkeley, CA).

9. Barrett HC, Haley KJ (2014) Economic games among the Shuar. *Experimenting with Social Norms: Fairness and Punishment in Cross-Cultural Perspective,* eds Henrich J, Ensminger J. (Russell Sage Foundation, New York), pp. 259-274.

10. Bolyanatz AH (2000) *Mortuary Feasting on New Ireland: The Activation of Matriliny among the Sursurunga*. (Greenwood Publishing Group, Westport, CT).

11. McNamara RA, Norenzayan A, Henrich J (2014) Supernatural punishment, in-group biases, and material insecurity: Experiments and ethnography from Yasawa, Fiji. *Rel Brain Behav* (Published online: 18 Jun 2014), 1-22.

12. Henrich J, Henrich N (2010) The evolution of cultural adaptations: Fijian taboos during pregnancy and lactation protect against marine toxins. *Proc R Soc London Ser B* 366(1701): 1139-1148.