Supplementary Materials for Hayakawa, Tannenbaum, Costa, Corey & Keysar "Thinking more or feeling less? Explaining the foreign language effect on moral judgment"

1. Demographic and Language Background Information

Table S1

Experiment	Native	Foreign	Female	Age	AOA	Months Abroad	Proficiency-Native	Proficiency-Foreign
1	German	English	49%	38	11	5	6.77	4.97
2	English	Spanish	72%	21	14	4	6.93	5.29
3	Spanish	English	61%	21	12	2	6.57	5.40
4	German	English	42%	35	11	2	6.16	4.84
5	German	English	46%	32	11	4	6.81	5.19
6	English	German	50%	24	16	14	6.95	5.17

Notes: "AOA" is the age of foreign language acquisition and "Months Abroad" refers to the number of months spent in a country where the target foreign language is the dominant language.

2. Participant Exclusions

Table S2

Experiment	Comprehension	Incomplete	Foreign Dominant	Perfect U
1	15	1	0	0
2	4	5	0	0
3	3	0	1	1
4	4	0	3	3
5	2	10	0	0
6	0	15	0	3

Notes: Number of participants excluded for lack of comprehension, incomplete surveys, having a dominant foreign language, or having a perfect utilitarian score making it mathematically impossible to calculate the deontology score.

3. Correlations among U, D and Traditional U parameters

Table S3

	U & D		U & Traditional U		D & Traditional U	
Experiment	***r***	***p-value***	***r***	***p-value***	***r***	***p-value***
1	-0.052	.449	0.724	<.001***	-0.697	<.001***
2	0.065	.317	0.632	<.001***	-0.698	<.001***
3	-0.193	.007**	0.765	<.001***	-0.696	<.001***
4	-0.101	.142	0.742	<.001***	-0.669	<.001***
5	-0.011	.870	0.664	<.001***	-0.670	<.001***
6	-0.033	.637	0.704	<.001***	-0.650	<.001***

Notes: ¶ $p < .10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

4. Individual difference results from Experiment 1

We regressed *D* scores onto IRI, NFC, and CRT ratings[1] and then did the same for *U* scores. Coefficients and robust standard errors are displayed in Table S4. The only reliable predictor of *D* scores were responses on the interpersonal reactivity index (IRI) — more empathic participants were also more deontological. The only reliable predictor of *U* scores were responses on the cognitive reflection test (CRT) — more reflective participants were also more utilitarian.

Table S4: Study 1 regression coefficients (robust standard errors) for Deontological and Utilitarian considerations

	Model 1: Deontological Considerations	**Model 2: Utilitarian Considerations**
IRI	0.049* (0.02)	0.004 (0.02)
NFC	0.031 (0.02)	0.024 (0.02)
CRT	–.010 (0.01)	0.023* (0.01)
Intercept	0.417*** (0.09)	0.188* (0.09)
R-sqr	0.052	0.037

Notes: ¶ $p < .10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

[1] In Experiment 1, CRT scores were calculated only from 4 of the 5 questions. Due to a translation error, responses to the "Soup and Salad" problem were excluded from the analysis.

Individual differences across conditions. We examined if foreign language use affected scores on any of our individual difference measures. Compared to native language speakers, foreign language speakers reported less empathic concern, $t(212) = 1.86$, $p = .06$, $d = 0.25$; less need for cognition, $t(212) = 4.00$, $p < .001$, $d = 0.55$; and greater cognitive reflection, $t(212) = –1.99$, $p = .048$, $d = 0.27$. Table S6 provides means for individual difference scores by condition.

Table S5: Study 1 results

	IRI	NFC	CRT
German (L1)	3.68 (0.07)	3.89 (0.07)	1.61 (0.14)
English (L2)	3.50 (0.07)	3.51 (0.06)	1.97 (0.12)
difference (L1 – L2)	0.18 (0.10)¶	0.38 (0.09)***	–.36 (0.18)*

Notes: Standard errors in parentheses. ¶ $p \leq .10$, * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$

Mediation. Since random assignment to foreign vs. native language conditions appeared to systematically influence responses on our individual difference measures, we conducted a mediation analysis to examine if the MFLE could be explained by experimentally-induced shifts in empathic concern, need for cognition, or cognitive reflection. To do so we conducted a path model that simultaneously regressed *U* and *D* scores onto our treatment variable (0 = native language, 1 = foreign language) and treated IRI, NFC, and CRT scores as mediating variables. Our path model is visually depicted in Figure S1, and statistical summaries of direct effects and indirect effects (i.e., mediated pathways) are presented in Table S6. Confidence intervals are bias-corrected using bootstrapping from 5,000 case-based resamples (MacKinnon, Lockwood & Williams, 2004; Preacher & Hayes, 2004).

For *U* scores, we find no reliable indirect effects for any of our individual difference measures; collectively, the three measures account for less than 3% of the treatment effect (indirect coefficient = 0.0003, SE = 0.011, 95% CI [–.021, 0.023]). This is unsurprising given that we did not observe a foreign language effect for utilitarianism (i.e., there was no reliable relationship to mediate). For *D* scores, the

three individual difference measures jointly explain 26% of the MFLE (indirect coefficient = 0.018, SE = 0.011, 95% CI [–.001, 0.0412]). Decomposing the mediation effect we see that IRI scores account for 45% of the mediation effect, NFC scores account for 41% of the mediation effect, and CRT scores account for 14% of the mediation effect. These results suggest that the reduction in deontological reasoning caused by using a foreign language is partly explained by reduced empathic responding and to a lesser degree by a reduction in need for cognition.

Figure S1. Path model in Studies 1 & 2.

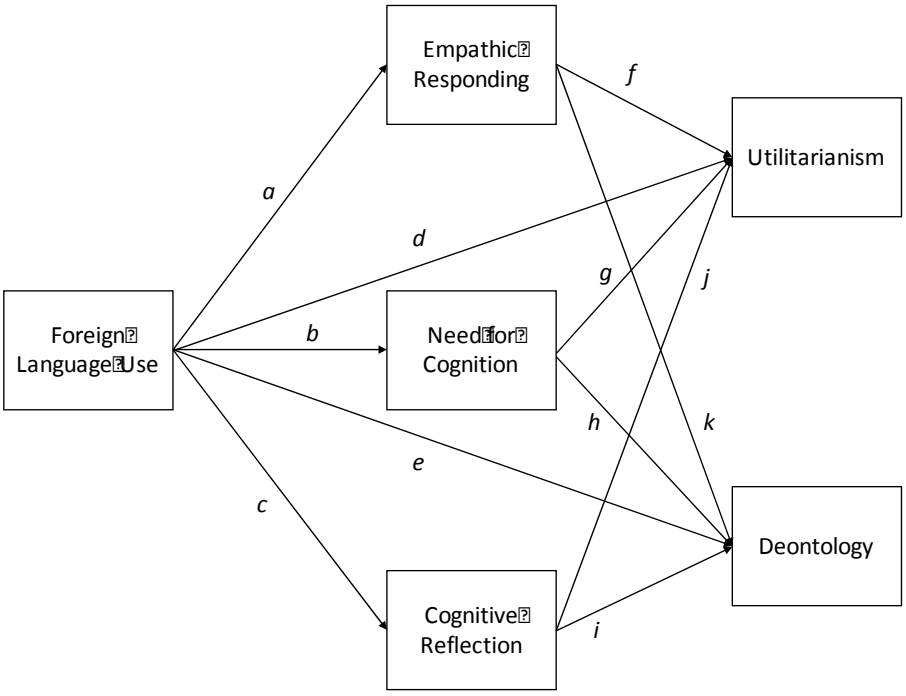

Table S6: Mediation results from Study 1

	Coefficient	Bootstrap standard error	95% Confidence Interval	
Direct Effects				
path a	0.178	0.096	-0.010	0.371
path b	0.378	0.094	0.196	0.571
path c	-0.368	0.186	-0.718	0.006
path d	0.012	0.026	-0.040	0.064
path e	0.052	0.029	0.000	0.111
path f	0.004	0.019	-0.034	0.040
path g	0.022	0.019	-0.016	0.060
path h	0.020	0.020	-0.021	0.059
path i	-0.007	0.010	-0.027	0.012
path j	0.023	0.011	0.004	0.045
path k	0.046	0.020	0.006	0.086
Indirect Effects				
cond → IRI → *D* (a × k)	0.008	0.006	0.000	0.026
cond → NFC → *D* (b × h)	0.008	0.008	-0.006	0.027
cond → CRT → *D* (c × i)	0.003	0.004	-0.004	0.015
combined indirect effects on *D*	0.018	0.011	-0.001	0.041
cond → IRI → *U* (a × f)	0.001	0.004	-0.007	0.009
cond → NFC → *U* (b × g)	0.008	0.008	-0.005	0.027
cond → CRT → *U* (c × j)	-0.009	0.006	-0.025	0.000
combined indirect effects on *U*	0.000	0.011	-0.021	0.023

Notes*:* confidence intervals are calculated from 5,000 case-based resamples

5. Individual difference results from Experiment 2

We regressed *D* scores onto IRI, NFC, and CRT ratings and then did the same for *U* scores. Coefficients and robust standard errors are displayed in Table S7. The only reliable predictor of *D* scores were responses on the interpersonal reactivity index (IRI) — more empathic participants were also more deontological. Both IRI and CRT ratings were reliable predictors of *U* — more empathic participants were also more utilitarian and more cognitively reflective participants were also more utilitarian.

Table S7: Study 2 regression coefficients (robust standard errors) for Deontological and Utilitarian Considerations

	Model 1: Deontological Considerations	Model 2: Utilitarian Considerations
IRI	0.078*** (0.02)	0.048** (0.02)
NFC	0.029 (0.02)	0.004 (0.02)
CRT	0.009 (0.01)	0.035*** (0.01)
Intercept	0.205*** (0.10)	0.016 (0.09)
R-sqr	0.093	0.111

Notes: ¶ $p < .10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Individual differences across conditions. We examined if foreign language use affected scores on any of our individual difference measures. Table S8 provides means for individual difference scores by condition. As in Experiment 1, we find that, compared to native language spekaers, foreign language speakers reported less empathic concern, $t(240) = 1.75$, $p = .08$, $d = 0.22$, and less need for cognition, $t(240) = 3.40$, $p < .001$, $d = 0.44$. Unlike Experiment 1, we find that foreign language speakers demonstrated less cognitive reflection than native language speakers, $t(240) = 4.41$, $p < .001$, $d = 0.57$.

Table S8: Study 2 results

	IRI	NFC	CRT
English (L1)	3.94 (0.06)	3.88 (0.06)	3.08 (0.13)
Spanish (L2)	3.80 (0.05)	3.58 (0.06)	2.25 (0.13)
difference (L1 – L2)	0.14 (0.08) ¶	0.30 (0.09)***	0.83 (0.19)***

Notes: Standard errors in parentheses. ¶ $p \leq .10$, * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$

Mediation. Since random assignment to foreign vs. native language conditions appeared to systematically influence responses on our individual difference measures, we conducted a mediation analysis in a manner identical to Study 1.

For *U* scores, we find a reliable mediation effect. The three individual difference measures jointly explain 29% of the MFLE on *U* scores (indirect coefficient = –0.029, SE = .010, 95% CI [–0.053, –0.013]). Decomposing the mediation effect we see that the IRI accounts for 20% of the mediation effect, the NFC for –2% of the mediation effect, and the CRT for 82% of the mediation effect. That the relatively lower *U* scores in the foreign language condition are partly accounted for by reduced cognitive reflection is consistent with the notion that using a foreign language may reduce utilitarianism due to cognitive load.

For *D* scores, we also find a reliable mediation effect. The three individual difference measures jointly explain 40% of the MFLE on *D* scores (indirect coefficient = –0.023, SE = 0.012, 95% CI [–.049,

–0.003]). Decomposing the mediation effect we see that the IRI accounts for 45% of the mediation effect, the NFC for 33% of the mediation effect, and the CRT for 22% of the mediation effect. These results suggest that the reduction in deontological reasoning caused by using a foreign language is partly explained by reduced empathic responding, and to a lesser degree by a reduction in need for cognition.

Table S9: Mediation results from Study 2

	Coefficient	Bootstrap standard error	95% Confidence Interval	
Direct Effects				
path a	-0.139	0.079	-0.290	0.017
path b	-0.297	0.087	-0.458	-0.122
path c	-0.832	0.187	-1.203	-0.479
path d	-0.073	0.024	-0.118	-0.024
path e	-0.035	0.026	-0.082	0.020
path f	0.043	0.018	0.008	0.076
path g	-0.002	0.018	-0.039	0.034
path h	0.026	0.019	-0.012	0.063
path i	0.006	0.009	-0.011	0.024
path j	0.029	0.009	0.012	0.046
path k	0.075	0.023	0.028	0.117
Indirect Effects				
cond → IRI → *D* (a × k)	-0.011	0.007	-0.027	-0.001
cond → NFC → *D* (b × h)	-0.008	0.006	-0.023	0.002
cond → CRT → *D* (c × i)	-0.005	0.008	-0.022	0.009
combined indirect effects on *D*	-0.023	0.012	-0.050	-0.003
cond → IRI → *U* (a × f)	-0.006	0.004	-0.018	0.000
cond → NFC → *U* (b × g)	0.001	0.006	-0.011	0.012
cond → CRT → *U* (c × j)	-0.024	0.009	-0.046	-0.010
combined indirect effects on *U*	-0.029	0.010	-0.053	-0.013

Notes*:* confidence intervals are calculated from 5,000 case-based resamples

6. Gender Effects

We examined potential gender differences, as previous research has suggested that women score higher on the *D* parameter as a result of a greater aversion to causing harm relative to men (Friesdorf, Conway & Gawronski, 2015). It was also found that women scored slightly lower on the *U* parameter relative to men. Across the six experiments, the overall trends appear to be in this direction, though they are not consistently significant effects as can be seen in Table S11. No interactions with language were found (all *p*-values > .234).

Table S10: Gender Effects: Mean (standard deviation)

	U			**D**			**Traditional U**		
	M	*F*	*p-value*	*M*	*F*	*p-value*	*M*	*F*	*p-value*
Experiment 1	0.346 (.207)	0.321 (.189)	0.356	0.665 (.210)	0.71 (.181)	0.101	0.563 (.199)	0.52 (.187)	0.084¶
Experiment 2	0.344 (.201)	0.3 (.174)	0.101	0.601 (.186)	0.655 (.195)	0.054¶	0.61 (.172)	0.546 (.168)	0.013*
Experiment 3	0.375 (.26)	0.292 (.238)	0.022*	0.736 (.309)	0.76 (.243)	0.537	0.517 (.264)	0.456 (.234)	0.093¶
Experiment 4	0.259 (.267)	0.192 (.223)	0.053¶	0.808 (.269)	0.834 (.206)	0.448	0.388 (.289)	0.329 (.244)	0.125
Experiment 5	0.327 (.249)	0.319 (.263)	0.815	0.755 (.258)	0.719 (.309)	0.365	0.501 (.235)	0.50 (.276)	0.990
Experiment 6	0.381 (.256)	0.354 (.256)	0.451	0.742 (.298)	0.743 (.254)	0.981	0.545 (.246)	0.512 (.246)	0.346

Notes: ¶ $p \leq .10$, * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$

7. Proficiency Effects

We conducted a series of analyses to examine the possible effect of foreign language proficiency on the *U* and *D* parameters. Lower levels of proficiency in a foreign language could increase cognitive load (Plass, Chun, Mayer, & Leutner, 2003). This in turn, could affect moral judgment, particularly the *U* parameter as utilitarian responding is thought to be the more cognitively expensive and may thus be reduced when resources are taxed (Greene et. al, 2008). Such an explanation could potentially explain why in some of our experiments participants using the foreign language were significantly less utilitarian than those using their native tongue. To test this hypothesis, we first calculated a "Relative Proficiency" score by subtracting the average reported fluency rating for the foreign language from the native language. A high score thus indicates that the foreign language proficiency was notably lower than that of the native tongue. We then separately regressed *U* and *D* scores onto experimental condition (0 = native language, 1 = foreign language), relative proficiency, and the interaction between the two. Consistent with the cognitive load hypothesis, we find that there is a significant or nearly significant effect of proficiency on *U* scores for two of out the three experiments for which we observed a foreign language reduction in utilitarianism (see Table S11). Additionally, we find significant proficiency x language interactions for those studies as the relationship between proficiency and *U* only holds for those using the foreign language during the experiment. We find no relationship between proficiency and the *D* parameter, which is what would be expected if deontological responding relies on relatively automatic System-I processes.

Table S11: Proficiency on U

	Proficiency		**Proficiency x Language**	
	b (SE)	*p-value*	*b (SE)*	*p-value*
Experiment 1	.048 (.037)	0.198	-.020 (.024)	0.388
Experiment 2	.080 (.042)	0.059¶	-.058 (.027)	0.033*
Experiment 3	-.021 (.067)	0.749	-.007 (.041)	0.856
Experiment 4	-.005 (.047)	0.911	-.014 (.032)	0.663
Experiment 5	-.023 (.051)	0.646	.001 (.033)	0.967
Experiment 6	.120 (.059)	0.042*	-.091 (.038)	0.017*

Notes: ¶$p \leq .10$, *$p \leq 0.05$, **$p \leq 0.01$, ***$p \leq 0.001$

Table S12: Proficiency on D

	Proficiency		**Proficiency x Language**	
	b (SE)	*p-value*	*b (SE)*	*p-value*
Experiment 1	-.008 (.037)	0.822	.007 (.023)	0.756
Experiment 2	.024 (.046)	0.609	-.026 (.029)	0.282
Experiment 3	.103 (.074)	0.166	-.054 (.045)	0.234
Experiment 4	-.042 (.046)	0.361	.011 (.031)	0.72
Experiment 5	-.078 (.055)	0.16	.037 (.036)	0.297
Experiment 6	.008 (.065)	0.901	-.027 (.042)	0.518

To more directly assess the role of proficiency within the context of the three proposed mechanisms, we regressed responses onto each of the planned contrasts outlined in the main text of the paper, along with proficiency scores and the interaction between the two. Using this method of analysis, we find little consistent evidence for the role of proficiency, leaving open the question of whether using a foreign language reduces utilitarianism due to cognitive load.

Table S13: Proficiency and Contrast Tests

	Contrast 1: Blunted Deontology					
	b*(SE), *p-value					
	Experiment 1	**Experiment 2**	**Experiment 3**	**Experiment 4**	**Experiment 5**	**Experiment 6**
Blunted Deontology Contrast	0.082 (0.126), p=.517	0.132 (0.170), p=.439	0.508 (1.121), p=.651	-0.530 (0.131), p=.687	-0.164 (0.208), p=.430	0.467 (1.306), p=.721
Foreign Language Proficiency	-0.013 (0.038), p=.731	0.086 (0.060), p=.152	-0.539 (0.344), p=.119	0.137 (0.049), p=.006**	0.065 (0.120), p=.589	-0.097 (0.218), p=.668
Contrast x Proficiency	-0.005 (0.024), p=.831	-0.016 (0.033), p=.638	-0.072 (0.162), p=.656	0.016 (0.024), p=.527	0.031 (0.031), p=.314	-0.060 (0.189), p=.748
Observations	428	484	390	406	418	412
R-squared	0.01	0.013	0.009	0.027	0.009	0.008

	Contrast 2: Heightened Utilitarianism					
	b*(SE), *p-value					
	Experiment 1	**Experiment 2**	**Experiment 3**	**Experiment 4**	**Experiment 5**	**Experiment 6**
Heightened Utilitarianism Contrast	-0.066 (0.126), p=.598	-0.327 (0.144), p=.024*	-0.849 (1.254), p=.503	0.038 (0.134), p=.778	-0.351 (0.285), p=.219	-1.70 (0.519), p=.001***
Foreign Language Proficiency	-0.019 (0.038), p=.610	0.087 (0.058), p=.135	-0.537 (0.342), p=.118	0.135 (0.045), p=.007**	0.026 (0.111), p=.814	0.051 (0.172), p=.769
Contrast x Proficiency	0.011 (0.024), p=.48	0.044 (0.028), p=.110	0.113 (0.182), p=.535	-0.007 (0.025), p=.772	0.051 (0.042), p=.220	0.232 (0.076), p=.002**
Observations	428	484	390	406	418	412
R-squared	0.001	0.035	0.022	0.024	0.004	0.022

	Contrast 3: Hybrid Account					
	b*(SE), *p-value					
	Experiment 1	**Experiment 2**	**Experiment 3**	**Experiment 4**	**Experiment 5**	**Experiment 6**
Blunted Deontology + Heightened Utilitarianism Contrast	0.037 (0.320), p=.907	-0.296 (0.364), p=.417	-0.518 (2.404), p=.830	0.019 (0.306), p=.950	-0.640 (0.482), p=.185	-2.354 (2.035), p=.249
Foreign Language Proficiency	-0.021 (0.038), p=.584	0.085 (0.060), p=.160	-0.545 (0.341), p=.111	0.136 (0.051), p=.008**	0.053 (0.120), p=.657	-0.188 (0.211), p=.374
Contrast x Proficiency	0.006 (0.061), p=.923	0.044 (0.071), p=.537	0.062 (0.348), p=.858	0.012 (0.056), p=.837	0.105 (0.072), p=.148	0.331 (0.292), p=.260
Observations	428	484	390	406	418	412
R-squared	0.003	0.008	0.012	0.025	0.006	0.003

Notes: We regressed responses onto the proficiency score, the planned contrasts testing the three proposed accounts,

and their interactions. Contrast weights are as follows: Blunted Deontology contrast {DL2: –3, DL1: +1, UL1: +1, UL2: +1}, Heightened Utilitarianism contrast {DL2: –1, DL1: –1, UL1: –1, UL2: +3}, Hybrid contrast {DL2: –1, DL1: 0, UL1: 0, UL2: +1}. ¶ $p \leq .10$, * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$

8. Moral Scenarios and Instructions (Experiments 1 & 2)

Instructions.

For this study, you will read 20 moral dilemmas and then answer some other questions. For each dilemma please tell us whether you find the behavior morally acceptable. Please provide your honest response — there are no right or wrong answers. Some of the dilemmas look similar at first, so be sure to read each one carefully!

Imagine the following:

Process Dissociation Scenarios (Adapted from Conway & Gawronski, 2013)

Time Machine

Incongruent

You find a time machine and travel back to the year 1920. While checking into a hotel, you meet a young Austrian artist. You realize this is Adolf Hitler before becoming the leader of the Nazi party. He is staying in the hotel room next to yours and the doors are not locked. It would be easy to kill him and thereby prevent the Second World War and the Holocaust. However, he has not committed any crimes yet and it seems wrong to hurt an innocent person.

Is it appropriate for you to kill an innocent young Hitler in order to prevent the Second World War?

Congruent

You find a time machine and travel back to the year 1920. While checking into a hotel, you meet a young man. You realize this is George Brackman, a man who later on kidnapped a child and held her hostage for a week until her family paid him to release her. He is staying in the hotel room next to yours and the doors are not locked. It would be easy to kill him and stop him from kidnapping the girl. However, he has not committed any crimes yet and it seems wrong to hurt an innocent person.

Is it appropriate for you to kill George Brackman in order to prevent him from kidnapping the child?

Car Accident

Incongruent

You are driving through a busy city street when all of a sudden a young mother carrying a child trips and falls in front of your car. You are going too fast to stop in time; your only hope is to move out of the way. Unfortunately, there is a little old lady walking in the only place you can move to. If you move out of the way to avoid the young mother and baby, you will seriously injure or kill the old lady.

Is it appropriate to move out of the way and hit the old lady in order to avoid the young mother and child?

Congruent

You are driving through a busy city street when all of a sudden a young mother carrying a child trips and falls in front of your car. You are going too fast to stop in time; your only hope is to move out of the way. Unfortunately, there is a group of children walking in the only place you can move to. If you move out of the way to avoid the young mother and baby, you will seriously injure or kill several of the children.

Is it appropriate to move out of the way and hit the schoolchildren in order to avoid the young mother and child?

Hard Times

Incongruent

You are the head of a poor family in a poor country. Your crops have failed, and it appears that you have no way to feed your family. Your sons are too young to find jobs, but your daughter could do better. You know a man from your village that makes pornographic films with girls such as your daughter. In one year of filming such videos your daughter could earn enough money to keep your family fed for several years.

Is it appropriate for you to employ your daughter in the pornography industry in order to feed your family?

Congruent

You are the head of a poor family in a poor country. You have your sons work on the family farm every day in order to teach them the value of hard work. Your daughter, however, cannot work on the farm due to the heavy lifting required. You worry that she will not learn the value of money if she does not work. You know a man from your village that makes pornographic films featuring girls such as your daughter. In one year of filming such videos your daughter could earn enough money to keep your family fed for several years.

Is it appropriate for you to employ your daughter in the pornography industry in order to teach her the value of money?

Crying Baby

Incongruent

It is war time. Enemy soldiers have taken over your village. They have orders to kill all remaining civilians. You and some of your neighbors hide in the cellar of a large house. Outside you hear the voices of soldiers who have come to search the house for valuables. A baby with no parents begins to cry loudly. You cover her mouth to block the sound. If you remove your hand from the baby's mouth her crying will

get the attention of the soldiers who will kill you and the others hiding out in the cellar. To save yourself and the others you must smother the child to death.

Is it appropriate for you to smother the child in order to save yourself and the other neighbors from being killed?

Congruent

It is war time. Enemy soldiers have taken over your village. They have orders to capture all remaining civilians to make them work in a mine. You and some of your neighbors hide in the cellar of a large house. Outside you hear the voices of soldiers who have come to search the house for valuables. A baby with no parents begins to cry loudly. You cover her mouth to block the sound. If you remove your hand from her mouth the crying will get the attention of the soldiers who will capture you and the others hiding out in the cellar. To save yourself and the others from working you must smother the child to death.

Is it appropriate for you to smother the child in order to save yourself and the other neighbors from being captured?

Relationship

Incongruent

You are divorced now and your former spouse lives far away. You don't expect to see your former spouse for a very long time. However, you have recently started dating a new person that is wonderful. Your new partner is in love for the first time and you feel equally strong about your partner. You want to do everything in your power to keep the relationship moving smoothly. Unfortunately, your new partner has told you many times that dating someone who is divorced is forbidden in your partner's religion. Your partner doesn't know about your ex-spouse. You consider keeping your previous relationship a secret so that your current relationship can continue.

Is it appropriate for you to keep your previous relationship a secret in order to keep her/him happy and the relationship alive?

Congruent

You are divorced now and your former spouse lives far away. You don't expect to see your former spouse for a very long time. However, you have recently started dating a new person that is wonderful. Your new partner is in love for the first time and you feel equally strong about your partner. You want to do everything in your power to keep the relationship moving smoothly. Unfortunately, your ex-spouse gave you a very serious and incurable Sexually Transmitted Disease (STD). Your partner does not know about it. You consider keeping your disease a secret so that your current relationship can continue.

Is it appropriate for you to keep your disease a secret in order to keep her/him happy and the relationship alive?

Abortion

Incongruent

You are a surgeon. A young woman you know becomes pregnant, but her body reacts in an unusual way. She develops a severe disease that leads to dangerous increases in blood pressure. The only treatment is to deliver the baby. Unless the baby is delivered soon, the mother will die. However, the baby is too young to survive on its own. If the baby is delivered, it will die. So, although the decision is very difficult for her, the mother asks you to abort the baby.

Is it appropriate for you to perform an abortion in order to save the mother's life?

Congruent

You are a surgeon. A young woman you know becomes pregnant, but she is not ready for children. She has not finished high school, has no money, and was left by the father of the baby. If she has the baby now, she will be stuck as a poor single mother for the rest of her life. This will make things very hard on her and the baby. She thinks that it would be smarter to wait and have children later. So, although the decision is very difficult for her, she asks you to abort the baby.

Is it appropriate for you to perform an abortion in order to let the mother live a better life?

Torture

Incongruent

You are a police officer, and have recently caught a criminal you have been hunting for some time. He has made many bombs: some that have already exploded and some that have not exploded yet. He places bombs outside cafes and they explode when people are drinking coffee on the patios. He has injured many people and might injure many more. Now that the criminal is caught, you want to know where the unexploded bombs are so you can stop them. He refuses to talk, so you decide to use torture, such as holding his head under water and beating him, until he confesses.

Is it appropriate for you to use torture in order to find and stop the unexploded bombs?

Congruent

You are a police officer, and have recently caught a criminal you have been hunting for some time. He has made many bombs: some that have already exploded and some that have not exploded yet. He places explosives outside cafes and they explode when no one is around. His bombs are inside paint cans so that they spray nearby objects with paint. He has sprayed many cafes with paint and might spray many more. Now that the criminal is in custody, you want to know where the unexploded bombs are so you can stop them. He refuses to talk, so you decide to use torture, such as holding his head under water and beating him, until he confesses.

Is it appropriate for you to use torture in order to find and stop the unexploded bombs?

Vaccine Policy

Incongruent

You are a doctor in a health clinic full of patients with a serious disease. You just received a shipment of drugs that can cure the disease but the drugs have their own dangerous side effects. If you give the drugs to your patients, a small number will die from the side effects but most will live. If you do not, most will die from the disease.

Is it appropriate for you to give the drug to your patients?

Congruent

You are a doctor in a health clinic full of patients with the latest flu virus. You just received a shipment of drugs that can cure the flu but the drugs have their own dangerous side effects. If you give the drugs to your patients, a small number will die from the side effects but most will live. If you do not, most will continue to have the flu for some time.

Is it appropriate for you to give the drug to your patients?

Animal Research

Incongruent

You have been hired by a medical company to conduct research on their drugs. Since drugs must be safe for humans, they are first tried out on animals. Your job is to find out how various chemicals affect rats, pigeons, rabbits, and monkeys. Most chemicals have only minor effects on the animals, but some cause them pain or even permanent damage. The chemicals you are researching are supposed to be part of a new AIDS drug cocktail that will give new hope to millions of AIDS victims around the world. You anticipate saving many lives with the chemicals.

Is it appropriate to test these chemicals on animals?

Congruent

You have been hired by a medicine company to conduct research on their drugs. Since drugs must be safe for humans, they are first tried out on animals. Your job is to find out how various chemicals affect rats, pigeons, rabbits, and monkeys. Most chemicals have only minor effects on the animals, but some cause them pain or even permanent damage. The chemicals you are researching are supposed to be part of a new acne facial cleanser that will give new hope to people with pimples and greasy skin. You anticipate making many people feel better about their appearance with the chemicals.

Is it appropriate to test these chemicals on animals?

Border Crossing

Incongruent

You are a soldier guarding a border checkpoint between your nation and one troubled by violence and terrorism. You notice a young man in a cheap car approaching the checkpoint with a serious look on his face. You suspect he means to bomb the checkpoint, killing all the soldiers inside. He is quickly approaching your station.

Is it appropriate for you to shoot and kill the approaching man?

Congruent

You are a soldier guarding a border checkpoint between your nation and one troubled by violence and terrorism. You notice a young man in a cheap car approaching the checkpoint with a serious look on his face. You suspect he means to cross the border in order to work illegally inside your country. He is quickly approaching your station.

Is it appropriate for you to shoot and kill the approaching man?

9. Individual Difference Measures (Experiments 1 & 2)

Empathic Concern (Interpersonal Reactivity Index, Davis, 1983)

Using the scales, tell us how well each of the following statements describe you from 1 (does not describe me well) to 5 (describes me very well).

- When I see someone being taken advantage of, I feel kind of protective toward them.
- When I see someone being treated unfairly, I sometimes don't feel very much pity for them.
- I often have tender, concerned feelings for people less fortunate than me.
- I would describe myself as a pretty soft-hearted person.
- Sometimes I don't feel sorry for other people when they are having problems.
- Other people's misfortunes do not usually disturb me a great deal.
- I am often quite touched by things that I see happen.

Need for Cognition (Rational-Experiential Inventory, Epstein et al, 1996)

Using the scales, tell us how true each of the following statements are from 1 (completely false) to 5 (completely true).

- I don't like to have to do a lot of thinking.
- I try to avoid situations that require thinking in depth about something.
- I prefer to do something that challenges my thinking abilities rather than something that requires little thought.
- I prefer complex to simple problems.
- Thinking hard and for a long time about something gives me little satisfaction.

Cognitive Reflection Test (Fredrick, 2005; Baron, Scott, Fincher, & Metz, 2014)

Please answer the following questions.

- If John can drink one barrel of water in 6 days, and Mary can drink one barrel of water in 12 days, how long would it take them to drink one barrel of water together (in days)?
- Jerry received both the 15th highest and the 15th lowest mark in the class. How many students are in the class?
- All flowers have petals Roses have petals. If these two statements are true, can we conclude from them that roses are flowers? (Yes or No)
- Soup and salad cost $5.50 in total. The soup costs a dollar more than the salad. How much does the salad cost?
- Sally is making tea. Every hour, the concentration of the tea doubles. If it takes 6 hours for the tea to be ready, how long would it take for the tea to reach half of the final concentration (in hours)?

10. Language Prescreen Questionnaire (German/English version)

Select the languages you speak.

- ❑ English
- ❑ German
- ❑ French
- ❑ Spanish
- ❑ Other _____

What is your native language?

- ❑ English
- ❑ German
- ❑ Other (please specify): _____

Growing up, did you use English at home?

- ❍ Yes
- ❍ No

11. Language Proficiency Quizzes

Participants were randomly given one of the quizzes in the assigned language prior to completing the experiment and the other quiz in the other language after completing the experiment.

Please read the text below and answer the question. Maria is a student at a university. She receives financial aid, but the amount of money she gets depends on the quality of her grades, so if she fails a class, she receives less money to pay her tuition. This causes her stress, but she is enjoying her classes. Which of the following statements is TRUE?

- ❍ Maria is a teacher.
- ❍ Maria dislikes her courses.
- ❍ Maria does not receive financial aid and is paying for university by herself.
- ❍ Maria needs to have good grades to get more money to pay her tuition.

Please read the text below and answer the question. Adam is a cashier at a mall. He is very good at doing math in his head, so he often calculates the total without using the computer. This is usually a quick and efficient way of doing the job, but sometimes he makes mistakes. Which of the following statements is TRUE?

- ❍ Adam is the owner of a mall.
- ❍ Adam is bad at mental math.
- ❍ Adam is always making mistakes and so needs to use the computer.
- ❍ Adam often does the math in his head and is usually quite good at it.

12. Demographic Questionnaire (German/English version)
Please indicate your gender:

- ❍ Male
- ❍ Female

How old are you?

_____ years old

What is your country of origin?

- ❍ USA
- ❍ Germany
- ❍ Other (please specify): _____

What was the method of your English acquisition?

- ❍ Academic/Formal
- ❍ Both academic and linguistic immersion
- ❍ Linguistic immersion

At what age did you begin learning English in a meaningful way?

_____ years old

How many months have you spent in an English speaking country?

_____ months

Please use the sliders to indicate how proficient you are at:

In each of the following contexts, estimate what percent of the time you use English (%)