

Supplemental Material

Table S1

Pearson's r Correlations Between Psychological Measures and Interest in Donations in Experiments 1, 2, Replication of Experiment 1, and Experiments 4-6

Variable	1. (Interest in) Behavior change	2. Feelings of working together	3. Feelings of social pressure	4. Feelings of free choice
2. Feelings of working together	E1: .65*** E1R: .50*** E2: .35*** E4: .45*** E5: .57*** E6: .56***	-		
3. Feelings of social pressure	E2: -.05 E4: -.01 E5: -.14 ⁺ E6: -.15	E2: -.01 E4: .22** E5: .13 E6: .05	-	
4. Feelings of free choice	E2: -.04 E4: -.07 E5: .16 ⁺ E6: .28**	E2: -.09 E4: -.14* E5: -.03 E6: .21*	E2: -.43*** E4: -.55*** E5: -.38*** E6: -.21*	-

Note. E1=Experiment 1; E1R=Replication of Experiment 1; E2=Experiment 2; E4=Experiment 4; E5=Experiment 5; E6=Experiment 6. Although the zero-order correlations between feelings of social pressure and interest in changing behavior were non-significant or marginally significant, feelings of social pressure significantly predicted reduced interest in changing behavior once feelings of working together were controlled (see Figure 6). Collapsing across Experiments 4-6, the partial correlation between feelings of social pressure and interest in changing behavior was significant, $r(469)=-.19, p<.001$. (This excluded Experiment 2, where the donation measure was nonnormally distributed.) Controlling for feelings of working together reduced error variance; within that residual variance, feelings of social pressure predicted less interest in changing behavior (see Friedman & Wall, 2005; MacKinnon, Krull, & Lockwood, 2000).

⁺ $p<.10$, * $p<.05$, ** $p<.01$, *** $p<.001$.

Supplemental Parametric Analysis for Experiment 2

We conducted a parametric analysis of participants' donations using a one-way analysis of variance. It yielded the same results as the non-parametric analyses reported in the main text. There was a significant effect of the type of appeal, $F(2, 156)=5.66$, $p=.004$, $\eta_p^2=.07$. Participants donated more after viewing the working-together normative appeal ($M=1.79$) than after viewing either the normative-information appeal ($M=0.98$), $B=0.81$ [0.18, 1.44], $SE=0.32$, $t(156)=2.52$, $p=.013$, $d=0.44$ [0.04, 0.83], or the control condition ($M=0.79$), $B=1.00$ [0.38, 1.62], $SE=0.31$, $t(156)=3.20$, $p=.002$, $d=0.60$ [0.21, 0.99]. The latter conditions did not differ, $t(156)<1$, $p>.25$, $d=0.14$ [-0.24, 0.53].

Table S2

Percentage of Participants who Selected Each Donation Amount After Viewing either the Control Appeal, Normative-information Appeal, or Working-together Normative Appeal (Experiment 2)

	Control Appeal	Normative- Information Appeal	Working Together Normative Appeal
\$0	53.6%	60.8%	38.5%
\$1	26.8%	17.7%	26.9%
\$2	10.7%	3.9%	5.8%
\$3	7.1%	7.8%	1.9%
\$4	0%	0%	0%
\$5	1.8%	9.8%	26.9%
Mean (SD)	0.79 (1.09)	0.98 (1.61)	1.79 (2.07)
Median	0	0	1
Mode	0	0	0

Table S3*Condition Effects on Personal Behavior Change or Interest in Personal Behavior Change*

Experiment	Working together normative appeal vs. Control appeal		Normative-information appeal vs. Control appeal		Working together normative appeal vs. Normative-information appeal	
	<i>d</i>	<i>p</i>	<i>d</i>	<i>p</i>	<i>d</i>	<i>p</i>
Experiment 1: Interest in charitable giving (Haiti Relief Fund)	0.93 [0.27, 1.58]	.002	0.26 [-0.37, 0.88]	>.25	0.77 [0.12, 1.41]	.017
Replication of Experiment 1: Interest in charitable giving (Typhoon Haiyan)	N/A	N/A	N/A	N/A	0.59 [0.14, 1.04]	.009
Experiment 2: Actual charitable giving (Family Giving Tree)*	0.60 [0.21, 0.99]	.002	0.14 [-0.24, 0.53]	>.25	0.44 [0.04, 0.83]	.013
Experiment 3: Restroom-level paper towel use	N/A	N/A	N/A	N/A	0.29 [0.01, 0.58]	.045
Experiment 4: Interest in charitable giving (Family Giving Tree)	0.56 [0.21, 0.91]	<.001	0.08 [-0.27, 0.42]	>.25	0.51 [0.17, .085]	.003
Experiment 5: Interest in charitable giving (Family Giving Tree)	0.41 [0.02, 0.80]	.034	0.05 [-0.35, 0.44]	>.25	0.35 [-0.06, 0.76]	.072
Experiment 6: Interest in reducing personal carbon emissions	0.70 [0.21, 1.18]	.004	0.16 [0.27, 0.58]	>.25	0.50 [0.02, 0.98]	.027
Meta-analysis excluding Experiment 3	0.60 95% CI: [0.41, 0.79]	<.001	0.11 95% CI: [-0.07, 0.29]	.250	0.52 95% CI: [0.34, 0.69]	<.001
Meta-analysis including Experiment 3	N/A	N/A	N/A	N/A	0.46 95% CI: [0.31, 0.60]	<.001

* Although this outcome in Experiment 2 was not normally distributed, we include it here for comparison purposes. Meta-analytic results do not differ substantially omitting this study

Table S4

Condition Effects on Feelings of Working Together

Experiment	Working together normative appeal vs. Control appeal		Normative-information appeal vs. Control appeal		Working together normative appeal vs. Normative-information appeal	
	<i>d</i>	<i>p</i>	<i>d</i>	<i>p</i>	<i>d</i>	<i>p</i>
Experiment 1: Interest in charitable giving (Haiti Relief Fund)	1.12 [0.46, 1.79]	<.001	0.41 [-0.21, 1.04]	.178	0.64 [-0.00, 1.28]	.036
Replication of Experiment 1: Interest in charitable giving (Typhoon Haiyan)	N/A	N/A	N/A	N/A	0.53 [0.08, 0.98]	.019
Experiment 2: Actual charitable giving (Family Giving Tree)	0.67 [0.28, 1.07]	<.001	0.28 [-0.10, 0.67]	.192	0.45 [0.06, 0.85]	.020
Pilot Study for Experiment 3: Reduction in paper towel usage	N/A	N/A	N/A	N/A	0.56 [0.01, 1.11]	.046
Experiment 4: Interest in charitable giving (Family Giving Tree)	1.00 [0.63, 1.36]	<.001	0.72 [0.36, 1.08]	<.001	0.32 [-0.02, 0.66]	.055
Experiment 5: Interest in charitable giving (Family Giving Tree)	1.01 [0.60, 1.42]	<.001	1.04 [0.62, 1.46]	<.001	0.06 [-0.35, 0.46]	>.25
Experiment 6: Interest in reducing personal carbon emissions	0.89 [0.40, 1.38]	<.001	0.47 [0.04, 0.90]	.048	0.47 [-0.01, 0.95]	.038
Meta-analysis	0.93 95% CI: [0.73, 1.12]	<.001	0.55 95% CI: [0.30, 0.80]	<.001	0.39 95% CI: [0.23, 0.54]	<.001

Table S5*Condition Effects on Feelings of Social Pressure*

Experiment	Working together normative appeal vs. Control appeal		Normative-information appeal vs. Control appeal		Working together normative appeal vs. Normative-information appeal	
	<i>d</i>	<i>p</i>	<i>d</i>	<i>p</i>	<i>d</i>	<i>p</i>
Experiment 2: Charitable giving (Family Giving Tree)	0.41 [0.02, 0.79]	.059	0.70 [0.31, 1.10]	<.001	-0.39 [-0.79, 0.00]	.047
Experiment 4: Charitable giving (Family Giving Tree)	0.30 [-.05, 0.65]	.086	0.81 [0.45, 1.17]	<.001	-0.47 [-0.81, -0.13]	.005
Experiment 5: Charitable giving (Family Giving Tree)	0.26 [-0.13, 0.65]	.196	0.86 [0.45, 1.27]	<.001	-0.59 [-1.00, -0.18]	.003
Experiment 6: Personal carbon emissions	0.06 [-0.41, 0.53]	>.25	0.45 [0.02, 0.87]	.029	-0.41 [-0.89, 0.07]	.082
Meta-analysis	0.26 95% CI: [0.07, 0.45]	.008	0.73 95% CI: [0.53, 0.92]	<.001	-0.48 95% CI: [-0.67, -0.28]	<.001

Table S6*Condition Effects on Feelings of Free Choice*

Experiment	Working together normative appeal vs. Control appeal		Normative-information appeal vs. Control appeal		Working together normative appeal vs. Normative-information appeal	
	<i>d</i>	<i>p</i>	<i>d</i>	<i>p</i>	<i>d</i>	<i>p</i>
Experiment 2: Charitable giving (Family Giving Tree)	-0.13 [-0.51, 0.26]	>.25	-0.44 [-0.82, -0.05]	0.019	0.33 [-0.07, 0.72]	.079
Experiment 4: Charitable giving (Family Giving Tree)	-0.34 [-0.69, 0.01]	.047	-0.67 [-1.03, -0.32]	<0.001	0.32 [-0.02, 0.65]	.066
Experiment 5: Charitable giving (Family Giving Tree)	-0.17 [-0.56, 0.22]	>.25	-0.45 [-0.85, -0.05]	0.018	0.32 [-0.08, 0.73]	.129
Experiment 6: Personal carbon emissions	0.65 [0.17, 1.13]	.009	0.11 [-0.31, 0.54]	>0.25	0.52 [0.04, 1.00]	.035
Meta-analysis	-0.02 95% CI: [-0.42, 0.37]	>.25	-0.38 95% CI: [-0.70, -0.05]	0.020	0.35 95% CI: [0.16, 0.55]	<.001

Appendix S1: Complete list of items for all scales used in Experiment 1

Interest in donating, 1=*not at all*, 7=*extremely* ($r=.92$)

1. If you saw this flier, how much would you want to donate to this charity?
2. If you saw this flier, how much would you feel like donating to this charity?

Feelings of working together in donating, 1=*not at all*, 7=*extremely* ($\alpha=.94$)

1. To what extent do you feel like donating to this charity is something done together with other Stanford students?
2. To what extent do you feel like donating to this charity is something shared with other Stanford students?
3. To what extent do you feel like donating to this charity involves a sense of togetherness with other Stanford students?

Perceived descriptive norm, 1=*not at all*, 7=*extremely* ($\alpha=.85$)

1. How common do you think it is for Stanford students to donate to this charity?
2. How often do you think Stanford students make an effort to donate to this charity?
3. How many Stanford students do you think make an effort to donate to this charity?

Perceived injunctive norm, 1=*not at all*, 7=*extremely* ($r=.65$)

1. How much do you think Stanford students think that it is a good idea to donate to this charity?
2. How much do you think Stanford students think you should make an effort to donate to this charity?

Flier appearance, 1=*not at all*, 7=*extremely*

1. How easy to understand is this flier?
2. How clear is this flier?
3. How attractive is this flier?
4. How eye-catching is this flier?
5. How pleasing is this flier to look at?

Appendix S2: Additional results for the replication of Experiment 1

The replication study included a second, exploratory manipulation in which a series of word-search tasks primed either affiliation (e.g., “friend”) or not (e.g., “street”). As noted in the manuscript, this did not affect the primary outcomes and results are similar when controlling for this variable. Here we report the results including this variable.

When controlling for this variable, again the working-together normative appeal generated greater feelings of working together, $B=0.60$ [0.10, 1.10], $SE=0.25$, $t(79)=2.39$, $p=.020$, and greater interest in donating, $B=0.59$ [0.15, 1.04], $SE=0.22$, $t(79)=2.66$, $p=.010$. Again, the mediating path was significant, 95% CI: [0.05, 0.50]. The working-together normative appeal did not affect in-group identification, $t<1$, $p>.25$.

The affiliation prime did not affect either feelings of working together, $B=-0.09$ [-0.60, 0.41], $SE=0.25$, $t(79)=-0.36$, $p=.721$, or interest in donating, $B=0.18$ [-0.27, 0.63], $SE=0.22$, $t(79)=0.80$, $p=.427$. Nor did it interact with the working-together vs. normative-information appeal when it came to predicting feelings of working together, $B=-0.30$ [-1.31, 0.72], $SE=0.51$, $t(78)=-0.58$, $p=.562$, or predicting interest in donating, $B=-0.39$ [-1.29, 0.50], $SE=0.45$, $t(78)=-0.88$, $p=.382$.

Appendix S3: Complete list of items for all scales used in Experiment 2

Donation behavior

1. Would you like to donate to the Family Giving Tree? You will receive \$5 for participating in this study. Please select the number of \$1 bills that you would like to donate to the Family Giving Tree below. You will receive the remaining money as an Amazon gift card. All money donated from participants in this study will be sent by the researchers to the Family Giving Tree when the study closes.

\$0
 \$1 
 \$2 
 \$3 
 \$4 
 \$5 

Feelings of working together in donating, 1=*not at all*, 7=*extremely* ($\alpha=.85$)

1. To what extent do you feel like donating to this charity is something done together with other Stanford students?
2. To what extent do you feel like donating to this charity is something shared with other Stanford students?
3. To what extent do you feel like donating to this charity involves a sense of togetherness with other Stanford students?

Feelings of social pressure to donate, 1=*not at all*, 7=*extremely* ($\alpha=.81$)

1. To what extent do you feel annoyed that you are being asked to donate to this charity?
2. To what extent do you feel you are being pressured to donate to this charity?
3. To what extent do you feel like people are trying to manipulate you into donating to this charity?

Feelings of freely choosing to donate, 1=*not at all*, 7=*extremely* ($r=.68$)

1. To what extent do you feel you can choose freely to donate to this charity?
2. To what extent do you feel you can decide on your own to donate to this charity?

Perceived descriptive norm ($\alpha=.81$)

1. How common do you think it is for Stanford students to donate to this charity? (1=*not at all common*, 5=*extremely common*)

2. How often do you think Stanford students make an effort to donate to this charity?
(1=*almost never*, 5=*almost all of the time*)
3. How many Stanford students do you think make an effort to donate to this charity?
(1=*none*, 5=*a great deal*)

Perceived injunctive norm, 1=*not at all*, 5=*a great deal* ($\alpha=.76$)

1. How much do you think Stanford students think that it is a good idea to donate to this charity?
2. How much do you think Stanford students think you ought to make an effort to donate to this charity?
3. How much do you think Stanford students think you should make an effort to donate to this charity?

Group identification, 1=*not at all*, 7=*extremely* ($\alpha=.73$)

1. How strongly do you identify with your friends and peers at Stanford University?
2. How important is being a Stanford student to your identity?
3. How important is being similar to Stanford students to you?

Appendix S4: Complete list of items for all scales used in Experiments 4 and 5

Interest in donating, 1=*not at all*, 7=*extremely* ($r_4=.72$, $r_5=.75$)

1. If you saw this flier, how much would you want to donate to this charity?
2. If you saw this flier, how much would you feel like donating to this charity?

Feelings of working together in donating, 1=*not at all*, 7=*extremely* ($\alpha_4=.91$, $\alpha_5=.91$)

1. If you donated to this charity, to what extent would you feel like you are donating together with other Stanford students?
2. If you donated to this charity, to what extent would you feel like you are doing something that is shared with other Stanford students?
3. If you donated to this charity, to what extent would you feel a sense of togetherness with other Stanford students?

Feelings of social pressure to donate, 1=*not at all*, 7=*extremely* ($\alpha_4=.82$, $\alpha_5=.77$)

1. If you saw this flier, to what extent would you feel that you were being pressured to donate to this charity?
2. If you saw this flier, to what extent would you feel like people were trying to manipulate you into donating to this charity?
3. If you saw this flier, to what extent would you feel annoyed that you were being asked to donate to this charity?

Feelings of freely choosing to donate, 1=*not at all*, 7=*extremely* ($r_4=.67$, $r_5=.67$)

1. If you donated to this charity after seeing this flier, to what extent would you feel you had freely chosen to donate to this charity?
2. If you donated to this charity after seeing this flier, to what extent would you feel you had decided on your own to donate to this charity?

Perceived descriptive norm ($\alpha_4=.77$, $\alpha_5=.76$)

1. How common do you think it is for Stanford students to donate to this charity? (1=*not at all common*, 5=*extremely common*)
2. How often do you think Stanford students donate to this charity? (1=*almost never*, 5=*almost all of the time*)
3. How many Stanford students do you think donate to this charity? (1=*none*, 5=*a great deal*)

Perceived injunctive norm, 1=*not at all*, 5=*a great deal* ($\alpha_4=.74$, $\alpha_5=.78$)

1. How much do you think Stanford students think that it is a good idea to donate to this charity?
2. How much do you think Stanford students think you ought to donate to this charity?
3. How much do you think Stanford students think you should donate to this charity?

Group identification, 1=*not at all*, 7=*extremely* ($\alpha_4=.54$, $\alpha_5=.72$)

4. How strongly do you identify with your friends and peers at Stanford University?
5. How important is being a Stanford student to your identity?
6. How important is being similar to Stanford students to you?

Appendix S5: Complete list of items for all scales used in Experiment 6.

Interest in reducing carbon emissions, 1=*not at all*, 7=*extremely* ($\alpha=.89$)

1. How interested are you in reducing your carbon emissions?
2. If you saw this flier, how much would you want to make an effort to reduce your carbon emissions?
3. If you saw this flier, how much would you feel like making an effort to reduce your carbon emissions?
4. If you saw this flier, how interested would it make you in finding out more about the group “Students for Cardinal Green?”

Feelings of working together in reducing carbon emissions, 1=*not at all*, 7=*extremely* ($\alpha=.93$)

1. If you reduced your carbon emissions after seeing this flier, to what extent would you feel like you are working together with other Stanford students?
2. If you reduced your carbon emissions after seeing this flier, to what extent would you feel like you are doing something that is shared with other Stanford students?
3. If you reduced your carbon emissions after seeing this flier, to what extent would you feel a sense of togetherness with other Stanford students in your efforts to do this?

Feelings of social pressure to reduce carbon emissions, 1=*not at all*, 7=*extremely* ($\alpha=.79$)

1. If you saw this flier, to what extent would you feel that you were being pressured to make an effort to reduce your carbon emissions?
2. If you saw this flier, to what extent would you feel like people were trying to manipulate you into making an effort to reduce your carbon emissions?
3. If you saw this flier, to what extent would you feel annoyed that you were being asked to make an effort to reduce your carbon emissions?

Feelings of freely choosing to reduce carbon emissions, 1=*not at all*, 7=*extremely* ($r=.68$)

1. If you donated to this charity after seeing this flier, to what extent would you feel you had chosen freely to make an effort to reduce your carbon emissions?
2. If you donated to this charity after seeing this flier, to what extent would you feel you had decided on your own to make an effort to reduce your carbon emissions?

Perceived descriptive norm ($\alpha=.82$)

1. How common do you think it is for Stanford students to make an effort to reduce their carbon emissions? (1=*not at all common*, 5=*extremely common*)
2. How often do you think Stanford students make an effort to reduce their carbon emissions? (1=*almost never*, 5=*almost all of the time*)
3. How many Stanford students do you think make an effort to reduce their carbon emissions? (1=*none*, 5=*a great deal*)

Perceived injunctive norm, 1=*not at all*, 5=*a great deal* ($\alpha=.73$)

1. How much do you think Stanford students think that it is a good idea to make an effort to reduce your carbon emissions?
2. How much do you think Stanford students think you ought to make an effort to reduce your carbon emissions?

3. How much do you think Stanford students think you should make an effort to reduce your carbon emissions?

Group identification, 1=*not at all*, 7=*extremely* ($\alpha=.76$)

7. How strongly do you identify with your friends and peers at Stanford University?
8. How important is being a Stanford student to your identity?
9. How important is being similar to Stanford students to you?

Appendix S6: Supplemental Omnibus Mediation Models

In the main manuscript, we presented the results of an omnibus mediation model simultaneously testing feelings of working together, feelings of social pressure, and feelings of free choice as possible mediators of the effect on interest in changing behavior across Experiments 4-6. This was done to maximize statistical power and achieve the most robust analysis. However, we also conducted omnibus mediation models separately for Experiments 4-6 (see Figures S6-S8). Each model was conducted using the same procedures as the analysis presented in the main manuscript and yielded similar results.

We also conducted an omnibus mediation model combining Experiments 2 and 4-6. As noted, Experiment 2 was not included in the primary analysis because in that study the psychological measures were assessed after participants had already chosen to donate to the cause or not, which could have affected their responses (see Footnote 7 in the main text); moreover, the outcome variable was non-normal (see Table S2, Figure 2). Nonetheless, combining Experiment 2 with Experiments 4-6 and using the same model as the analysis presented in the main manuscript, we found similar results. See Figure S3.

We also provide an omnibus mediation model for Experiment 2 on its own. As noted, statistical tests of mediation were not the focus of Experiment 2, both because the outcome was not normally distributed and because the process measures followed a behavior, which may have altered responses. However, for completeness we tested the same omnibus mediation model as in Experiments 4-6 using parametric analyses (i.e., predicting the mean donation amount for each of the conditions). As in those studies, the mediating path from the working-together normative appeal (versus normative-information appeal) through feelings of working together was significant, 95% CI: [0.01, 0.43]. However, in Experiment 2, feelings of pressure did not predict the amount donated, $B=-0.08$ [-0.26, 0.10], $SE=0.09$, $z=-0.85$, $p>.25$, and the mediating path was also not significant, 95% CI: [-0.07, 0.16]. See Figure S9.

We suspect that this reflects a way in which participants' responses to the self-report items were altered by their behavior. In Experiment 2, all participants decided how much they would like to donate to the charity before they responded to any of the questions assessing the mediators. We believe the order in which measures were assessed mattered in Experiment 2, compared to the primary process experiments, because actual behavior rather than behavioral intentions was assessed. As research on cognitive dissonance shows, people can change their attitudes to align with a behavior they have already performed (e.g., Festinger, 1957). If a person decides to donate to a cause or not to donate, he or she may answer questions related to the process of donating differently to justify that decision.

The primary purpose of Experiment 2 was to test the effect on actual donations. Therefore, we asked all participants if and how much they would like to donate before the process measures. This ensured that donation decisions were not biased by measures of secondary interest. Yet this order allows participants' behavior to influence responses to process questions.

Suppose a person had decided *not* to donate, perhaps in reactance to felt pressure to do so. Having declined to donate, this social pressure may be alleviated and no longer present. The person might also be motivated to dismiss pressure they experienced to protect their sense of autonomy. Such processes could undermine the integrity of the process measures in Experiment 2 and may explain why feelings of social pressure did not mediate in this study, unlike all of the primary process studies.

The assessment of behavior also led to measurement issues, as the outcome was not normally distributed (see Fig. 2).

However, we cannot rule out the possibility that feelings of working together simply are more influential in mediating actual behavior than feelings of social pressure.

To complement the parametric mediation analysis conducted for Experiment 2, we used the *test_mediation* function from the R package *robmed* (Alfons, 2019) to conduct a non-parametric mediation analysis (i.e., predicting the median donation amount by condition instead of the mean). As in the parametric mediation analysis, feelings of working together predicted the amount donated, $B=0.44$, $SE=0.12$, $z=3.66$, $p<.001$, and the mediating path from the working-together normative appeal (versus normative-information appeal) through feelings of working together was significant, 95% CI: [0.02, 0.50]. However, also as in the parametric mediation analysis, feelings of pressure did not predict the amount donated, $B=-0.08$, $SE=0.08$, $z=-0.96$, $p>.25$, and the mediating path was also not significant, 95% CI: [-0.05, 0.18].

Appendix S7: Comparison of White and Asian American Participants' Responses

As noted in the main text, the fear of being subsumed by the group looms especially large in Western cultures, where the self is defined as apart from others. Thus, independent selves may be particularly attuned to instances of social pressure. In interdependent cultures, where the self is defined more by connections with others, this fear and corresponding reactance to social pressure may be less significant. For example, East Asians have a lower need for uniqueness than Westerners (Aaker & Schmitt, 2001). And, people from interdependent cultures show less reactance in response to threats to individual freedom (e.g., Hamedani, Markus, & Fu, 2013; Iyengar & Lepper, 1999; Jonas, Graupmann, Kayser, Zanna, Traut-Mattausch, & Frey, 2009; Kim, Baek, Yoon, Oh, & Choi, 2017; Savani, Markus, & Conner, 2008). When the self is defined more by relationships, social pressures and obligations may be routine experiences, not threats to be warded off to preserve an independent self (e.g., Markus & Kitayama, 2010).

If independent selves have heightened sensitivity to instances of social pressure, they may experience greater increases in feelings of social pressure in response to norm-only appeals. They might also show stronger negative responses to experiences of social pressure (i.e., a stronger negative correlation with interest in behavior change).

However, if, in both cultural contexts people share a motivation to work with others toward common goals (see discussion in Carr & Walton, 2014), they may be similarly responsive to cues that imply this opportunity.

Methods. We can begin to examine these possibilities in our current data, by comparing White Americans with Asian Americans. Although both groups are situated in the American cultural context, Asian Americans may be somewhat less independent than White Americans (e.g., Oyserman, Coon, & Kimmelmeier, 2002). We conducted a meta-analysis across the three studies where we measured the three process measures of interest (Experiments 4-6). In these studies, 151 participants (32.0%) reported their race as White and 139 (29.4%) reported their race as Asian. We omitted Experiment 2 since the process measures were assessed after participants had made their donation decisions in this study. These analyses exclude non-Asian, non-White participants, as comparing Asians and Whites provides the clearest theoretical test (but see the discussion below and Table S7 for effects among participants who identified as another race or as multiracial).

Behavioral Interest. Examining behavioral interest, there was a significant race \times condition interaction, $F_{\text{Interaction}}(2,284)=4.82, p=.009$ (see Table S7A). The normative-information appeal did not increase behavioral interest relative to the control appeal for either Asians, $B=0.25, 95\% \text{ CI: } [-0.19, 0.69], SE=0.22, t(284)=1.12, p>.25$, or Whites, $B=0.08, 95\% \text{ CI: } [-0.34, 0.51], SE=0.22, t(284)=0.38, p>.25$. The interaction between race and the control vs. normative-information condition was not significant, $B=-0.16, 95\% \text{ CI: } [-0.77, 0.44], SE=0.31, t(284)=-0.54, p>.25$. However, the interaction between race and the normative-information vs. norm + working-together condition was significant, $B=-0.97, 95\% \text{ CI: } [-1.63, -0.32], SE=0.33, t(284)=-2.94, p=.004$. The working-together normative appeal increased behavioral interest relative to the normative-information appeal for Whites, $B=0.92, 95\% \text{ CI: } [0.48, 1.35], SE=0.22, t(284)=4.16, p<.001$, but not for Asians, $B=-0.06, 95\% \text{ CI: } [-0.54, 0.43], SE=0.25, t(284)=-0.23, p>.25$. Thus, Whites were more responsive to the working-together normative appeals, consistent with the idea that these appeals are more potent in independent cultures than interdependent cultures.

Feelings of Working Together. Examining feelings of working together, there was no race \times condition interaction, $F_{\text{Interaction}}(2,284)=1.40, p=.248$ (see Table S7B). There was also no difference overall in feelings of working together by race, across conditions ($M_{\text{Asian}} = 2.91; M_{\text{White}} =$

3.07), $t(288)=-1.00$, $p>.25$, and no difference within any condition, all $t_s<1.10$, all $p_s>.25$. See means and standard deviations below.

The correlation between feelings of working together and behavioral interest also did not differ by race. It was significant for Asians $r(137)=.53$, $p<.001$, and for Whites, $r(149)=.58$, $p<.001$. Feelings of working together thus arose similarly and motivated behavior similarly across groups.

Feelings of Social Pressure. Next, we examined feelings of social pressure. There was a significant race \times condition interaction, $F_{Interaction}(2,284)=4.05$, $p=.018$ (see Table S7C). Consistent with the idea that social pressure and obligation are routine in interdependent cultures, in the control condition Asians reported greater social pressure than Whites, $B=0.57$, 95% CI: [0.10, 1.04], $SE=0.24$, $t(284)=2.40$, $p=.017$.

The interaction between race and the control vs. normative-information condition was significant, $B=-0.97$, 95% CI: [-1.65, -0.29], $SE=0.34$, $t(284)=-2.81$, $p=.005$. In the normative-information condition, feelings of social pressure rose significantly (relative to the control condition) for Whites, $B=1.35$, 95% CI: [0.88, 1.82], $SE=0.24$, $t(284)=5.62$, $p<.001$, but not for Asians, $B=0.40$, 95% CI: [-0.11, 0.87], $SE=0.25$, $t(284)=1.54$, $p=.126$. In the normative-information condition, the group difference reversed, with Whites reporting non-significantly greater social pressure than Asians, $B=0.40$, 95% CI: [-0.09, 0.89], $SE=0.25$, $t(284)=1.59$, $p=.112$.

The interaction between race and the norm-only vs. norm + working together appeal condition was not significant, $B=0.37$, 95% CI: [-0.36, 1.10], $SE=0.37$, $t(284)=0.99$, $p>.25$. In the norm + working together condition, feelings of social pressure dropped (relative to the normative-information condition) significantly for Whites, $t(284)=-3.36$, $p<.001$, and marginally for Asians, $t(284)=-1.66$, $p=.098$.

We examined the partial correlation between feelings of social pressure and behavioral interest controlling for feelings of working together, because the two predictors were not strongly correlated (overall: $r(470)=.12$, $p=.007$; for Whites: $r(149)=0.12$, $p=.155$; for Asians: $r(137)=.08$, $p=.361$) and we wished to understand the variance predicted by feelings of social pressure above and beyond variance related to feelings of working together. This correlation was moderate overall, $r(470)=-.19$, $p<.001$. It was marginally significant for Whites, $r(149)=-.14$, $p=.094$, and non-significant for Asians, $r(137)=-.07$, $p=.416$. (The partial correlations between feelings of working together and behavioral interest accounting for social pressure are similar to the zero-order correlations: overall, $r(470)=.56$, $p<.001$; for Whites, $r(149)=.59$, $p<.001$; and for Asians, $r(137)=.53$, $p<.001$.)

Table S7

Means by Appeal Type and Race of Participants (Combining Data from Experiments 4-6)

	Race of Participants		
	White Americans ($N=151$)	Asian Americans ($N=139$)	Multiracial or Other- Race Americans ($N=170$)
<i>A. Self-Reported Interest in Behavior Change</i>			
Control Appeals	2.76 ^a	2.65 ^a	2.71 ^a

Normative- Information Appeals	2.84 ^a	2.90 ^a	2.80 ^a
Working-Together Normative Appeals	3.76 ^b	2.84 ^a	3.34 ^b

B. Feelings of Working Together

Control Appeals	2.29 ^a	2.54 ^a	2.16 ^a
Normative- Information Appeals	3.22 ^b	2.96 ^a	3.45 ^b
Working-Together Normative Appeals	3.75 ^c	3.42 ^b	3.57 ^b

C. Feelings of Social Pressure

Control Appeals	2.22 ^a	2.79 ^a	2.43 ^a
Normative- Information Appeals	3.56 ^b	3.17 ^a	3.50 ^b
Working-Together Normative Appeals	2.74 ^c	2.71 ^a	2.89 ^a

Note. Means in the same column within outcome with different superscripts indicate significant differences at $p < .05$. An asterisk indicates that the comparison between means with the same superscript is marginally significant.

Feelings of Free Choice. Race did not moderate the effect of normative appeal condition on feelings of free choice, $F_{\text{interaction}}(2,284) = .77, p > .25$.

Effects Among Participants from Other Racial Backgrounds. We examined participants who identified as multiracial (including White/Asian biracial) or another race (e.g., Black or Hispanic) together as there were too few Black ($N=38$) or Hispanic ($N=39$) participants across Experiments 4-6 to reliably examine these groups separately.

Like White participants, this subset of participants showed increased interest in behavior change in response to working-together normative appeals relative to both the normative-information appeal, $B=0.54, 95\% \text{ CI: } [0.09, 0.98], SE=0.22, t(167)=2.38, p=.018$, and the control appeal, $B=0.63, 95\% \text{ CI: } [0.18, 1.08], SE=0.23, t(167)=2.76, p=.007$.

Examining the process measures, we found that working-together normative appeals increased feelings of working together for this group as compared to control appeals, $B=1.41, 95\% \text{ CI: } [0.90, 1.92], SE=0.26, t(167)=5.43, p < .001$, as did normative information appeals, $B=1.30, 95\% \text{ CI: } [0.76, 1.83], SE=0.27, t(167)=4.75, p < .001$. But normative-information appeals also particularly increased feelings of social pressure in this group relative to the control appeals, $B=1.07, 95\% \text{ CI: } [0.52, 1.61], SE=0.28, t(167)=3.85, p < .001$, as they did among White participants. Thus, for this group too, it seems normative-information appeals backfired because they induced aversive social pressure.

Summary. Consistent with a cultural analysis, these results suggest that White Americans were particularly responsive to implied social pressure in normative-information appeals. They reported little social pressure in the control condition but spiked highest in the normative-information condition. But working-together normative appeals were similarly effective at mitigating felt social pressure for both Asians and Whites. Moreover, feelings of social pressure if anything predicted less interest in behavior change more strongly for Whites

than for Asians. However, the positive effects of working-together normative appeals on interest in behavior change were not restricted to White participants. They were also apparent among participants who identified as multiracial (including White/Asian biracial) or another race (e.g., Black or Hispanic).

Figure S1

Fliers Appealing for Donations to the Family Giving Tree in Experiments 2 and 4 including (a) the Control Appeal, (b) the Normative-information Appeal, and (c) the Working-together Normative Appeal

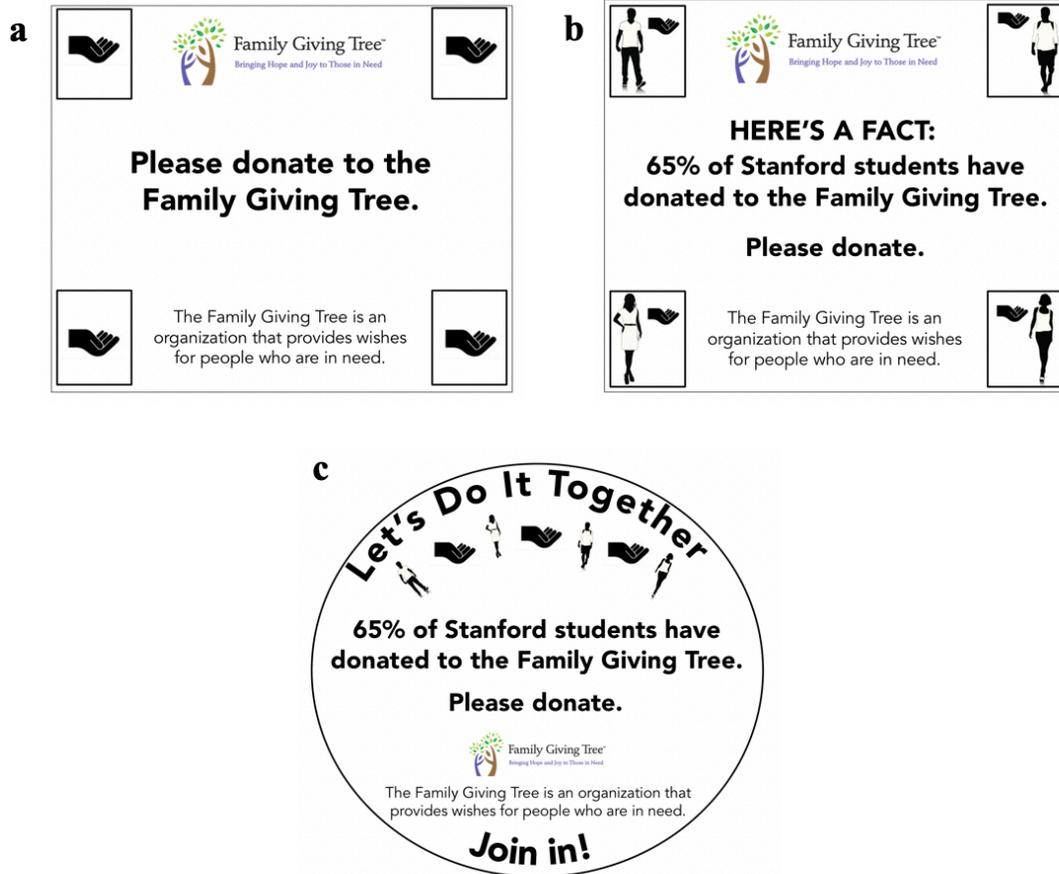


Figure S2

Stickers Appealing for Reduced Paper-towel used in Experiment 3 including (a) the Normative-information Appeal and (b) the Working-together Normative Appeal

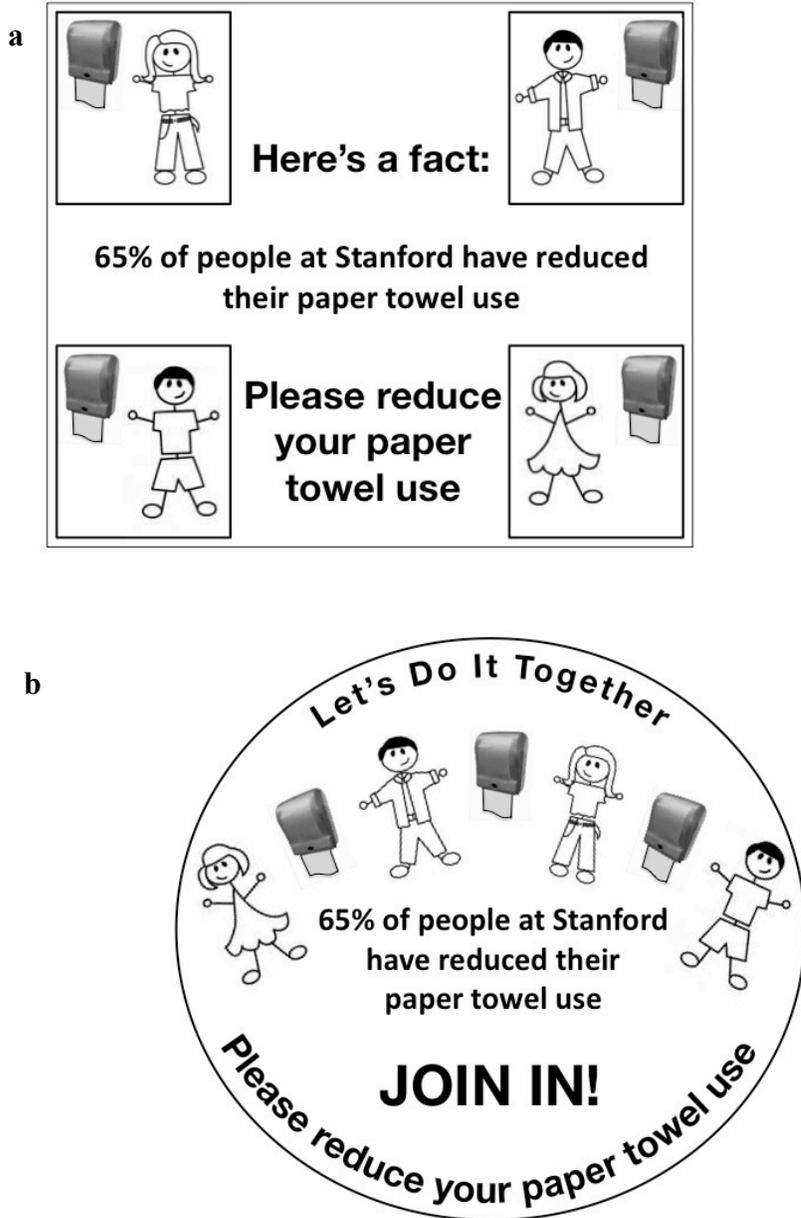
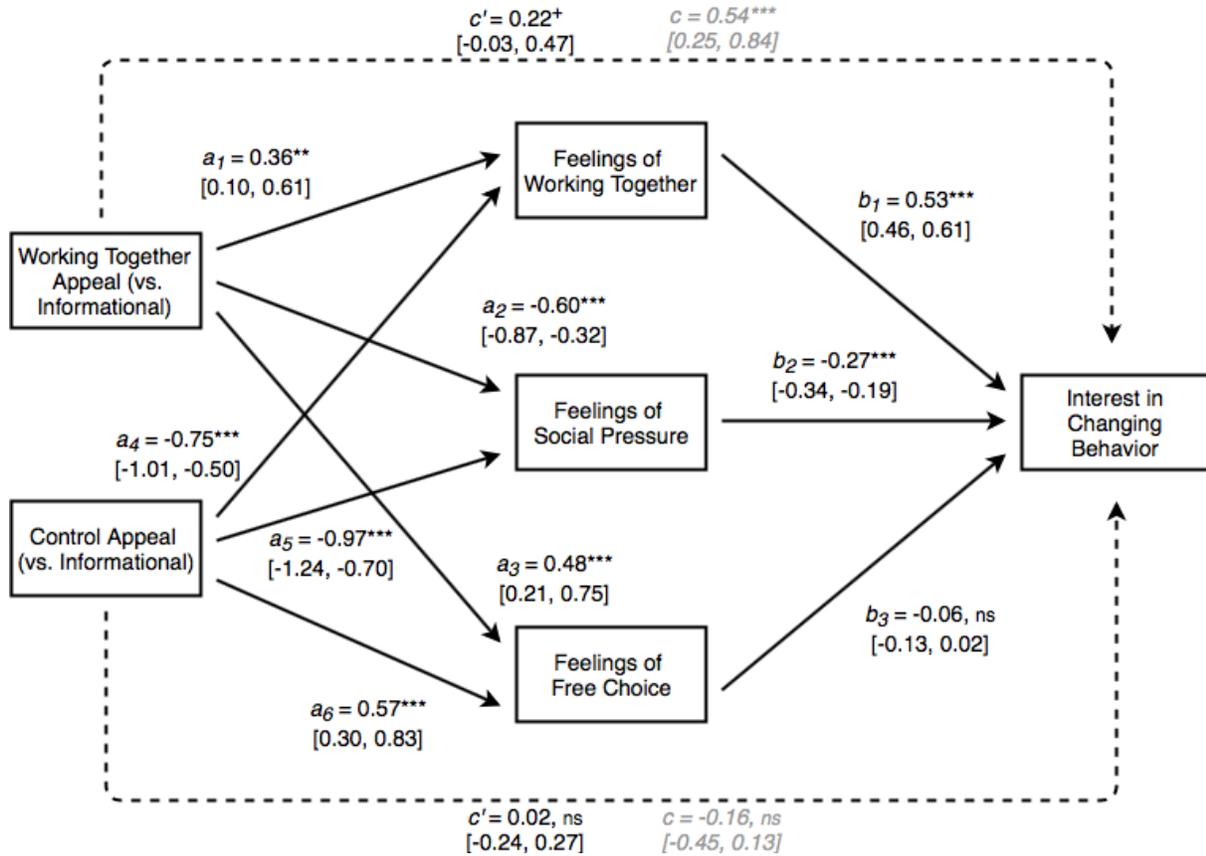


Figure S3

Omnibus Mediation Model Collapsing Across Experiments 2 and 4-6



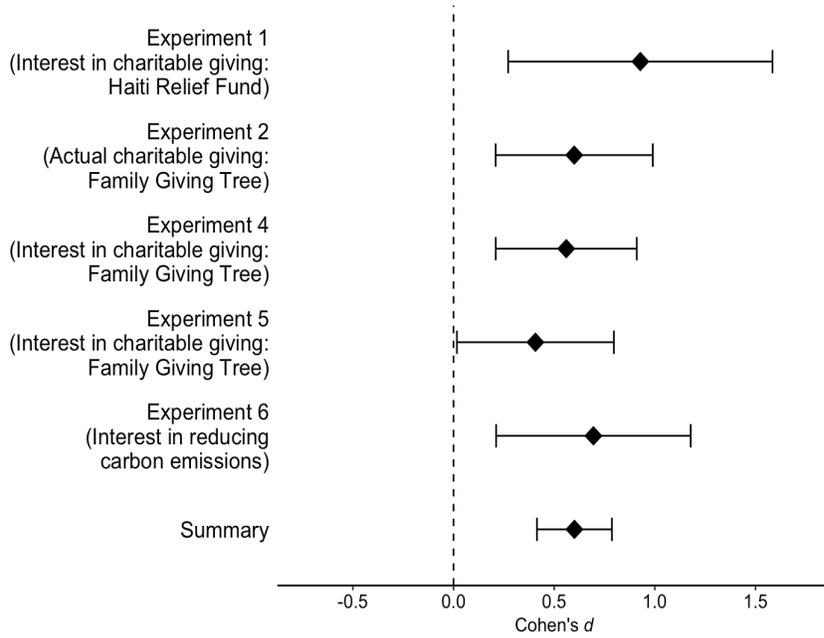
Note. $N=636$. All estimates are unstandardized regression coefficients. 95% confidence intervals for estimates are presented in brackets. The a paths represent the effect of the causal variable on the mediator (a_1 - a_3 is the effect of the working-together appeal on the mediators compared to the normative-information appeal, a_4 - a_6 is the effect of the control appeal on the mediators compared to the normative-information appeal), the b paths represent the effect of the mediator on the outcome variable, the c paths represents the total effect, and the c' paths (dotted lines) represent the direct effect (the effect of appeal condition on interest in donating controlling for the mediators).

ns $p > .10$, $+$ $p < .10$, $*$ $p < .05$, $**$ $p < .010$, $***$ $p < .001$

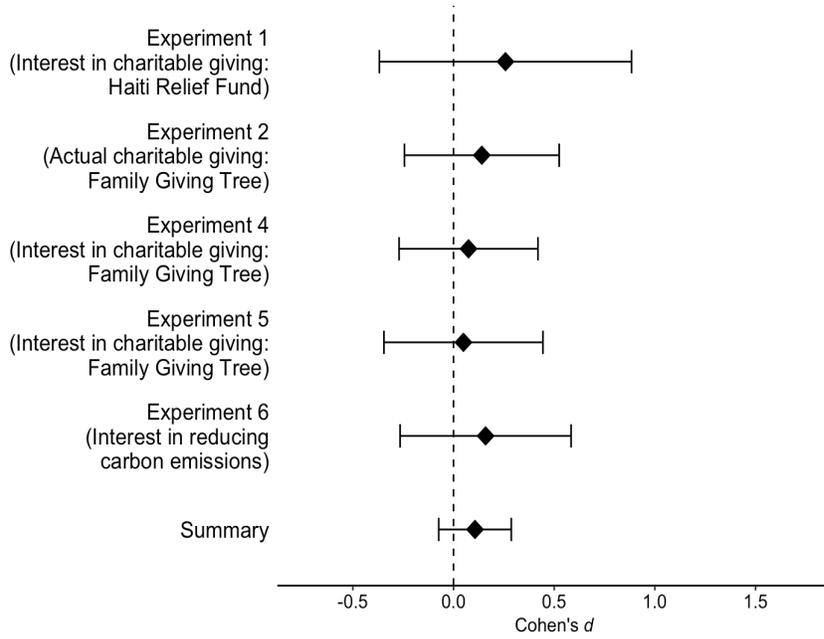
Figure S4

Condition Effects on Personal Behavior Change or Interest in Personal Behavior Change

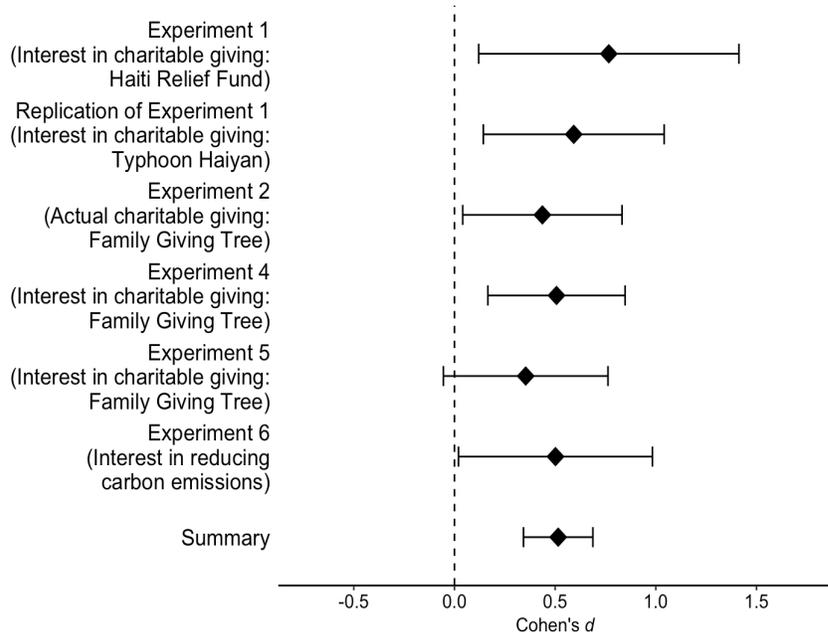
(A) Working-together normative appeals vs. control



(B) Normative-information appeals vs. control appeals



(C) Working-together normative appeals vs. normative-information appeals

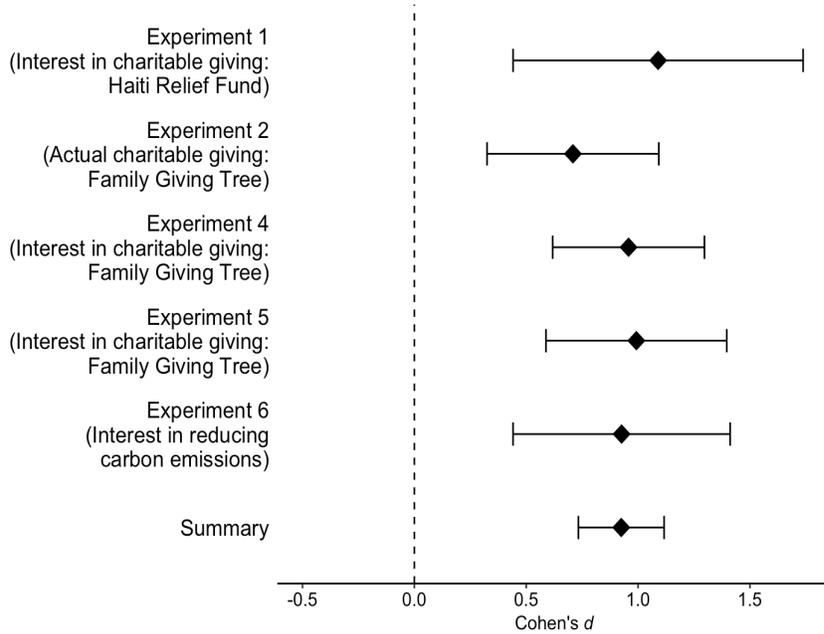


Note. Experiment 3 is excluded from this analysis, as it examined restroom-level change in paper-towel use, not personal behavior, but see Table S3 for an analysis including this study. Error bars represent 95% confidence intervals.

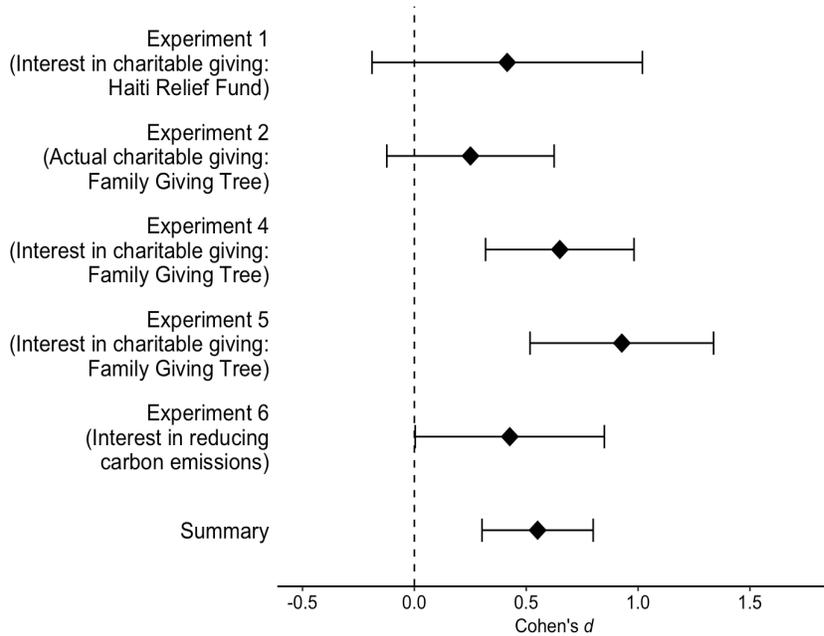
Figure S5

Condition Effects on Feelings of Working Together

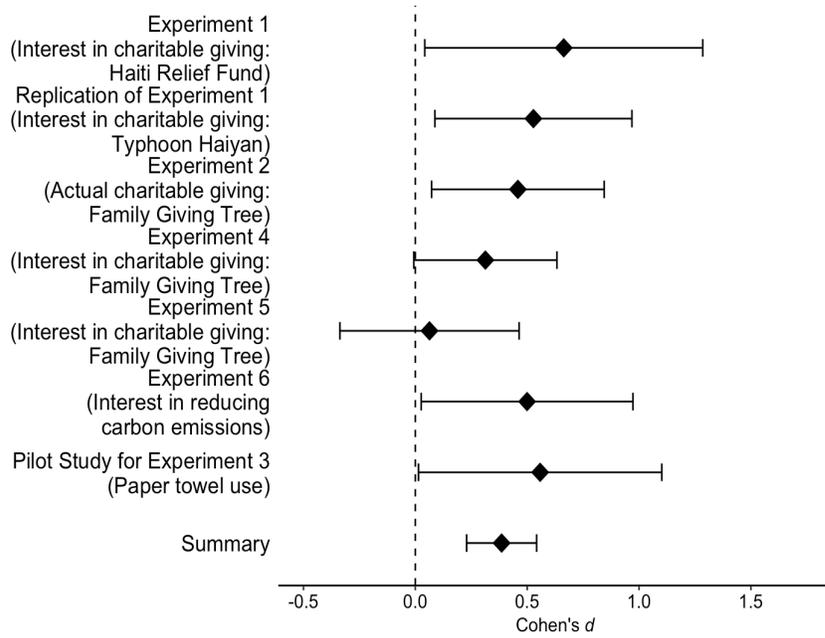
(A) Working-together normative appeals vs. control



(B) Normative-information appeals vs. control appeals



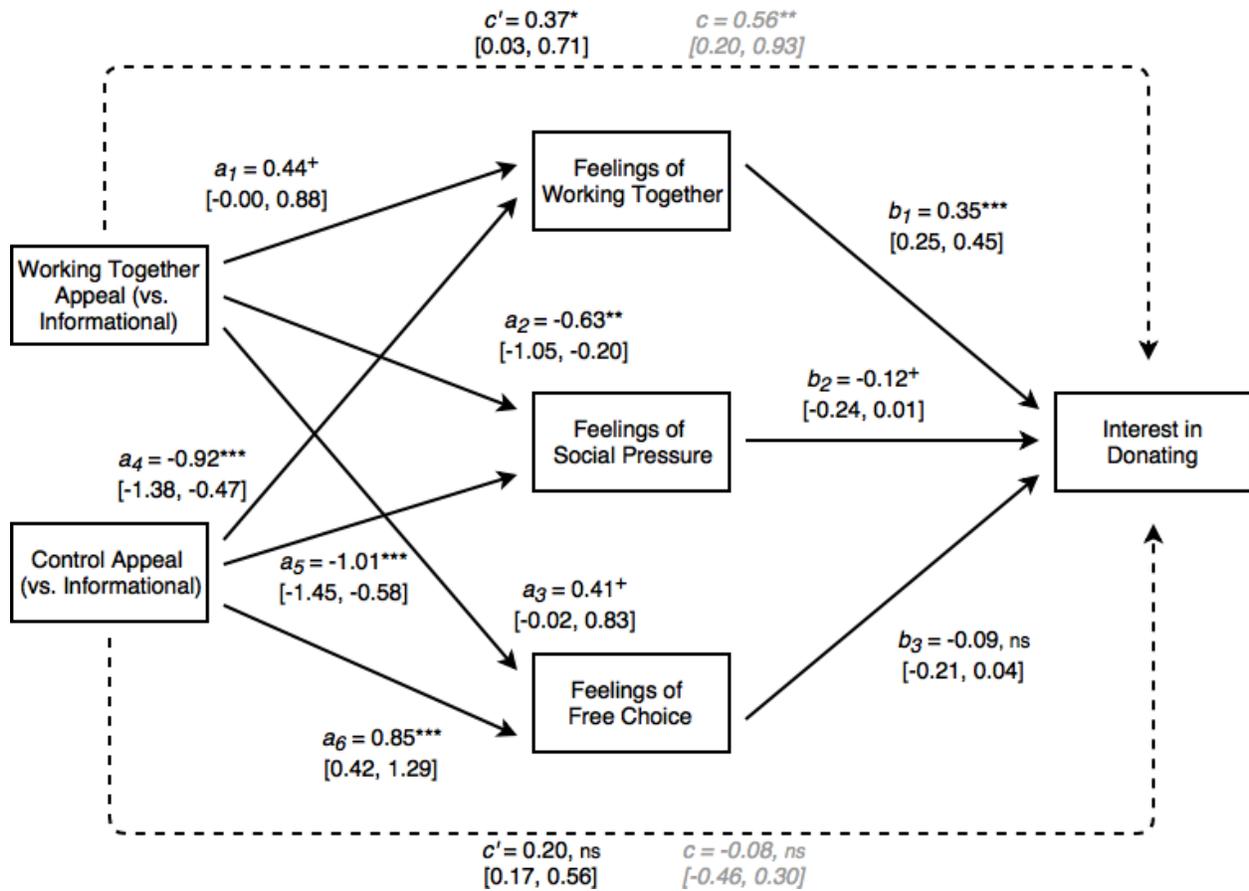
(C) Working-together normative appeals vs. normative-information appeals



Note. Error bars represent 95% confidence intervals.

Figure S6

Omnibus Multiple Mediation Model for Experiment 4

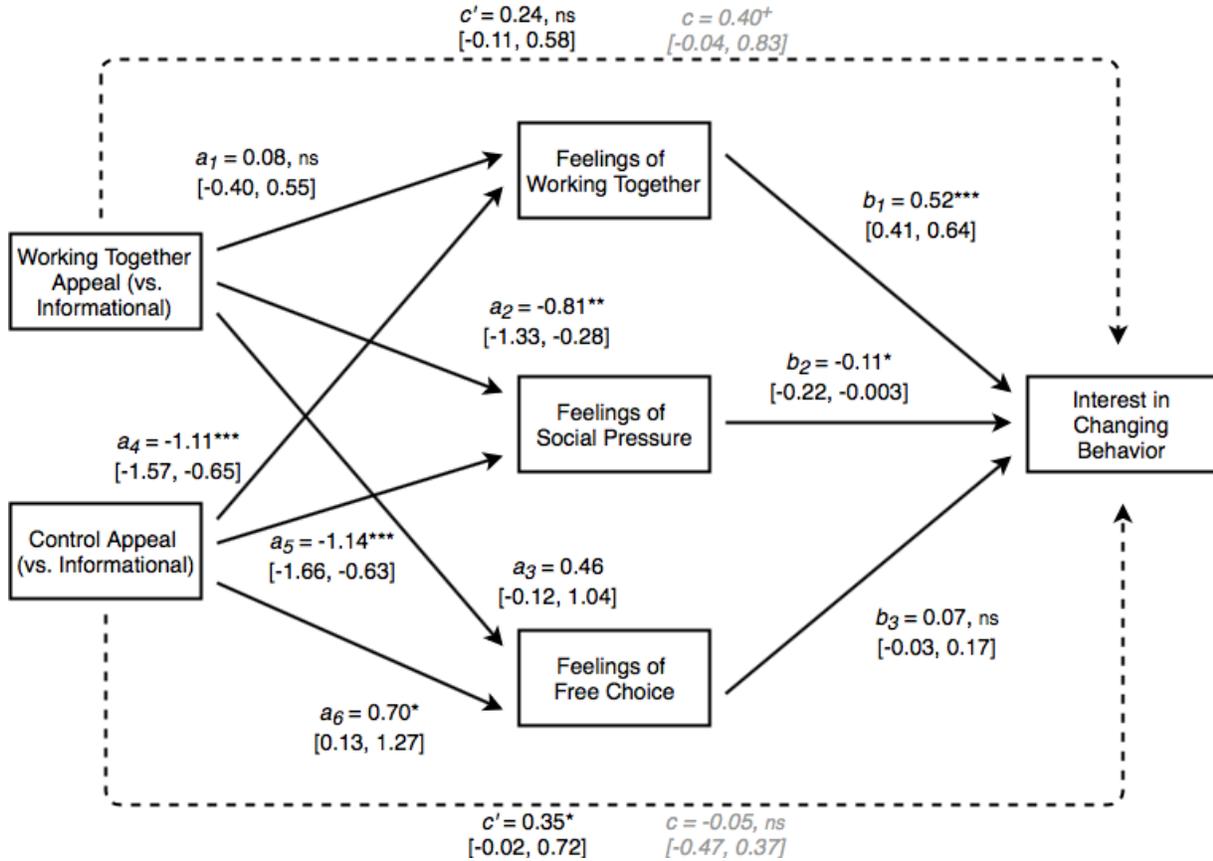


Note. All estimates are unstandardized regression coefficients. 95% confidence intervals for estimates are presented in brackets. The a paths represent the effect of the causal variable on the mediator (a_1 - a_3 is the effect of the working-together appeal on the mediators compared to the normative-information appeal, a_4 - a_6 is the effect of the control appeal on the mediators compared to the normative-information appeal). The b paths represent the effect of the mediator on the outcome variable. The c paths represent the total effect, and the c' paths (dotted lines) represents the direct effect (the effect of appeal condition on interest in donating controlling for the mediators).

^{ns} $p > .10$, ⁺ $p < .10$, * $p < .05$, ** $p < .010$, *** $p < .001$

Figure S7

Omnibus Mediation Model for Experiment 5

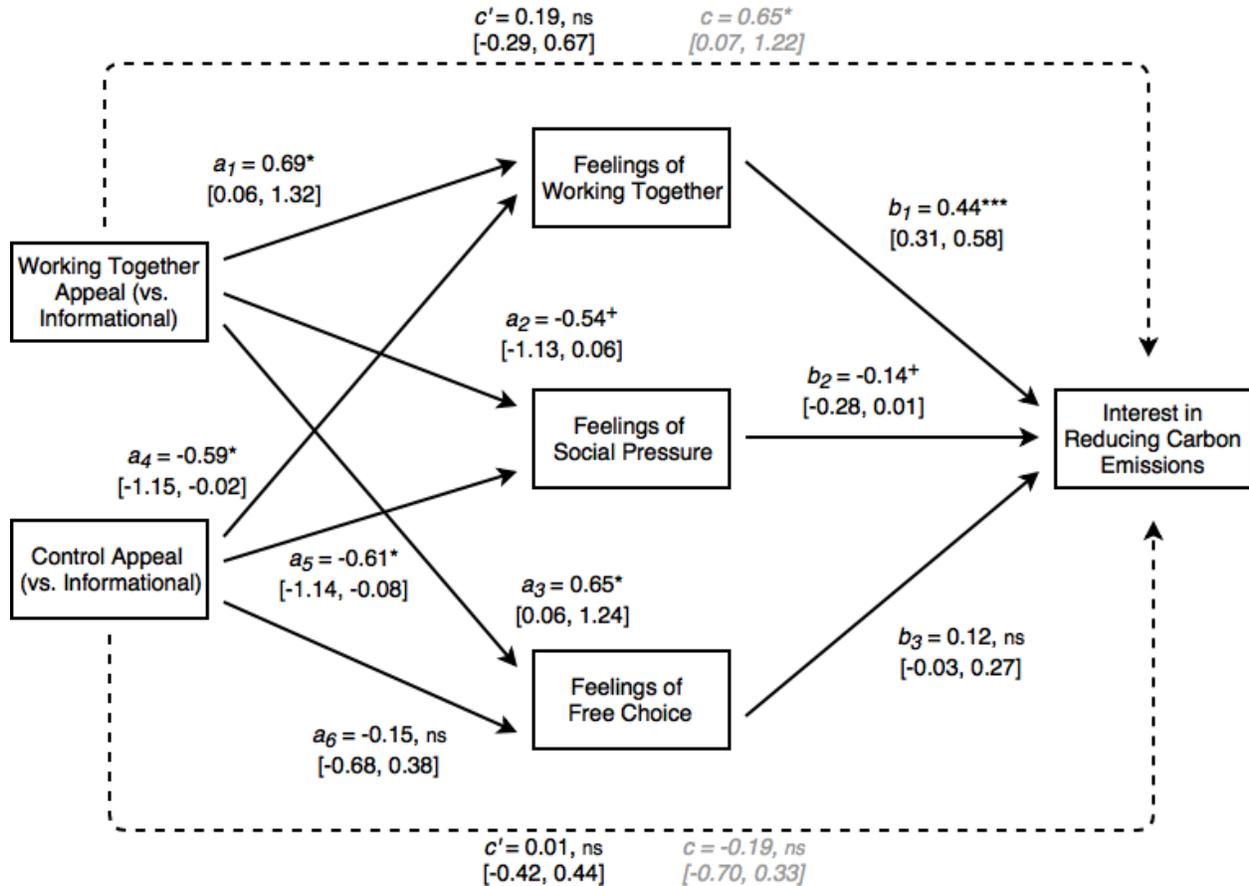


Note. All estimates are unstandardized regression coefficients. 95% confidence intervals for estimates are presented in brackets. The *a* paths represent the effect of the causal variable on the mediator (a_1 - a_3 is the effect of the working-together appeal on the mediators compared to the normative-information appeal, a_4 - a_6 is the effect of the control appeal on the mediators compared to the normative-information appeal). The *b* paths represent the effect of the mediator on the outcome variable. The *c* paths represent the total effect, and the *c'* paths (dotted lines) represents the direct effect (the effect of appeal condition on interest in donating controlling for the mediators).

^{ns} $p > .10$, ⁺ $p < .10$, * $p < .05$, ** $p < .010$, *** $p < .001$

Figure S8

Omnibus Mediation Model for Experiment 6

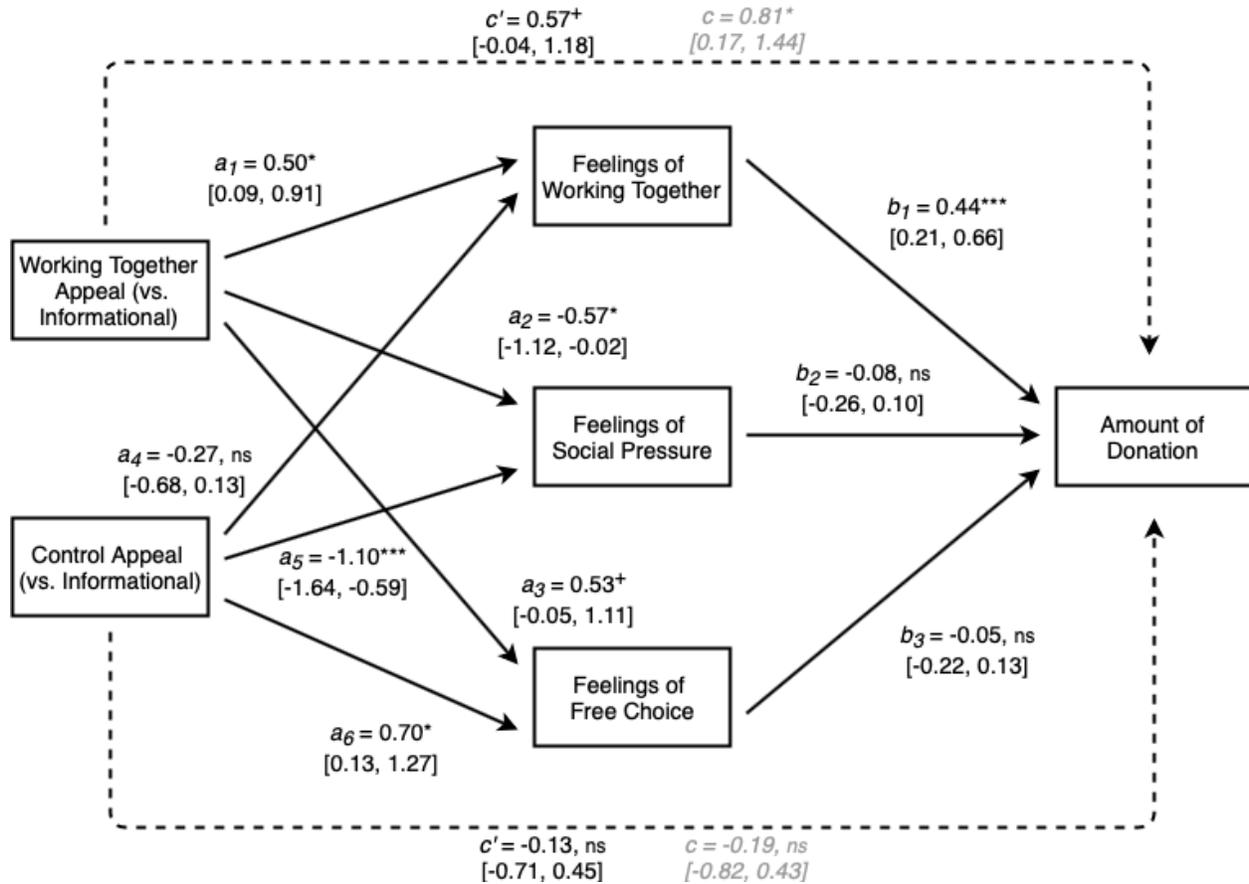


Note. All estimates are unstandardized regression coefficients. 95% confidence intervals for estimates are presented in brackets. The a paths represent the effect of the causal variable on the mediator (a_1 - a_3 is the effect of the working-together appeal on the mediators compared to the normative-information appeal, a_4 - a_6 is the effect of the control appeal on the mediators compared to the normative-information appeal), the b paths represent the effect of the mediator on the outcome variable, the c paths represents the total effect, and the c' paths (dotted lines) represent the direct effect (the effect of appeal condition on interest in donating controlling for the mediators).

ns $p > .10$, $+$ $p < .10$, $*$ $p < .05$, $**$ $p < .010$, $***$ $p < .001$

Figure S9

Omnibus Mediation Model for Experiment 2



Note. All estimates are unstandardized regression coefficients. 95% confidence intervals for estimates are presented in brackets. The a paths represent the effect of the causal variable on the mediator (a_1 - a_3 is the effect of the working-together appeal on the mediators compared to the normative-information appeal, a_4 - a_6 is the effect of the control appeal on the mediators compared to the normative-information appeal). The b paths represent the effect of the mediator on the outcome variable. The c paths represent the total effect, and the c' paths (dotted lines) represents the direct effect (the effect of appeal condition on interest in donating controlling for the mediators).

^{ns} $p > .10$, ⁺ $p < .10$, * $p < .05$, ** $p < .010$, *** $p < .001$

Supplemental References

- Aaker, J., & Schmitt, B. (2001). Culture-dependent assimilation and differentiation of the self: Preferences for consumption symbols in the United States and China. *Journal of Cross-Cultural Psychology, 32*(5), 561-576.
- Alfons, A. (2019). robmed: (Robust) Mediation Analysis. R package version 0.4.0. <https://CRAN.R-project.org/package=robmed>.
- Festinger, L. (1957). *A theory of cognitive dissonance*. Stanford, CA: Stanford University Press.
- Friedman, L., & Wall, M. (2005). Graphical views of suppression and multicollinearity in multiple linear regression. *American Statistician, 59*(2), 127-136.
- Hamedani, M.Y.G., Markus, H.R., & Fu, Alyssa. (2013). In the land of the free, interdependent action undermines motivation. *Psychological Science, 24*(2), 189-196.
- Iyengar, S.S., & Lepper, M. (1999). Rethinking the value of choice: A cultural perspective on intrinsic motivation. *Journal of Personality and Social Psychology, 76*, 349-366.
- Jonas, E., Graupmann, V., Kayser, D.N., Zanna, M., Traut-Mattausch, E., & Frey, D. (2009). Culture, self, and the emergence of reactance: Is there a “universal” freedom? *Journal of Experimental Social Psychology, 45*(5), 1068-1080.
- Kim, Y., Baek, T.H., Yoon, S., Oh, S., & Choi, Y.K. (2017). Assertive environmental advertising and reactance: Differences between South Koreans and Americans. *Journal of Advertising, 4*, 550-564.
- MacKinnon, D.P., Krull, J.L., & Lockwood, C.M. (2000). Equivalence of the mediation, confounding, and suppression effect. *Prevention Science, 1*(4), 173-184.
- Markus, H.R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review, 98*(2), 224-253.
- Markus, H.R., & Kitayama, S. (2010). Cultures and selves: A cycle of mutual constitution. *Perspectives on Psychological Science, 5*(4), 420-430.
- Oyserman, D., Coon, H.M., & Kemmelmeier, M. (2002). Rethinking individualism and collectivism: Evaluation of theoretical assumptions and meta-analysis. *Psychological Bulletin, 128*, 3-72.
- Savani, K., Markus, H.R., & Conner, A.L. (2008). Let your preference be your guide? Preferences and choices are more tightly linked for North Americans than for Indians. *Journal of Personality and Social Psychology, 95*(4), 861-876.