

Normative appeals motivate people to contribute to collective action problems more when they invite people to work together toward a common goal

Summary

What we found: Through six experiments, we discovered that normative appeals framed as invitations to work together towards a common goal – so called “working-together normative appeals” – were more effective in promoting behavior change, such as increased charitable giving, reduced paper-towel use, and greater interest in reducing personal carbon emissions. Normative-information appeals, which included the same normative information but no reference to working together, did not affect interest or behavior.

Why it matters: By framing normative appeals as invitations to work together towards a common goal, desired behavior can be driven more effectively. Using such appeals, which invite people to “join in” and “do it together,” not only generates heightened interest but also translates into tangible behavioral outcomes across diverse contexts.

What next: Organizations can leverage these findings in various practical settings, such as fundraising campaigns, environmental initiatives, and community projects, enabling them to effectively engage individuals and drive desired behaviors.

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Running head: WORKING-TOGETHER NORMATIVE APPEALS

**Normative Appeals Motivate People to Contribute to Collective Action Problems
More When They Invite People to Work Together Toward a Common Goal**

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Abstract

A common method to promote behavior change, particularly in contexts related to collective action, is to reference a social norm and ask people to comply with it. We argue that such appeals will be more effective when they couch the norm as an invitation to work with others toward a common goal. In six experiments, we found that *working-together normative appeals*, which invited people to “join in” and “do it together,” increased interest in (Experiments 1, 4, and 5) and actual charitable giving (Experiment 2); reduced paper-towel use in public restrooms (Experiment 3); and increased interest in reducing personal carbon emissions (Experiment 6). By contrast, *normative-information appeals*, which included the same normative information but no reference to working together, did not affect interest or behavior. Mediation analyses suggest that working-together normative appeals were more effective because they fostered a feeling in participants that they were working together with others, which increased motivation, while inducing less social pressure, which undermined effectiveness. Results show how the very collective nature of collective action problems can be leveraged to promote personal behavior change and help solve societal problems.

Keywords: Norms, Helping/Prosocial Behavior, Social Dilemmas, Reactance

Normative Appeals Motivate People to Contribute to Collective Action Problems More When They Invite People to Work Together Toward a Common Goal

Social norms—the representation that many people do or approve of a behavior—are one of the best-known influences on human behavior (Cialdini, Reno, & Kallgren, 1990; Cohen, 2003; Deutsch & Gerard, 1955; Fishbein & Ajzen, 1975), and a common tool to influence behavior in policy contexts (Sunstein, 2016; Walton & Wilson, 2018). Social norms are often employed in the context of collective action problems (Allcott, 2011; Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007), situations in which addressing a problem requires many individuals to sacrifice their own self-interest and contribute to the public good (Willer, 2009). These problems—which include the challenge of raising charitable aid for those in need, of reducing personal carbon emissions to combat global climate change, and, in some respects, of promoting mask wearing and social distancing to mitigate the COVID-19 pandemic—involve some of the most significant long-term threats society faces today.

Information about social norms can be conveyed indirectly, such as through cues in the physical environment (Cialdini et al., 1990; Keizer Lindenberg, & Steg, 2008). Social norms can also be conveyed directly, including in explicit appeals that reference a norm and ask people to comply with it. Goldstein, Cialdini, and Griskevicius (2008), for instance, induced more hotel guests to reuse towels with an appeal that noted that “almost 75% of guests...[reuse] their towels more than once” than with an appeal that focused only on environmental benefits. Explicit normative appeals can affect a variety of behaviors relevant to collective problems, from pro-environmental behavior (e.g., Abrahamse & Steg, 2013) to charitable giving (e.g., Agerström, Carlsson, Nicklasson, &

Guntell, 2016). Since normative appeals are easy to implement and can have a wide reach, it is especially important to understand how and when they work to address collective problems.

The focus theory of norms suggests that norms have many aspects and that people respond to those aspects that are most salient (Cialdini, Kallgren & Reno, 1991). Past research has primarily examined descriptive (e.g., most people do X) and injunctive (e.g., people approve of X) aspects. For example, people are especially likely to litter in a littered environment when their attention is drawn to the fact that many people litter there (i.e., the descriptive norm is made salient) (Cialdini et al., 1990).

We identify another aspect of social norms that may, or may not, be salient in a context: the nature of the relationship implied between a person being asked to change and the group whose norm is referenced in the appeal to change. We propose that normative appeals, which reference a norm (“The group does X”) to ask people to change (“And you should too”), can readily imply two divergent stances of the group toward the person. In one, it may seem that the group is pressuring you to do as others do, that is, to “get with the program” and conform. This inference may produce high levels of social pressure that can provoke reactance and risks backfiring, especially when people behave in private outside the scrutiny of others (see Brehm, 1972; Iyengar & Lepper, 1999). However, in the second, it could seem that the group is inviting you to join with others and work together to make a change for the common good. This inference, we suggest, can create a feeling of working together, a powerful and underappreciated source of intrinsic motivation (Carr & Walton, 2014). If so, precisely how normative appeals represent the relationship between the person and the group may be critical to predicting

their behavioral effects.

Thus, we predict that normative appeals that facilitate the representation of an opportunity to work with others toward a common goal, while discouraging the representation of pressure to change, will be most effective in causing behavior change. Next, we review past literatures on feelings of social pressure and on working together, how these inform our predictions, and how our research contributes to these areas and to a deeper understanding of social norms and collective action problems.

Mere Normative-Information Appeals and Social Pressure that Backfires

Conformity to a group is often seen in negative terms, particularly in Western cultural contexts, where the present research was conducted. Illustrating this view, Ralph Waldo Emerson wrote, “Imitation is suicide” (1841/1982, p. 175). Indeed, people may exhibit reactance to forms of social influence that feel controlling (e.g., Brehm, 1972; Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004). For example, Reich and Robertson (1979) found that explicit commands like “Don’t you *dare* litter” increased littering compared to appeals like “Help keep your pool clean” (see also Dillard & Shen, 2005; Mann & Hill, 1984). In a meta-analysis of studies on health behavior, more forceful messages (e.g., “You *should* eat more healthily”) backfired compared to messages that used verbs like *suggest* or *encourage* (Stok et al., 2016; see also Bryan et al., 2016; Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004).

Past researchers have speculated that appeals to social norms may backfire precisely by generating such reactance (e.g., Campo & Cameron, 2006; Melnyk, van Herpen, Fischer, & Trijp, 2011; Stok et al., 2013). However, little research has assessed reactance in response to norms, so its role is not well understood. Yet given this

sensitivity to social pressure, we theorized that explicit *normative-information appeals*—appeals that simply reference a norm and ask people to behave in line with it—risk feeling coercive. They may be experienced as obligations or even commands in a way that fosters resistance. Consistent with this idea, one correlational study gave students a social-norm message about alcohol use, and found that binge-drinking students (but not moderate drinkers) agreed more with reactance-related statements after reading it (e.g., “The message tried to pressure me,” “This message makes me annoyed,” Jung et al., 2010).

Yet such reactance might be mitigated if communications are sensitive to individuals’ autonomy (Vansteenkiste et al., 2004). Appeals can, alternately, be framed as *invitations* to join with others (e.g., “Join in!”). By definition, an invitation can be accepted or declined; it thus signals and respects the agency of the recipient. In the current research, we suggest that normative appeals that invite a person to join together with others in pursuit of a common goal—*working-together normative appeals*—will be less apt to induce reactance.

In line with our theorizing, reactance may explain why appeals to *obligations* have failed to motivate behavior change as compared to a control condition in some past research. For example, Nolan et al. (2008) found that an appeal that emphasized social obligation (“Do Your Part to Conserve Energy for Future Generations... We need to work together to conserve energy... Using fans instead of air conditioning—The Socially Responsible Choice.”) did not motivate behavior change as compared to an information-only condition. Such appeals do not represent a community of people engaged in a behavior inviting you to join their efforts. They order you to change. Notably, in the same

study, normative appeals framed as invitations (“Join Your Neighbors...”) were effective in reducing energy use. The lack of direct assessments of feelings of social pressure and of working together limits insight into mechanisms in this work. Yet we theorize that appeals to social norms that invite people to join with others in their community will help recipients feel free to choose to comply rather than ordered to fall in line, minimizing perceived social pressure (cf. Festinger & Carlsmith, 1959).

To be clear, social norms can influence behavior without an explicit invitation to work together. Much of the literature has examined indirect indicators of norms (e.g., Cialdini et al., 1990; Keizer et al., 2008; Paluck, 2009). As compared to direct appeals, indirect indicators may not foreground the relationship between the person and the group since a person is not asked directly to change. Thus, they may be less likely to provoke reactance. Then other aspects of norms may drive effects. There is also evidence that direct normative appeals can change behavior even without an explicit invitation to work together, as we discuss later.

Cues that Signal an Opportunity to Work With Others Promote Intrinsic Motivation

In addition to their invitational quality, working-together normative appeals cast normative behavior as an opportunity to work together with others toward a common goal, which, past research suggests, can inspire intrinsic motivation (Carr & Walton, 2014).

A fundamental quality of people involves the motivation and the ability to understand and to act on the world in tandem with others (Tomasello, Carpenter, Call, Behne, & Moll, 2005). This quality allows people to coordinate and pool efforts to

accomplish collective goals that go beyond the reach of any one person alone, such as to start a business, to create a government, to run a research project, and to address societal problems like climate change or a pandemic. Given the importance of coordinated social action to human social life, achievement, and cultural evolution, it is unsurprising that people have many mechanisms that support the capacity to work together, such as the ability to hold joint attention and to coordinate actions (Sebanz, Bekkering, & Knoblich, 2006).

These mechanisms include motivational processes. The need to affiliate with others—to seek out and maintain positive interpersonal relationships—is basic, fundamental, and universal (Baumeister & Leary, 1995). Further, relationships serve as an important source of motivation (Walton & Brady, 2017; Walton & Cohen, 2011). Even symbolic cues of social connection can facilitate the sharing of motivation from one person to another. In one study, undergraduates worked 50% longer on a math puzzle when they believed they shared a birthday with a math major than when they were exposed to the same person with a different birthday (Walton, Cohen, Cwir, & Spencer, 2012; see also Fitzsimons & Bargh, 2003; Shteynberg & Galinsky, 2011).

Most relevant to the present research, cues that signal an opportunity to work with other people toward a common goal can increase motivation. In one line of studies, social gestures that conveyed that other people in a small group regarded a person as working together with them—rather than that represented each person as working separately on the same task—facilitated a feeling of working together that enhanced intrinsic motivation (Carr & Walton, 2014; see also Isaac, Sansone, & Smith, 1999). In response to cues of working together, participants freely chose to work longer on a challenging

task, experienced less “depletion” after having worked hard on the task, reported greater enjoyment of tasks, and chose to do more similar tasks in the future. These findings arose even as people worked while physically alone, in private, on challenging, sometimes insoluble tasks unaware that their persistence, for instance, was being assessed. The results thus point to gains in intrinsic motivation, not demand processes.

Such sensitivity to cues of working together arises early in life. In other studies, preschoolers worked longer and reported greater enjoyment when they were treated as collaborating with another child than as working separately on the same tasks or as taking turns (Butler & Walton, 2013; see also Master, Butler, & Walton, 2017; Master & Walton, 2013; Master, Cheryan, & Meltzoff, 2016; Ross & Lollis, 1987; Warneken & Tomasello, 2006).

Working-Together Norms and Collective Action Problems

Thus, past research shows that, in dyadic and small-group settings, social cues that signal an opportunity to work with others can facilitate motivation in personal goal pursuit. Yet this past research has not examined norms or collective action problems. Accordingly, we ask: Are normative appeals more motivating of collective action when they include an invitation to work together with others? Further, are such working-together normative appeals more effective because they minimize felt social pressure while inspiring feelings of working together?

This hypothesis brings together the literatures on the social-relational foundations of motivation and on social norms. It also draws on past theorizing, which suggests that people have dual needs to connect with and to distinguish themselves from others (Brewer, 1991). By inviting people to join a common cause, working-together normative

appeals may allow people to feel both independent and connected at once, facilitating change.

This hypothesis directly extends past research on both collective action and social norms. First, consistent with our theorizing, past research finds that group identities with norms for action—such as identifying with the “gay movement” rather than “gay people”—are especially effective at mobilizing collective action (e.g., Kelly & Breinlinger, 1995; McGarty, Bliuc, Thomas, & Bongiorno, 2009; Stürmer & Simon, 2004; Thomas, McGarty, & Mayor, 2009). In highlighting the role of feelings of working together, however, we propose that representing social norms in terms of an opportunity to work with others toward a common goal can enhance collective action even in contexts without an activist group identity. Other past studies have considered people’s beliefs about a group, such as its perceived effectiveness (*collective response efficacy*) or their trust that others in it will cooperate (*collective trust*, De Cremer, 1999; Doherty & Weber, 2016; Kramer, Brewer, & Hanna, 1995). By contrast, we focus on the perceived relationship between the self and the group—how the group seems to regard the person asked to change, as someone working together with the group toward a common goal or as a subject of social pressure.

Second, as we have noted, social norms can influence behavior through diverse mechanisms, such as by altering influential beliefs about what is true, effective, and socially approved (Cialdini & Goldstein, 2004; Deutsch & Gerard, 1955; Jacobson, Mortensen & Cialdini, 2011). Social-relational and identity processes also contribute to compliance with norms, such as the motivation to meet the expectations of valued others (e.g., Ajzen & Fishbein, 1980), to reduce a salient discrepancy between one’s behavior

and that of the group (Abrahams & Hogg, 1990; Reynolds, Subašić, & Tindall, 2015; see also Carver & Scheier, 2001), and to signal, maintain, or bolster one's association with a group (e.g., Terry & Hogg, 1996). Our research adds to these existing perspectives by exploring the *nature* of people's relationship to the group—specifically, their experience of social pressure from and feelings of working together with the group—that may underpin the effectiveness of appeals to social norms.

Past theory has not considered the role of feelings of working together in normative appeals; nor has research isolated this role empirically. Yet working-together themes are so congruent with normative appeals, especially in collective action contexts, that multiple past studies have included them in such appeals (e.g., Nolan et al., 2008). Consider Goldstein and colleagues' (2008) intervention to promote hotel towel reuse described earlier, which is one of the most influential studies on social norms in recent years (2,915 citations on Google Scholar as of March 7, 2021). The effects in this study are attributed simply to normative information (e.g., “appeals employing descriptive norms (e.g., ‘the majority of guests reuse their towels’) proved superior...” p. 472). Yet every norm condition in this work included an explicit invitation to guests to work together toward a common cause (e.g., “JOIN YOUR FELLOW GUESTS IN HELPING TO SAVE THE ENVIRONMENT. Almost 75% of guests...[reuse] their towels more than once”; capitalization in the original). No condition presented norm information without an invitation to work with others. The norm conditions were compared to each other and to a control condition with no norm and no reference to working together (“HELP SAVE THE ENVIRONMENT...”). Such blended appeals may be common in part because collective action problems inherently involve norms—by definition, their

solution requires the efforts of many people. However, no past study has identified the effect of an invitation to work together above and beyond normative information.

Certainly, appeals to social norms can be effective without direct reference to working with others. In the context of hotel towel reuse, other studies find that appeals that highlighted both an injunctive and a descriptive norm can increase compliance (e.g., “[m]ost of our guests express a desire to preserve natural resources. When an opportunity is provided, over 75% of them choose to reuse their bath towels”; Terrier & Marfaing, 2015; Schultz, Khazian, & Zaleski, 2008; see also Agerström et al., 2016). Yet absent the direct manipulation of critical elements, or the assessment of psychological processes, these effects are not adequately understood. Even without explicit reference, normative appeals could evoke feelings of working together, perhaps especially if they combine injunctive and descriptive elements. By manipulating and assessing processes directly, we examine the roles of feelings of working together and of social pressure in response to normative appeals, and thus clarify how and when such appeals cause behavior change.

There is a deep irony in the hypothesis that the opportunity to work with others could motivate personal contributions to collective action problems. Classic theory identifies the need for collective efforts as a primary barrier to the solution of these problems (e.g., Olson, 1965; Ostrom, 1998). If other people are contributing to a cause, whether by donating to a charity or reducing emissions of harmful pollutants, individuals can “free-ride” by not contributing themselves yet gain the collective benefits (e.g., Kim & Walker, 1984). By contrast, we suggest that the very need for collective efforts gives rise to an opportunity. Highlighting an opportunity to work with others toward a shared goal might motivate individual contributions. If so, the collective nature of a collective

problem might motivate its solution.

Overview of Studies

Six experiments investigated normative appeals that invited people to work together to address a collective problem and depicted this working-together relationship (e.g., “Most people do it—Let’s do it together”); distinguished these from appeals that provided the same normative information but depicted individuals as working separately (e.g., “Most people do it”) (Carr & Walton, 2014); and compared both to control appeals without normative information.

Given our focus on collective action problems, we did not test the effects of appeals with working-together cues absent normative information (see Carr & Walton, 2014). As noted, collective action problems inherently involve norms, as they require that many people come together in change. It is thus inherently important to understand how normative appeals, and those that additionally reference an opportunity to work together, can motivate individual contributions to collective action problems. We also foresee complexities in the study of appeals to work together on collective action without reference to a norm, which may be explored in future research, as we discuss in the General Discussion.

Following past research (e.g., Cialdini et al., 1990), the appeals conveyed descriptive normative information. We examined three different collective action problems with behavioral outcomes in relatively private settings. Experiments 1, 4, and 5 examined interest in charitable giving in private online contexts, which strongly predicts actual giving (Webb & Sheeran, 2006). Experiment 2 examined actual charitable donations. Experiment 3, a field experiment, examined a real-world sustainable behavior,

reductions in paper towel use in public restrooms. Experiment 6 examined interest in reducing personal carbon emissions.

In addition to behavioral outcomes, we assessed key hypothesized processes—feelings of working together (Experiments 1, 2, 4-6) and of social pressure (Experiments 2, 4-6)—and tested their mediating roles. Although the literature on reactance has focused on social pressure, we also explored participants’ feelings of free choice (Experiments 2, 4-6; see Iyengar & Lepper, 1999). We also assessed other processes that can contribute to norm effects and examined how, if at all, they shifted in response to the two norm conditions and contributed to behavior change. These included the perceived level of the norm, its injunctive strength, and the strength of participants’ in-group identification, as identifying more strongly with an in-group can motivate behavior in line with perceived group norms (e.g., Terry, Hogg, & White, 1999).

Experiment 1: Interest in Charitable Giving

Experiment 1 compared three appeals for charitable donations: a control appeal with no normative information and two appeals that conveyed normative information but varied in whether they invited people to work together.

Method

Participants

Sixty-four Stanford students (34 female, 35.9% White, 29.7% Asian, 17.2% Latinx, 6.3% Black/African-American¹) participated in exchange for a \$5 gift card. We aimed to recruit at least 60 students because this would provide adequate power to detect

¹ Percentages do not add up to 100% because some participants selected multiple races/ethnicities, selected “other,” or did not report race/ethnicity.

a medium to large effect size using η_p^2 in a one-way analysis of variance (Cohen, 1988).² Degrees of freedom vary slightly as some participants did not complete all measures.

Procedure

The study was said to examine “ads and appeals.” To bolster this cover story, participants first rated an advertisement for toothpaste. Next, they saw and rated on several dimensions one of three fliers on a randomized basis soliciting donations for the Haiti Relief Fund (described below), a fund to provide services in the aftermath of the then-recent 2009 Haitian earthquake. Participants were asked to imagine seeing the flier in the student union. Finally, we assessed interest in donating to the charity.

Manipulation: Haiti Relief Fund Fliers

The control flier provided no normative information and did not represent people as working together (Figure 1a). It contained only the appeal to donate.

The “normative-information appeal” flier stated, “Here’s a fact,” conveyed a norm of donating among Stanford students (“65% of students at Stanford have donated to the Haiti Relief Fund”) and appealed for donations (Figure 1a). The number was chosen to reflect a majority but not unanimity. The flier was square and included in each corner a stick-figure of a person adjacent to a “giving” hand. The stick-figures were presented in separate corners and boxed-off to forestall the perception that people were working together and instead represent people as working separately to support the charity.

The “working-together normative appeal” flier contained the same normative

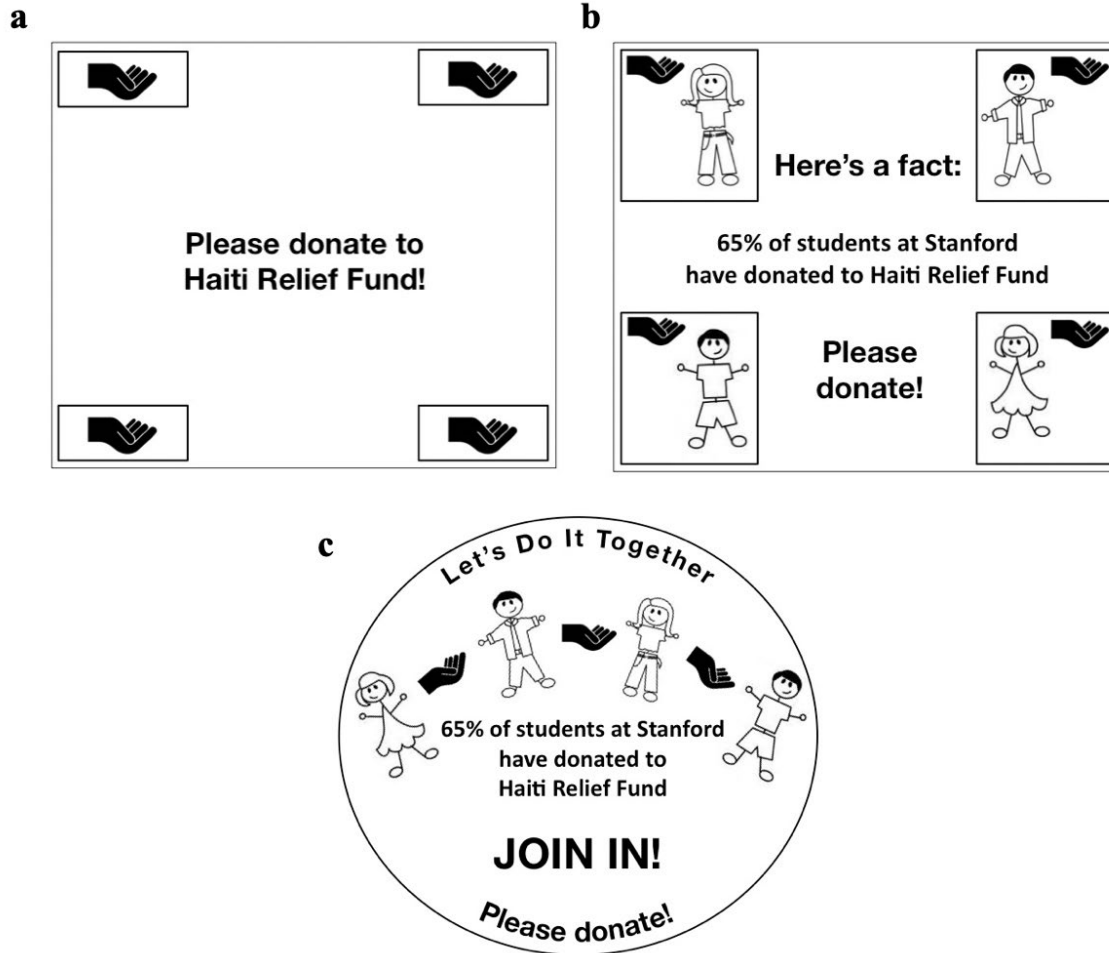
² Past field studies have found small-to-medium size effects of appeals to descriptive norms (e.g., Abrahamse & Steg, 2013; Agerström et al., 2016; Goldstein et al., 2008; Nolan et al., 2008; Terrier & Marfaing, 2015). Given that Experiment 1 was conducted in a controlled environment rather than a field context and examined behavioral interest rather than actual behavior, which tends to produce larger effects (e.g., Rhodes & Dickau, 2012; Webb & Sheeran, 2006), we deemed a medium-to-large effect size appropriate and, accordingly, increased sample size in later experiments examining actual behaviors.

information and appeal and highlighted the same group (Stanford students) (Figure 1c) but also invited people to join with others to support the charity. Instead of “Here’s a fact” it said, “Let’s do it together” and “Join in!” The stick-figures were grouped together and linked by “giving” hands to reinforce this representation of working together. Finally, the layout was circular rather than square, as circles are associated with communality (Cortes, Campos, & Dweck, 2011). These differences in format are not arbitrary. They represent the same behavior (i.e., donating) as something done together with others rather than separately from others.

The surface areas of and images on all fliers were matched.

Figure 1

Fliers Appealing for Donations to the Haiti Relief Fund in Experiment 1: (a) the Control Appeal, (b) the Normative-Information Appeal, and (c) the Working-together Normative Appeal



Dependent Measures

For full items, see Appendix S1 in the Supplementary Material.

Interest in donating. Interest in donating was assessed using two items (“If you saw this flier how much would you want to donate to this charity?”, “If you saw this flier how much would you feel like donating to this charity?”, $1=not\ at\ all$, $7=extremely$); $r(61)=.92$, $p<.001$.

Perceptions and psychological effects of fliers. Participants rated on 7-point scales the extent to which they would *feel they were working together to support the charity* (3 items; e.g., “If you donated to this charity, to what extent would you feel like you are donating together with other Stanford students?”; $\alpha=.94$) (Carr & Walton, 2014).

These questions do not assess whether people *perceived* an opportunity to work with others in the appeal (i.e., our manipulation) but whether they *anticipated* a sense of working together if they were to undertake the behavior, a theorized psychological consequence. Therefore, we treat this measure as a process measure rather than as a manipulation check.

We also assessed the extent to which participants perceived a *descriptive norm* to donate (3 items; e.g., “How common do you think it is for Stanford students to donate to this charity?”; $\alpha=.85$), and a *injunctive norm* to donate (2 items; e.g., “How much do you feel like other Stanford students think it is good to donate to this charity?”; $r(61)=.65$, $p<.001$). Participants also rated (4) the flier’s *clarity* (2 items; e.g., “How easy to understand is this flier?”; $r(62)=.89$, $p<.001$). Question order was randomized across participants, blocked by the type of process question.

Pilot Studies

The normative-information and working-together normative appeals featured different layouts, with the latter designed to reinforce the representation that people were working together to support the charity. To ensure that the layouts did not differ in other ways, we conducted a pilot study with the same population ($n=46$, 26 female, 30.4% White, 37.0% Asian, 10.9% Latinx, 13.0% Black/African-American). Participants were presented with the flier from either norm condition. To elicit responses to only the layouts, the letters were jumbled and size-matched blocks replaced the images. Participants rated the layout’s attractiveness, reported how warm and happy the layout made them feel, and the positivity of their mood after viewing the layout. The two appeals’ layouts did not vary on any outcome, $ts<1$, $ps>.25$.

A second pilot study examined if the two normative appeals differentially affected participants' identification with the group espousing the norm (i.e., Stanford students), which could represent a potential alternative explanation (Terry & Hogg, 1996). Sixty participants (drawn from the same population, 36 female, 38.3% White, 33.3% Asian, 11.7% Latinx, 8.3% Black/African-American) viewed one of the two normative appeals with the text and images intact (i.e., Figure 1b or 1c). They then answered, "How strongly do you identify with your friends and peers at Stanford University?", "How important is being a Stanford student to your identity?", and "How important is being similar to Stanford students to you?" on 7-point scales (items based on past research; Terry & Hogg, 1996). There was no effect of condition on the composite scale of group identification, $t < 1, p > .25$.

Results

Primary analyses were tested using analyses of variance (ANOVAs) with planned contrasts to compare group means. The results are reported in Table 1. Datasets and relevant scripts for data analysis are available online at <https://osf.io/cdn8s/>. Correlations among outcome measures are reported in Table S1. One participant did not complete any item assessing interest in donating, descriptive or injunctive norms, or clarity. Thus, degrees of freedom differ slightly for these measures. Results do not differ when this participant is omitted from analyses. Cohen's d was calculated using the *R* package *effsize* (Torchiano, 2017), which uses the pooled standard deviation of the two groups being compared rather than the pooled standard deviation across the entire sample.

Interest in Donating

Appeal type affected interest in donating, $F(2, 60) = 5.68, p = .006, \eta_p^2 = .16$.

Participants reported greater interest in donating in response to the working-together normative appeal ($M=4.38$) than to either the normative-information appeal ($M=3.26$), $B=1.12$, 95% confidence interval (CI) [0.21, 2.03], $SE=0.46$, $t(60)=2.45$, $p=.017$, $d=0.77$ [0.12, 1.41], or the control appeal ($M=2.91$), $B=1.48$ [0.56, 2.39], $SE=0.46$, $t(60)=3.23$, $p=.002$, $d=0.93$ [0.27, 1.58]. The latter two appeals did not differ, $t(60)<1$, $p>.25$, $d=0.26$ [-0.37, 0.88].

Perceptions and Psychological Effects of the Flier

Feeling of working together in supporting the charity. Appeal type also affected participants' feelings of working together with others in supporting the charity, $F(2, 61)=6.32$, $p=.003$, $\eta_p^2=.17$. The working-together normative appeal increased feelings of working together to support the charity ($M=4.91$) relative to both the normative-information appeal ($M=3.92$), $B=0.98$ [0.07, 1.90], $SE=0.46$, $t(61)=2.15$, $p=.036$, $d=0.64$ [-0.00, 1.28], and the control appeal ($M=3.30$), $B=1.60$ [0.70, 2.51], $SE=0.45$, $t(61)=3.53$, $p<.001$, $d=1.12$ [0.46, 1.79]. The difference between the latter appeals did not reach significance, $t(61)=1.36$, $p=.178$, $d=0.41$ [-0.21, 1.04].

Descriptive and injunctive norms. Perceptions of both descriptive and injunctive norms varied by appeal type, $F(2, 60)=21.71$, $p<.001$, $\eta_p^2=.42$ and $F(2, 60)=5.49$, $p=.007$, $\eta_p^2=.16$, respectively. Participants who viewed the normative-information and working-together normative appeals did not differ significantly in their perceptions of either the descriptive, $t(60)=0.35$, $p>.25$, $d=0.13$ [-0.51, 0.76], or the injunctive norm, $t(60)=1.55$, $p=.126$, $d=0.50$ [-0.14, 1.14]. Participants in both norm groups perceived at least marginally stronger descriptive and injunctive norms to donate than participants who viewed the control appeal, $ts>1.70$, $ps<.094$, $ds>0.50$.

Clarity. Appeal type marginally affect ratings of flier clarity, $F(2, 61)=2.79$, $p=.070$, $\eta_p^2=.08$. The two appeals including normative information did not differ, $t<1$, $p>.25$, $d=0.10$ [-0.73, 0.52], but the control appeal tended to be judged as clearer than both normative appeals, $t_s>1.80$, $p_s<.076$, $d_s>0.59$, presumably reflecting its relative simplicity.

Mediation By Feelings of Working Together

Feelings of working together mediated the effect of the working-together normative appeal on interest in donating relative to the normative-information appeal. In a simultaneous regression, feelings of working together predicted interest in donating, $B=0.58$ [0.37, 0.79], $SE=0.10$, $t(59)=5.56$, $p<.001$, and the effect of the working-together normative appeal on interest in donating became non-significant, $B=0.55$ [-0.23, 1.32], $SE=0.39$, $t(59)=1.42$, $p=.161$. We used the R package *mediation* (e.g., Tingley, Yamamoto, Hirose, Keele, & Imai, 2014) to create 95% confidence intervals for the indirect effect ($a*b$) using bootstrapping with 5,000 repetitions. The confidence interval did not include zero, indicating that the mediational hypothesis was supported (95% CI: [0.04, 1.22]).

Table 1*Condition Means and Contrasts Comparing Normative-Information Appeals and Working-together Normative Appeals in Experiment**1*

Outcome	Control Appeal	Normative-Information Appeal	Working-Together Normative Appeal	Contrast Comparing the Two Normative Appeals
<i>Normative Behavior (Self-Reported)</i>				
Interest in Donating	2.91 ^a (0.33)	3.26 ^a (0.27)	4.38 ^b (0.36)	$t(60)=2.45, p=.017$
<i>Perceptions and Psychological Effects of the Flier</i>				
Feelings of Working Together in Donating	3.30 ^a (0.29)	3.92 ^a (0.35)	4.91 ^b (0.32)	$t(61)=2.15, p=.036$
Perceived Descriptive Norm of Donating	3.36 ^a (0.23)	4.90 ^b (0.20)	5.00 ^b (0.16)	$t < 1, p > .25$
Perceived Injunctive norm of Donating	4.43 ^a (0.23)	4.98 ^{a*} (0.24)	5.48 ^b (0.21)	$t(60)=1.55, p=.126$
Perceived Clarity of Flier	6.64 ^a (0.11)	6.10 ^{a*} (0.26)	5.98 ^b (0.24)	$t < 1, p > .25$

Note. Standard errors of the means are presented in parentheses. All items were measured on 7-point scales. For each outcome, means with different superscripts differ significantly ($p < .05$). Means with an additional asterisk (*) differ marginally from means with the same superscript ($p < .10$).

Replication Experiment

A replication experiment found similar results. Participants ($N=82$, 36 female, 37.8% White, 19.5% Asian, 7.3% Latinx, 8.5% Black/African-American) approached on Stanford campus were given either the same normative-information or working-together normative appeal used in Experiment 1 but framed as a request to support victims of the then-recent Taiphoon Haiyan (there was no no-norm control appeal in this study), and then reported feelings of working together (3 items, $\alpha=.84$) and interest in donating (2 items, $r(80)=.72$, $p<.001$). Again, the working-together normative appeal generated greater feelings of working together ($M=4.44$, $SD=1.11$) than the normative-information appeal ($M=3.84$, $SD=1.17$), $B=0.60$ [0.10, 1.10], $SE=0.25$, $t(80)=2.39$, $p=.019$, $d=0.53$ [0.08, 0.98], and greater interest in donating (working-together normative appeal: $M=3.88$, $SD=0.99$; normative-information appeal: $M=3.28$, $SD=1.03$), $B=0.60$ [0.15, 1.04], $SE=0.22$, $t(80)=2.68$, $p=.009$, $d=0.59$ [0.14, 1.04]. Again, the mediating path was significant, 95% CI: [0.04, 0.52]. The manipulation did not affect in-group identification (3 items, $\alpha=.69$), $t<1$, $p>.25$, which was moderate across all three appeal types, $M_{\text{grand}}=4.27$ on a 7-point scale.³

Discussion

In Experiment 1, an appeal that conveyed a social norm to encourage charitable donations generated no greater interest in giving than an appeal that did not reference the norm. But when the appeal represented the norm in terms of an opportunity to work with others toward a common cause, participants showed significantly greater interest in

³ The replication study also included a second, exploratory manipulation in which a series of word-search tasks primed either affiliation (e.g., “friend”) or not (e.g., “street”). This did not affect the primary outcomes and results are similar controlling for this variable (see Appendix S2).

contributing compared to both comparison conditions. This effect relative to the normative-information appeal was mediated by participants' greater feelings of working together in contributing to the cause.

There was no evidence for potential alternative explanations. There was no difference between the two appeals that included normative information in perceptions of either the descriptive (what others do) or the injunctive norm (what others approve of). Both groups of participants believed that donating was prevalent in and approved by a valued social group. There was also no evidence of shifts in participants' in-group identification.

Experiment 2: Charitable Giving

A limitation of Experiment 1 involves the hypothetical nature of the outcome. Can working-together normative appeals increase actual charitable giving?

Secondarily, Experiment 2 tests whether the normative-information appeal heightens feelings of social pressure, which, we suggest, may undermine its effectiveness. However, process measures in Experiment 2 are constrained by the fact that they were assessed following actual behavior, not just an expression of interest, so as to avoid interfering with the primary outcome. Responses could thus reflect the behavior, as behavior can serve as a commitment that alters attitudes (Festinger, 1957).

Additionally, the outcome (donations) in Experiment 2 is non-normally distributed, further constraining statistical tests of mediation. For these reasons, mediation tests are reported in the supplement. Experiments 4-6 will further explore these processes.

Method

Participants

One hundred and sixty-four Stanford students (115 female, 5 not reported, 30.5% White, 34.1% Asian, 7.3% Latinx, 6.7% Black/African-American) participated in an online study in exchange for a \$5 gift card. We aimed to recruit as many students as possible in the last two weeks of the quarter and posted 200 openings for the study. We aimed for a larger sample than Experiment 1 because we anticipated that the effect on actual giving might be smaller and/or donations might not be normally distributed.

Procedure

As in Experiment 1, the study was said to examine “ads and appeals” and participants first rated an advertisement for toothpaste. Next, they were randomized to see one of three fliers (described below) soliciting donations for the Family Giving Tree, an organization that provides wishes for people in need, and were asked whether they would like to contribute any of the \$5 they would receive for participating in the study to this charity. Participants were told they would receive the remaining money as a gift card. Then they rated the flier on several dimensions. We donated the total amount participants chose to give to the Family Giving Tree.

Manipulation: Family Giving Tree Fliers

The fliers were similar to those in Experiment 1 (Figure S1). The control appeal contained only the appeal to donate. The normative-information appeal stated, “Here’s a fact,” conveyed a norm of donating among Stanford students (“65% of students at Stanford have donated to the Family Giving Tree”) and asked for donations. The working-together normative appeal contained the same normative information and request and highlighted the same group identity but invited people to join with others to support the charity, for instance replacing “Here’s a fact” with “Let’s do it together” and

“Join in!”

Dependent Measures

Donations. Participants were given the option to donate either \$0, \$1, \$2, \$3, \$4, or \$5 of their earnings to the Family Giving Tree. Each response option was accompanied by an image of dollar bills corresponding to the amount; thus, the \$0 option depicted no images of dollar bills, the \$1 option depicted an image of a single dollar bill, and the \$5 option depicted an image of five \$1 bills.

Psychological measures. After making their donation decision, participants completed similar psychological measures as in Experiment 1: (1) feelings of working together (3 items; $\alpha=.87$); (2) perceived descriptive norms (3 items; $\alpha=.81$); (3) perceived injunctive norms (3 items; $\alpha=.76$); and (4) group identification (3 items; $\alpha=.73$). We also assessed processes relevant to reactance through two measures: the extent to which participants (5) felt *social pressure to donate* (3 items; “To what extent do you feel you are being pressured to donate?”; $\alpha=.81$) and (6) felt they could *freely choose to donate* (2 items; e.g., “To what extent do you feel you can decide on your own to donate to this charity?”; $r(157)=.68, p<.001$). We treated these constructs separately because we reasoned that a person could feel their behavior is freely chosen yet subject to social pressure. Indeed, these measures were only moderately negatively associated ($r=-.43$; similarly, in Experiments 4-6 this correlation was $r=-.55, -.21, \text{ and } -.38$, respectively, see Table S1). For full items, see Appendix S3.

Results and Discussion

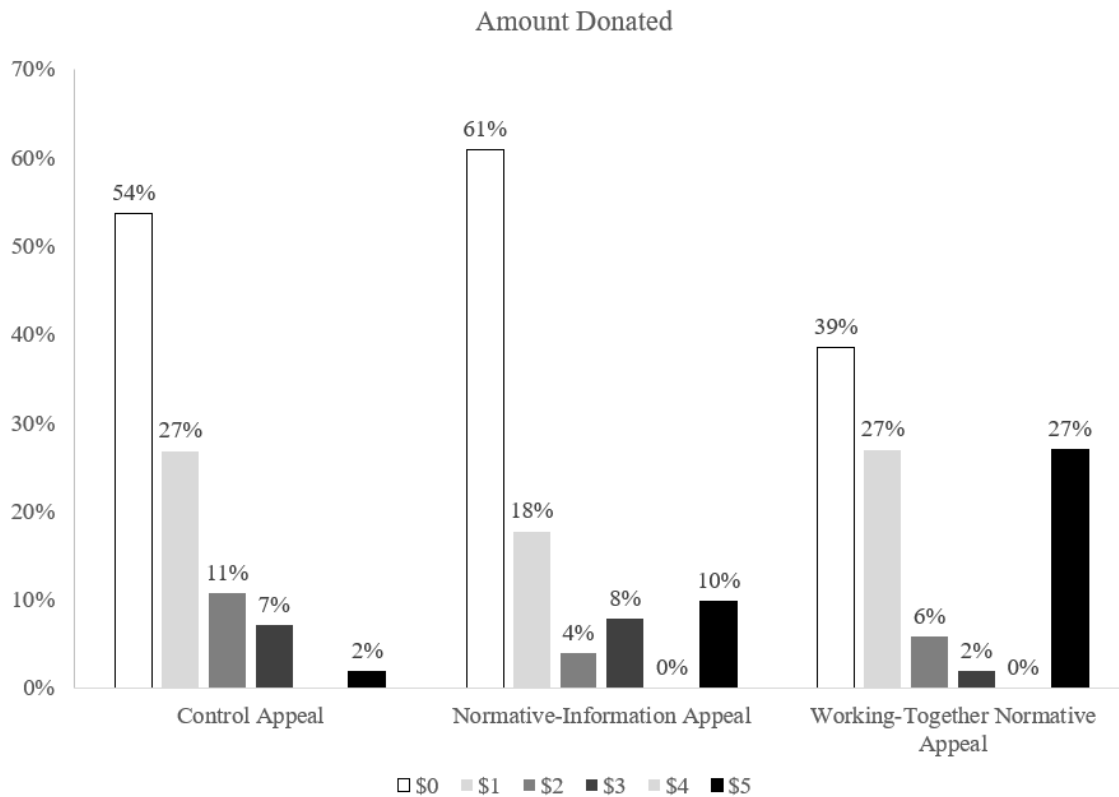
Correlations among outcome measures are reported in Table S1.

Charitable Donations

Donations were not normally distributed: most participants donated either \$0, \$1, or all \$5. As shown in Figure 2, most participants who viewed the control or normative-information appeal donated nothing (54% and 61%) and few donated \$5 (2% and 10%). Among participants who viewed the working-together normative appeal, however, nearly as many participants donated \$5 (27%) as who donated nothing (39%; see also Table S2).

Figure 2

Distribution of Donations to the Family Giving Tree by Type of Appeal (Experiment 2)



To test for statistical significance, we conducted a nonparametric Kruskal-Wallis test. Appeal type significantly affected donation amount, $\chi^2(2)=7.15, p=.028$. The median donation was \$1 in response to the working-together normative appeal and \$0 in response to the control or normative-information appeal. Nonparametric pairwise comparisons conducted with Dunn's test of multiple comparisons indicated that the working-together

normative appeal increased donations relative to both the control appeal, $p=.013$, and the normative-information appeal, $p=.008$. The latter appeals did not differ, $p>.25$. The means showed the same pattern (working-together normative appeal: $M=\$1.79$, $SD=2.07$; control appeal: $M=\$0.79$, $SD=1.09$; normative-information appeal: $M=\$0.98$, $SD=1.61$), and the same pattern of statistical significance (see Table S2).

Psychological Effects of the Flier

Feeling of working together in donating. Appeal type significantly affected participants' feelings of working together with others in supporting the charity, $F(2, 156)=7.11$, $p=.001$, $\eta_p^2=.08$. As in Experiment 1, participants reported greater feelings of working together in response to the working-together normative appeal ($M=2.77$) than to either the normative-information appeal ($M=2.27$), $B=0.50$ [0.08, 0.92], $SE=0.21$, $t(156)=2.36$, $p=.020$, $d=0.45$ [0.06, 0.85], or the control appeal ($M=1.99$), $B=0.78$ [0.37, 1.19], $SE=0.21$, $t(156)=3.73$, $p<.001$, $d=0.67$ [0.28, 1.07]. The latter conditions again trended but did not differ significantly, $B=0.27$ [-0.14, 0.69], $SE=0.21$, $t(156)=1.31$, $p=.192$, $d=0.28$ [-0.10, 0.67].

Descriptive and injunctive norms. Perceptions of descriptive norms varied by appeal type, $F(2, 156)=11.13$, $p<.001$, $\eta_p^2=.13$. As compared to the control appeal ($M=2.22$), both the working-together normative appeal ($M=2.74$) and the normative-information appeal ($M=2.96$) increased the perceived level of the descriptive norm, $B=0.52$ [0.20, 0.84], $SE=0.16$, $t(156)=3.24$, $p=.002$, $d=0.60$, and, $B=0.74$ [.42, 1.06], $SE=0.16$, $t(156)=4.56$, $p<.001$, $d=0.94$, respectively. The two appeals including normative information did not differ from one another, $B=0.22$ [-0.11, 0.54], $SE=0.17$, $t(156)=1.31$, $p=.191$, $d=0.25$ [-0.14, 0.65].

Injunctive norms did not vary by appeal type, $F < 1, p > .25, \eta_p^2 = .00$.⁴

Group Identification. There was no effect of appeal type on group identification, $F < 1, p > .25, \eta_p^2 = .01$.

Feeling of social pressure. Appeal type significantly affected feelings of social pressure, $F(2, 156) = 7.75, p < .001, \eta_p^2 = .09$. As hypothesized, the normative-information appeal increased feelings of social pressure ($M = 4.65$) relative to both the control appeal ($M = 3.55$), $B = 1.10$ [.55, 1.65], $SE = 0.28, t(156) = 3.94, p < .001, d = 0.70$ [0.31, 1.10], and the working-together normative appeal ($M = 4.08$), $B = 0.57$ [.01, 1.13], $SE = 0.29, t(156) = 2.00, p = .047, d = 0.39$ [-0.00, 0.79]. The working-together normative appeal also marginally raised feelings of social pressure relative to the control appeal, $B = 0.53$ [-0.02, 1.08], $SE = 0.28, t(156) = 1.91, p = .059, d = 0.41$ [0.02, 0.79], although as noted this increase was attenuated relative to the normative-information appeal.

Feeling of free choice. Appeal type significantly affected feelings of free choice, $F(2, 156) = 3.03, p = .051, \eta_p^2 = .04$. Participants reported marginally less free choice in response to the normative-information appeal ($M = 4.08$) than in response to the working-together normative appeal ($M = 4.61$), $B = -0.53$ [-1.12, 0.06], $SE = 0.30, t(156) = -1.77, p = .079, d = -0.33$ [-0.72, 0.07], and significantly less than in response to the control appeal ($M = 4.78$), $B = -0.70$ [-1.28, -0.12], $SE = 0.29, t(156) = -2.38, p = .019, d = -0.44$ [-0.82, -0.05]. The working-together normative appeal and control appeal did not differ, $B = -0.17$ [-0.75, 0.41], $SE = 0.29, t(156) = -0.59, p > .25, d = -0.13$ [-0.51, 0.26].⁵

⁴ This finding was unexpected and differs from Experiment 1 and from Experiments 4 and 5, each of which found effects of normative appeals on perceived injunctive norms in charitable-giving contexts. A difference is that in Experiment 2 the outcome was behavioral, not just behavioral interest: participants completed the psychological measures after they had donated or not. Perhaps participants were reluctant to admit that others feel one should donate after they had, or had not, donated.

⁵ 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

Experiment 3: Paper-Towel Usage

Experiment 2 found that working-together normative appeals can increase charitable giving above and beyond both a no-norm control appeal and a normative-information appeal. Can working-together normative appeals also affect behavior in a real-world field setting? Experiment 3 examined appeals to reduce paper-towel use in public restrooms.

Experiments 4-6 will follow up on the finding in Experiment 2 that normative-information appeals can heighten feelings of social pressure and reduce feelings of free choice and explore their mediating roles.

Method

Restrooms

We randomly assigned 27 (13 men's, 14 women's) restrooms on Stanford University's campus to display either a normative-information or a working-together normative appeal. The restrooms were in buildings housing classrooms and offices. Each had one of three types of paper-towel dispensers. These required individuals to either push a lever, rotate a wheel, or pull down on the towel and tear off the desired amount.

Procedure and Measures

To assess paper-towel usage, we worked with custodial staff to take over paper-towel restocking duties for three weeks. One week before we delivered the manipulation (baseline week), we took daily measurements of paper-towel usage in each restroom. We restricted measurements to weekdays because the buildings are closed on weekends. On

responses. However, for completeness we tested the same mediation model as in Experiment 1 and the replication of Experiment 1, as well as the same multiple mediation model employed in Experiments 4-6. See Appendix S6 and Figure S9.

Monday morning, we stocked each paper-towel dispenser with a fresh roll of paper towels. The weight of this roll was recorded (in ounces [oz.]). We then weighed the roll in each restroom each subsequent morning through Friday morning to calculate the previous day's usage. Because the buildings were locked on weekends, measurements could not be taken on Saturday to calculate Friday usage. Thus, the baseline and manipulation assessment weeks comprised Monday through Thursday. Paper-towel rolls were restocked as needed.

Monday morning after the baseline week the manipulation was administered. Condition-specific stickers (described below) were placed on the paper-towel dispenser and the mirror in each restroom (two stickers per restroom). The stickers remained in place for two weeks. As in the baseline week, paper-towel rolls were weighed each weekday morning to calculate the previous day's usage. This provided eight measurements of daily paper-towel usage during the manipulation period per restroom. After two weeks, all stickers were removed.

Over the entire three-week study period, we attached tape seals to each paper-towel dispenser to indicate if someone not on the research team restocked paper towels during the study period. The seals showed that on a few occasions custodial staff mistakenly restocked paper towels before we arrived at the restroom. On those days, the previous day's usage for that restroom could not be accurately calculated. These instances (10 of 108 measurements in the baseline week and 25 of 216 measurements in the manipulation weeks) were excluded from analyses and did not differ by appeal type, $t_s < 1$.

Manipulation: Stickers Appealing to Reduce Paper-Towel Usage

The stickers were similar in design to the fliers in Experiments 1 and 2. The normative-information appeal sticker was square and showed people separated in each corner (Figure S2a). The working-together normative appeal sticker was circular and showed people linked by paper-towel dispensers (Figure S2b). The normative information (“65% of people at Stanford have reduced their paper towel use”) and appeal to reduce usage were identical in the two conditions. The working-together normative appeal condition replaced “Here’s a fact” with “Let’s do it together” and “Join in!” The surface areas of and images on the two stickers were matched.

Pilot Study: Psychological Processes

A pilot study examined the psychological processes that arose from the two stickers. Pilot participants ($n=56$ Stanford students and staff, 40 female, 35.7% White, 33.9% Asian, 14.3% Latinx, 7.1% Black/African-American) were asked to imagine seeing one of the two stickers in a campus restroom. Using items analogous to those assessed in Experiment 1 and in the first pilot study for Experiment 1, we found that the working-together and normative-information appeals did not differ in their perceived attractiveness ($M_{\text{Working-Together}}=3.26$, $M_{\text{Normative-Information}}=3.68$) or clarity ($M_{\text{Working-Together}}=5.81$, $M_{\text{Normative-Information}}=5.28$), $ts < 1.22$, $ps > .22$; in the positivity of the mood ($M_{\text{Working-Together}}=4.55$, $M_{\text{Normative-Information}}=4.24$), feelings of warmth ($M_{\text{Working-Together}}=3.77$, $M_{\text{Normative-Information}}=3.84$), and feelings of happiness ($M_{\text{Working-Together}}=4.03$, $M_{\text{Normative-Information}}=4.00$) they created, $ts < 1$, $ps > .25$; or in the strength of the descriptive ($M_{\text{Working-Together}}=4.71$, $M_{\text{Normative-Information}}=4.56$) (3 items; $\alpha=.69$) or injunctive norm ($M_{\text{Working-Together}}=5.26$, $M_{\text{Normative-Information}}=4.99$) they created (3 items; $\alpha=.79$), $ts < 1$, $ps > .25$. There was also no difference in the encoding of normative information, as assessed by both the

percentage of participants who recalled the normative information accurately at the end of the survey (92.8% overall), $\chi^2 < 1$, $p > .25$, and participants' mean recall of the percentage of people whom the sticker indicated had reduced their paper-towel use, $t < 1$, $p > .25$.

Only one difference was found. The working-together normative appeal increased participants' reported feelings of working together with others to reduce paper towel use ($M=4.33$) relative to the normative-information appeal ($M=3.72$) (3 items, $\alpha=0.81$), $t(54)=2.05$, $p=.046$, $d=0.56$ [0.01, 1.11]. Thus, the manipulation varied only feelings of working together and not other assessed variables. (Because this study was conducted before Studies 2 and 4-6, we did not assess feelings of social pressure or free choice.)

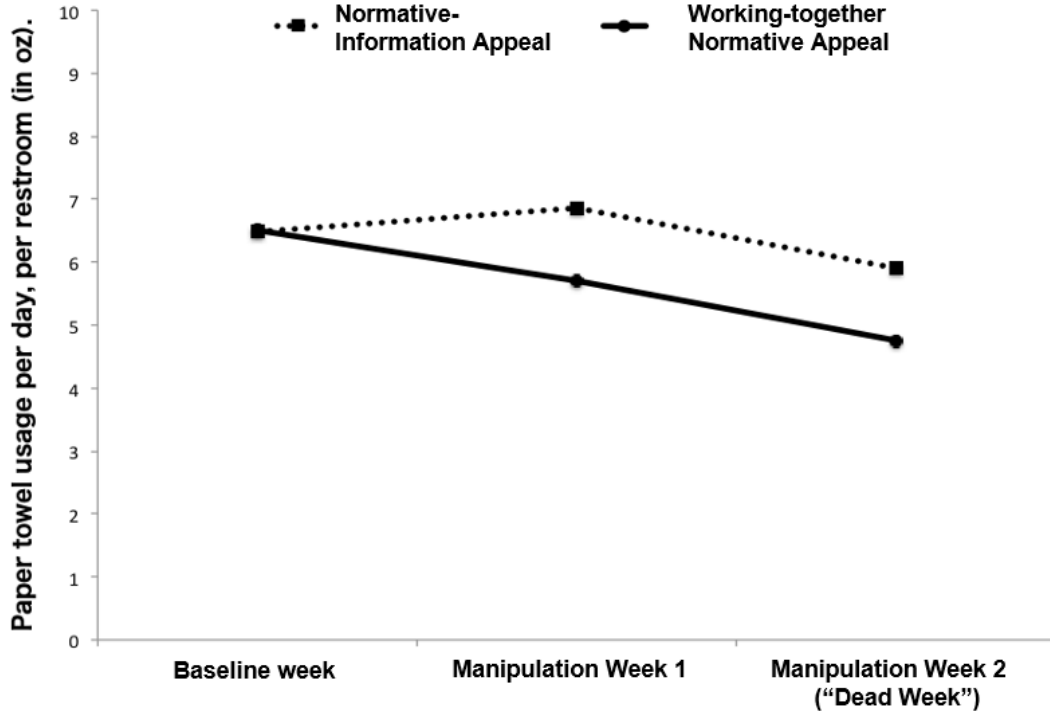
Results and Discussion

Baseline usage in the normative-information appeal ($M=6.48$ oz./day) and working-together normative appeal ($M=6.50$ oz./day) restrooms was nearly identical, $t < 1$. The raw means for paper-towel usage by condition during the baseline and manipulation weeks are shown in Figure 3a.

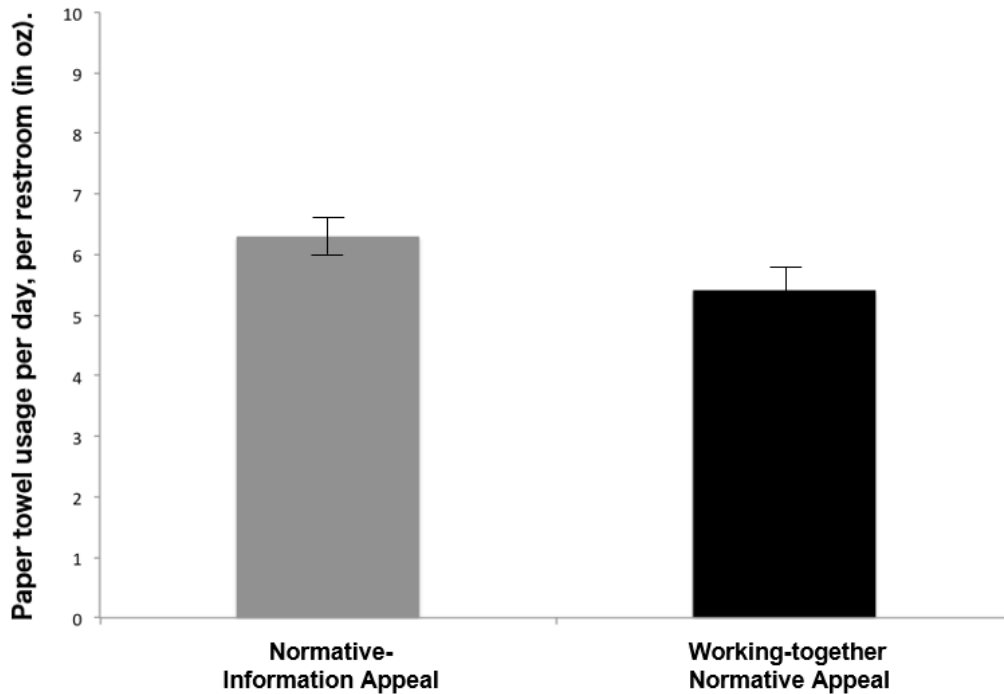
Figure 3

In Experiment 3, (a) Raw Means of Daily Paper-towel Usage (in oz.) per Restroom by Type of Appeal Displayed During the Baseline and Each Manipulation Week and (b) Daily Paper-towel Usage (in oz.) per Restroom by Type of Appeal Displayed During the Manipulation Period, Controlling for Baseline Daily Usage and Manipulation Week

a



b



Note. Error bars represent the standard error of the mean.

Because we had repeated observations within each restroom, we analyzed the data

using hierarchical linear modeling (HLM) with the software HLM 7 from Scientific Software International treating days as nested within restrooms. In an HLM model, daily paper-towel usage during the manipulation period was the dependent variable with condition (0=“normative-information appeal”, 1=“working-together normative appeal”) and baseline usage as restroom-level predictors and manipulation week (1=Week 1, 2=Week 2) as a day-level predictor. The day-level model was: $Y_{ij} = \beta_{0j} + \beta_{1j} * (\text{Manipulation Week}) + r_{ij}$. The restroom-level models were: $\beta_{0j} = \gamma_{00} + \gamma_{01} * (\text{Condition}) + \gamma_{02} * (\text{Baseline Usage})$ and $\beta_{1j} = \gamma_{10}$. Manipulation week was included as a covariate because the second week of the manipulation was Stanford’s “dead week”—the week before final examinations when traffic in academic buildings drops. Both covariates—baseline usage and manipulation week—were centered and significant predictors, $\gamma_{02} = 0.81$, $t(189) = 12.27$, $p < .001$, and, $\gamma_{10} = -0.87$, $t(189) = 2.04$, $p = .042$, respectively.

As hypothesized, daily per restroom paper-towel usage during the manipulation period was significantly lower in restrooms that displayed the working-together normative appeal ($M_{\text{adj}} = 5.41$ oz.) than in restrooms that displayed the normative-information appeal ($M_{\text{adj}} = 6.30$ oz.), $\gamma_{01} = -.89$, $t(189) = 2.01$, $p = .045$. See Figure 3b. This difference represents a 14% drop in usage in restrooms that displayed the working-together normative appeal, which corresponds to 11.5 fewer feet of paper towels used per day per restroom. This effect was not moderated by baseline usage, manipulation week, day of week, restroom gender, floor of restroom, or type of paper-towel dispenser, $t_s < 1$, $p_s > .25$. None of these variables (except baseline usage and manipulation week) significantly predicted usage, $t_s < 1$, $p_s > .25$.

Secondary analyses examined if paper-towel usage in the manipulation period

dropped relative to the baseline week within each condition. We subtracted each restroom's baseline usage from its daily manipulation-period usage and tested whether this difference score was, on average, significantly lower than 0 in each condition. Analyses used the manipulation-baseline difference as the dependent variable and controlled for manipulation week as described above. The day-level model was: $Y_{ij} = \beta_{0j} + \beta_{1j} * (\text{Manipulation Week}) + r_{ij}$. The restroom-level models were: $\beta_{0j} = \gamma_{00}$ and $\beta_{1j} = \gamma_{10}$. An HLM analysis within the working-together normative appeal condition revealed a significant decline in usage from baseline to manipulation weeks, $\gamma_{00} = -1.00$, $t(119) = 4.31$, $p < .001$. The same analysis within the normative-information appeal condition was not significant, $\gamma_{00} = -0.18$, $t < 1$, $p > .25$. Only the working-together message caused a significant reduction in usage.

Experiment 4: Working-Together Normative Appeals Mitigate Reactance Evoked by Mere Normative Information Appeals

In Experiments 1-3, appeals to social norms motivated greater interest in changing behavior and greater behavior change when the norm was represented as an invitation to work with others toward a common goal than when it was not. Moreover, consistent with our hypothesis, participants' feelings of working together with others in their efforts mediated this effect.

In these studies, mere normative-information appeals caused no significant change in behavioral interest or behavior relative to no-norm control appeals. Why not? And can further understanding this question deepen an understanding of the processes that contribute to the effectiveness of working-together normative appeals?

Experiment 2 provided initial evidence that even as working-together normative

appeals increased participants' feelings of working together with others they also mitigated participants' heightened feelings of social pressure provoked by normative-information appeals. Experiments 4-6 further examine the role of social pressure in the contexts of charitable-giving (Experiments 4 and 5) and motivation to reduce personal carbon emissions (Experiment 6). Although a focus of Experiments 4-6 is on testing the mediating roles of feelings of working together and of social pressure, for brevity and to maximize power given the complexity of the mediation analysis, we report an omnibus mediation model examining these factors (and feelings of free choice) across Experiments 4-6 following Experiment 6. For thoroughness, we report the omnibus mediation model for each experiment separately in the Supplemental Material (Figures S6, S7, and S8).

Method

Participants

We recruited as many participants as possible during the last two weeks of the quarter for an online survey, with the goal of exceeding the 36 students per condition required for adequate power (80%) to detect an effect size similar to that found in Experiment 1 and the replication study on interest in donating ($d \approx 0.6$ for the comparison between the working-together and normative-information appeals). A total of 202 Stanford students (119 female, 82 male, 1 non-binary, 34.2% White, 26.2% Asian, 8.9% Latinx, 10.9% Black/African-American) participated in exchange for either course credit or a \$5 gift card.

Procedure

As in Experiments 1 and 2, the study was said to examine “ads and appeals,” and

participants first rated an advertisement for toothpaste. They then responded, on a randomized basis, to one of three appeals encouraging donations to the Family Giving Tree (see Figure S1): a control appeal, a normative-information appeal, or a working-together normative appeal.

Along items similar to those assessed in Experiments 1 and 2, participants indicated on 7-point scales (1) how *interested* they would be in donating to the charity (2 items, $r(200)=.72, p<.001$); and the extent to which they (2) would experience *feelings of working together* in donating (3 items; $\alpha=.91$); (3) *feel pressured* to donate (3 items; $\alpha=.82$); and (4) feel they could *freely choose* to donate (2 items; $r(200)=.67, p<.001$).

Participants also rated on 5-point scales the extent to which they perceived (5) a *descriptive norm* (3 items; $\alpha=.77$) and (6) an *injunctive norm* (3 items; $\alpha=.74$) to donate, and (7) reported their *identification* with Stanford students (3 items; $\alpha=.54$) on 7-point scales. See Appendix S4 for full items.

Results

The primary results are reported in Table 2. Correlations among outcome measures are reported in Table S1.

Interest in Donating

Appeal type significantly affected interest in donating, $F(2, 199)=6.90, p=.001, \eta_p^2=.07$. Replicating Experiments 1 and 2, participants reported greater interest in donating to the charity in response to the working-together normative appeal ($M=3.50$) than to either the normative-information appeal ($M=2.94$), $B=0.57, 95\% \text{ CI: } [0.20, 0.93]$, $SE=0.19, t(199)=3.02, p=.003, d=0.51 [0.17, 0.85]$, or the control appeal ($M=2.86$), $B=0.64 [0.27, 1.02]$, $SE=0.19, t(199)=3.36, p<.001, d=0.56 [0.21, 0.91]$. As in the prior

studies, the latter appeals did not differ, $t < 1$, $p > .25$, $d = 0.08$ [-0.27, 0.42].

Perceptions and Psychological Effects of the Flier

Feeling of working together in supporting the charity. Appeal type also affected participants' feelings of working together in donating, $F(2, 199) = 17.55$, $p < .001$, $\eta_p^2 = .15$. The working-together normative appeal increased feelings of working together to support the charity ($M = 3.65$), marginally relative to the normative-information appeal ($M = 3.21$), $B = 0.44$ [-0.01, 0.89], $SE = 0.23$, $t(199) = 1.93$, $p = .055$, $d = 0.32$ [-0.02, 0.66], and significantly relative to the control appeal ($M = 2.29$), $B = 1.36$ [0.90, 1.82], $SE = 0.23$, $t(199) = 5.84$, $p < .001$, $d = 1.00$ [0.63, 1.36]. The normative-information appeal also increased feelings of working together relative to the control appeal, albeit to a lesser degree, $B = 0.92$ [0.46, 1.38], $SE = 0.23$, $t(199) = 3.94$, $p < .001$, $d = 0.72$ [0.36, 1.08]. This pattern is consistent with the supposition that mere normative information may, in some cases, evoke feelings of working together.

Feeling of social pressure. Appeal type also affected feelings of social pressure, $F(2, 199) = 10.44$, $p < .001$, $\eta_p^2 = .10$. Participants reported feeling greater pressure in response to the normative-information appeal ($M = 3.57$) than in response to the control appeal ($M = 2.56$), $B = 1.02$ [0.57, 1.46], $t(199) = 4.51$, $p < .001$, $d = 0.81$ [0.45, 1.17]. The working-together normative appeal fell in between ($M = 2.94$), marginally higher than the control appeal, $B = 0.39$ [-0.06, 0.83], $SE = 0.22$, $t(199) = 1.73$, $p = .086$, $d = 0.30$ [-0.05, 0.65], but significantly lower than the normative-information appeal, $B = -0.63$ [-1.06, -0.20], $SE = 0.22$, $t(199) = -2.86$, $p = .005$, $d = -0.47$ [-0.81, -0.13]. Thus, the working-together appeal mitigated increased feelings of social pressure.

Feeling of free choice. Appeal type also affected feelings of free choice, $F(2,$

199)=7.20, $p<.001$, $\eta_p^2=.07$. The normative-information appeal reduced feelings of free choice ($M=4.12$) relative to the control appeal ($M=4.98$), $B=-0.85$ [-1.30, -0.41], $SE=0.23$, $t(199)=-3.79$, $p<.001$, $d=-0.67$ [-1.03, -0.32]. The working-together normative appeal again fell in between ($M=4.53$), below the control appeal, $B=-0.45$ [-0.89, -.01], $SE=0.22$, $t(199)=-2.00$, $p=.047$, $d=-0.34$ [-0.69, 0.01], and marginally above the normative-information appeal, $B=0.41$ [-0.03, 0.84], $SE=0.22$, $t(199)=1.85$, $p=.066$, $d=0.32$ [-0.02, 0.65].

Descriptive and injunctive norms. Perceived descriptive norms varied by appeal type, $F(2, 199)=16.86$, $p<.001$, $\eta_p^2=.15$, and perceived injunctive norms varied marginally, $F(2, 199)=2.77$, $p=.065$, $\eta_p^2=.03$. Participants who viewed the two appeals including normative information did not differ in their perceptions of either the descriptive, $t<1$, $p>.25$, $d=0.10$ [-0.24, 0.44], or the injunctive norm, $t<1$, $p>.25$, $d=-0.10$ [-0.44, 0.23]. Participants perceived marginally or significantly stronger descriptive and injunctive norms to donate in response to both normative appeals than in response to the control appeal, $ts>1.69$, $ps<.092$, $ds>0.29$.

Group Identification. There was no effect of appeal type on group identification, $F(2, 199)=1.02$, $p>.25$, $\eta_p^2=.01$.

Table 2*Condition Means and Contrasts Comparing Normative-Information Appeals and Working-together Normative Appeals in Experiment*

4

Outcome	Control Appeal	Normative-Information Appeal	Working-Together Normative Appeal	Contrast Comparing the Two Normative Appeals
<i>Normative Behavior (Self-Reported)</i>				
Interest in Donating (7-point scale)	2.86 ^a (0.14)	2.94 ^a (0.12)	3.50 ^b (0.15)	$t(199)=3.02, p=.003$
<i>Perceptions and Psychological Effects of the Flier</i>				
Feelings of Working Together in Donating (7-point scale)	2.29 ^a (0.16)	3.21 ^b (0.16)	3.65 ^c (0.17)	$t(199)=1.93, p=.055$
Feeling of Social Pressure to Donate (7-point scale)	2.56 ^a (0.15)	3.57 ^b (0.16)	2.94 ^{a*} (0.16)	$t(199)=-2.86, p=.005$
Feeling of Free Choice in Donating (7-point scale)	4.98 ^a (0.17)	4.12 ^b (0.15)	4.53 ^{b*} (0.16)	$t(199)=1.85, p=.066$
Perceived Descriptive Norm (5-point scale)	2.40 ^a (0.09)	3.11 ^b (0.10)	3.03 ^b (0.09)	$t(199)<1, p>.25$
Perceived Injunctive norm (5-point scale)	2.74 ^a (0.09)	2.95 ^b (0.09)	3.02 ^b (0.08)	$t(199)<1, p>.25$
Group Identification (7-point scale)	4.29 ^a (0.11)	4.28 ^a (0.11)	4.46 ^a (0.09)	$t(199)<1.28, p=.203$

Note. Standard errors of the means are presented in parentheses. For each outcome, means with different superscripts differ significantly ($ps<.05$). Means with an additional asterisk (*) differ marginally from means with the same superscript ($p<.10$).

Discussion

As in the prior studies, only the working-together normative appeal increased interest in contributing to a cause. The normative-information appeal did not. Further, consistent with Experiment 2 and our theorizing, only the working-together normative appeal increased feelings of working together while also mitigating feelings of social pressure. The normative-information appeal also increased feelings of working together, but to a lesser extent and, moreover, sharply heightened feelings of social pressure.

Experiment 5: Ensuring the Robustness of the Effects

Experiment 5 aimed to replicate Experiment 4 using slightly different materials. The working-together appeals in the prior studies included three statements encouraging people to act (“Let’s do it together,” “Please donate,” and “Join in!”), as compared to one in the normative-information appeal (“Please donate”). One such request (“Let’s do it together”) also took the “power position,” at the top of the flier, as compared to “Here’s a fact” in the normative-information appeal.

Did the mere number or placement of exhortations to act increase charitable giving? Experiment 5 matched the number and placement of requests as well as their font size and other factors (e.g., exclamation points). We also omitted the “here’s a fact” statement, as it could alter message responses in unintended ways (e.g., increase deliberative processing). Otherwise, Experiment 5 tested the same hypotheses as Experiment 4.

Method

Participants

We posted 200 openings for an online survey and recruited as many student

participants as possible over a three-week period, with the goal of exceeding the 36 students per condition required for adequate power (80%) to detect an effect size similar to that found in Experiment 1 and the replication study on interest in donating ($d \approx 0.6$ for the comparison between the working-together and normative-information appeals).

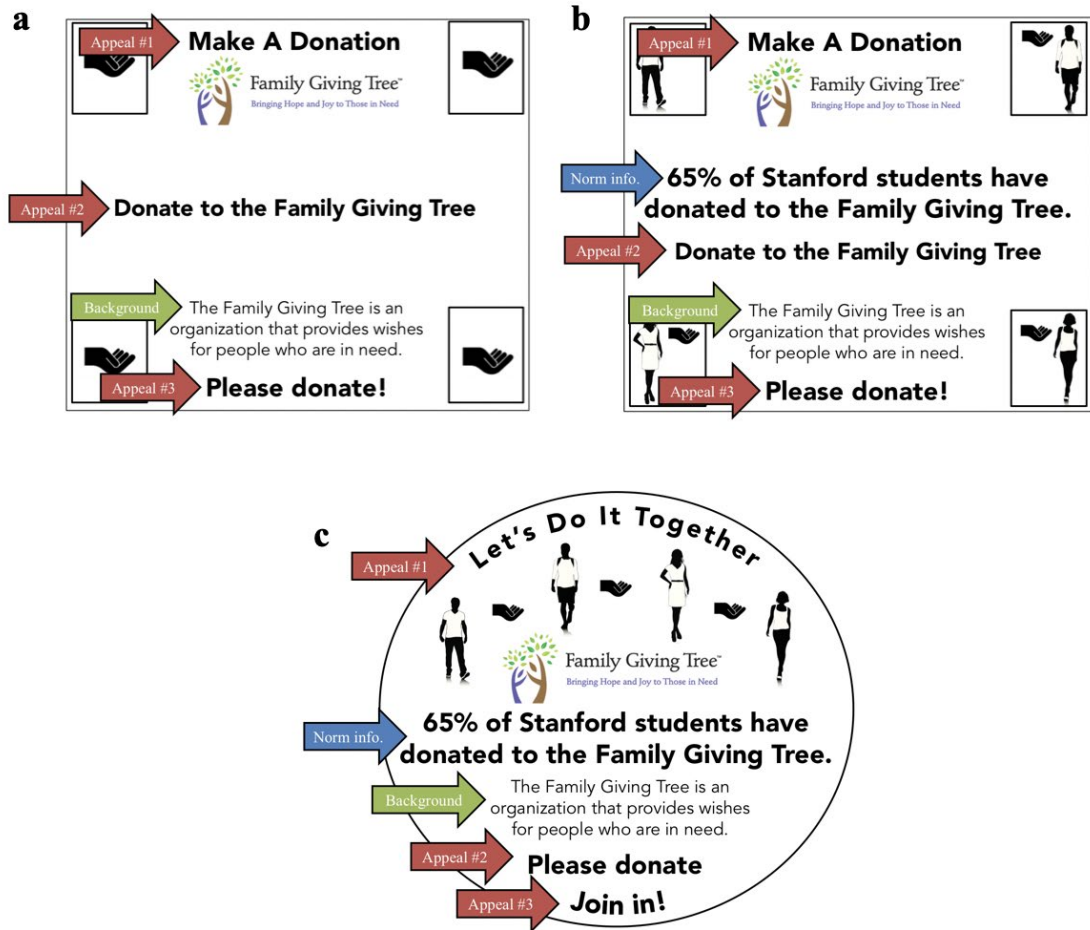
Additionally, 50 participants per condition provides sufficient power to detect an effect size of $d=0.5$, similar to that observed in Experiment 4. A total of 152 Stanford students (104 female, 43 male, 1 transgender man, 3 non-binary, 32.2% White, 29.6% Asian, 6.6% Latinx, 5.3% Black/African-American) participated in exchange for a \$5 gift card.

Procedure

As in Experiments 1, 2, and 4, the study was said to examine “ads and appeals,” and participants first rated an advertisement for toothpaste. They then responded, on a randomized basis, to one of three appeals encouraging people to donate to the Family Giving Tree: a control appeal, a normative-information appeal, or a working-together normative appeal. We added two new solicitations to the control and normative-information appeals for three in total (“Make a donation,” “Donate to the Family Giving Tree,” and “Please donate!”), placed one at the top of the flier, and, as in past studies, ensured that font size and other details were consistent across the appeals. See Figure 4.

Figure 4

Fliers Appealing for Donations to the Family Giving Tree in Experiment 5: (a) the Control appeal, (b) the Normative-information Appeal, and (c) the Working-together Normative Appeal, Annotated with Arrows to Highlight Equivalencies Between Appeals



Note. Equivalencies are highlighted through the following colors: Red=Appeals to Give, Blue=Normative Information, Green=Background Information. All images and font sizes were matched across the appeals.

As in Experiments 2 and 4, participants indicated on 7-point scales (1) how *interested* they would be in donating to the charity (2 items, $r(150)=.75, p<.001$); and the extent to which they (2) would experience *feelings of working together* in donating (3 items; $\alpha=.91$); (3) *feel pressured* to donate (3 items; $\alpha=.77$); and (4) feel they could *freely choose* to donate (2 items; $r(150)=.67, p<0.001$).

Participants also rated on 5-point scales the extent to which they perceived (5) a *descriptive norm* (3 items; $\alpha=.76$) and (6) a *injunctive norm* (3 items; $\alpha=.78$) to donate,

and (7) reported their *identification* with Stanford students (3 items; $\alpha=.72$) on 7-point scales. See Appendix S4 for full items.

Results

The primary results are reported in Table 3. Correlations among outcome measures are reported in Table S1.

Interest in Donating

Appeal type marginally significantly affected interest in donating, $F(2, 149)=2.65$, $p=.074$, $\eta_p^2=.03$. Replicating Experiments 1, 2, and 4, participants reported significantly greater interest in donating to the charity in response to the working-together normative appeal ($M=2.82$) than in response to the control appeal ($M=2.38$), $B=0.45$ [0.03, 0.86], $SE=0.21$, $t(149)=2.14$, $p=.034$, $d=0.41$ [0.02, 0.80], and marginally so compared to the normative-information appeal ($M=2.42$), $B=0.40$, 95% CI: [-0.04, 0.83], $SE=0.22$, $t(149)=1.81$, $p=.072$, $d=0.35$ [-0.06, 0.76]. As in the prior studies, the control and normative-information appeals did not differ, $t<1$, $p>.25$, $d=0.05$ [-0.35, 0.44].

Perceptions and Psychological Effects of the Flier

Feeling of working together in supporting the charity. Appeal type affected participants' feelings of working together in donating, $F(2, 149)=16.37$, $p<.001$, $\eta_p^2=.18$. Participants reported greater feelings of working together to support the charity in response to the working-together normative appeal ($M=3.04$) than the control appeal ($M=1.86$), $B=1.18$ [0.72, 1.64], $SE=0.23$, $t(149)=5.10$, $p<.001$, $d=1.01$ [0.60, 1.42]. Interestingly, the normative-information appeal also increased feelings of working together ($M=2.96$) relative to the control appeal, $B=1.11$ [0.64, 1.58], $SE=0.24$, $t(149)=4.66$, $p<.001$, $d=1.04$ [0.62, 1.46]. Thus, the comparison between the two

normative appeals was not significant, $B=0.08$ [-0.41, 0.56], $SE=0.24$, $t(149)=0.31$, $p>.25$, $d=0.06$ [-0.35, 0.46].

Feeling of social pressure. Appeal type also affected feelings of social pressure, $F(2, 149)=9.72$, $p<.001$, $\eta_p^2=.12$. Participants reported greater pressure in response to the normative-information appeal ($M=3.60$) than to either the control appeal ($M=2.46$), $B=1.14$ [0.62, 1.66], $t(149)=4.34$, $p<.001$, $d=0.86$ [0.45, 1.27], or the working-together normative appeal ($M=2.79$), $B=0.81$ [0.27, 1.34], $SE=0.27$, $t(149)=2.99$, $p=.003$, $d=0.59$ [0.18, 1.00]. The latter appeals did not differ, $B=0.34$ [-0.17, 0.84], $SE=0.26$, $t(149)=1.30$, $p=.196$, $d=0.26$ [-0.13, 0.65]. Thus, even as both normative appeals increased feelings of working together in this study, only the working-together normative appeal did so without inducing heightened feelings of social pressure.

Feeling of free choice. Appeal type marginally significantly affected feelings of free choice, $F(2, 149)=2.92$, $p=.057$, $\eta_p^2=.04$. Participants reported less free choice in response to the normative-information appeal ($M=4.02$) than in response to the control appeal ($M=4.72$), $B=-0.70$ [-1.28, -0.12], $SE=0.29$, $t(149)=-2.40$, $p=.018$, $d=-0.45$ [-0.85, -0.05]. The working-together normative appeal ($M=4.48$) fell in between and did not differ significantly from either the control appeal, $B=-0.24$ [-0.81, 0.32], $SE=0.29$, $t(149)=-0.85$, $p>.25$, $d=-0.17$ [-0.56, 0.22], or the normative-information appeal, $B=0.46$ [-0.14, 1.05], $SE=0.30$, $t(149)=1.53$, $p=.129$, $d=0.32$ [-0.08, 0.73].

Descriptive and injunctive norms. Perceived descriptive norms varied by appeal type, $F(2, 149)=12.57$, $p<.001$, $\eta_p^2=.14$, as did perceived injunctive norms, $F(2, 149)=3.78$, $p=.025$, $\eta_p^2=.05$. Participants who viewed one of the two normative appeals did not differ in their perceptions of either the descriptive, $t<1$, $p>.25$, $d=0.12$ [-0.29,

0.52], or the injunctive norm, $B=-0.20$ [-0.49, 0.08], $SE= 0.15$, $t(149)=-1.40$, $p=.165$, $d=0.30$ [-0.11, 0.71]. Participants perceived significantly stronger descriptive norms to donate in response to either of the normative appeals compared to the control appeal, $ts>3.87$, $ps<.001$, $ds>0.82$. Participants also perceived stronger injunctive norms in response to the working-together normative appeal than the control appeal, $B=0.38$ [0.11, 0.65], $SE= 0.14$, $t(149)=2.75$, $p=.007$, $d=0.53$ [0.14, 0.92], but the comparison between the normative-information appeal and the control appeal did not reach significance, $B=0.18$ [-0.10, 0.46], $SE= 0.14$, $t(149)=1.26$, $p=.211$, $d=0.24$ [-0.15, 0.64].

Group Identification. There was no effect of appeal type on group identification, $F(2, 149)=1.07$, $p>.25$, $\eta_p^2=.01$.

Table 3*Condition Means and Contrasts Comparing Normative-Information Appeals and Working-together Normative Appeals in Experiment*

5

Outcome	Control Appeal	Normative-Information Appeal	Working-Together Normative Appeal	Contrast Comparing the Two Normative Appeals
<i>Normative Behavior (Self-Reported)</i>				
Interest in Donating (7-point scale)	2.38 ^a (0.13)	2.42 ^{a*} (0.15)	2.82 ^b (0.17)	$t(149)=1.81, p=.072$
<i>Perceptions and Psychological Effects of the Flier</i>				
Feelings of Working Together in Donating (7-point scale)	1.86 ^a (0.12)	2.96 ^b (0.18)	3.04 ^b (0.20)	$t(149)<1, p>.25$
Feeling of Social Pressure to Donate (7-point scale)	2.46 ^a (0.17)	3.60 ^b (0.21)	2.79 ^a (0.19)	$t(149)=2.99, p=.003$
Feeling of Free Choice in Donating (7-point scale)	4.72 ^a (0.21)	4.02 ^b (0.23)	4.48 ^a (0.18)	$t(149)=1.53, p=.129$
Perceived Descriptive Norm (5-point scale)	2.07 ^a (0.09)	2.70 ^b (0.13)	2.81 ^b (0.13)	$t(149)<1, p>.25$
Perceived Injunctive norm (5-point scale)	2.38 ^a (0.10)	2.56 ^{b*} (0.10)	2.76 ^b (0.09)	$t(149)=1.40, p=.165$
Group Identification (7-point scale)	4.32 ^a (0.15)	4.15 ^a (0.19)	4.00 ^a (0.15)	$t(149)<1, p>.25$

Note. Standard errors of the means are presented in parentheses. For each outcome, means with different superscripts differ significantly ($ps<.05$). Means with an additional asterisk (*) differ marginally from means with a different superscript ($p<.10$).

Discussion

Experiment 5 replicated Experiment 4 using revised materials, equating the number and placement of exhortations to donate. As previously, only the working-together normative appeal increased interest in donating to a cause. It was not the number or placement of exhortations that increased interest in donating but the representation of working together. As in the prior studies, the working-together normative appeal also increased participants' feelings of working together with others. Interestingly, in Experiment 5 the normative-information appeal did as well but, unlike the working-together normative appeal, it also raised feelings of social pressure and reduced feelings of free choice. Thus, only the working-together normative appeal fostered greater feelings of working together in participants without raising feelings of social pressure or reducing feelings of free choice.

Experiment 6: Interest in Reducing Personal Carbon Emissions

Experiment 6 examined the same processes as Experiments 4 and 5 in a particularly significant context: appeals to reduce personal carbon emissions. Moreover, this context differs in an important respect from the contexts examined previously. When asked to donate to a charity or to use fewer paper towels the ways people can comply are limited. But there are many ways people can reduce carbon emissions (e.g., flying less, driving less, eating less meat, etc.). When people have more freedom in how to pursue a goal, are they still vulnerable to feeling pressured by normative appeals? Would working-together normative appeals still motivate greater conformity?

Method

Participants

We posted 150 openings for an online study to a paid undergraduate participant pool for a

two-week time period, with the goal of exceeding the 36 students per condition required for adequate power (80%) to detect an effect size similar to that found previously on interest in donating ($d \approx .6$ for the comparison between the working-together appeal and normative-information appeal). However, we note that Experiment 6 was conducted before Experiments 2 and 5, which produced somewhat smaller effects, and may thus be somewhat underpowered. One hundred and eighteen Stanford students (82 female, 34 male, 1 non-binary, 1 not reported, 28.0% White, 34.7% Asian, 9.3% Latinx, 6.8% Black/African-American) participated in exchange for a \$5 gift card.

Procedure

As in Experiments 1, 2, 4 and 5, the study was said to examine “ads and appeals,” and participants first rated an advertisement for toothpaste. They then rated one of three fliers (described below) encouraging people to reduce their carbon footprint. We then assessed interest in reducing personal carbon emissions and related psychological processes.

Manipulation: Carbon Footprint Fliers

As in the previous studies, the appeals were matched on images and background information. All three stated, “We need to reduce our carbon footprint. Here’s what you can do to make a difference.” Each also described diverse ways people could reduce their carbon emissions—e.g., eating less red meat, flying less, buying used products—and asked participants do so (Figure 5).

The control appeal contained only black and white images of the Earth (Figure 5a).

The normative-information appeal added a reference to a norm among Stanford students: “65% of Stanford students are taking steps to reduce their carbon emissions.” As in the previous studies, the flier was square, and each corner featured a black and white image of a person

adjacent to a picture of the Earth (Figure 5b).

The working-together normative appeal added, “Let’s do it together” and “Join in!”⁶ Additionally, the images of people were grouped with images of the Earth linking them and the layout was circular rather than square, representing efforts to reduce carbon emissions as something done with others rather than separately from others (Figure 5c).

Figure 5

Fliers Appealing to Reduce Carbon Emissions in Experiment 6: (a) the Control Appeal, (b) the Normative-information Appeal, and (c) the Working-together Normative Appeal

⁶ Although the normative-information appeal did not contain additional requests to change behavior as in Experiment 5, that study suggests that it is not the number or placement of requests that increases the effectiveness of working-together normative appeals but the reference to working together.



Dependent Measures

We assessed the same measures as in Experiments 2, 4, and 5 adapted for the new context: (1) *interest* in reducing personal carbon emissions (4 items, $\alpha=.89$); (2) anticipated *feelings of working together* in reducing carbon emissions (3 items, $\alpha=.93$), (3) *social pressure* to reduce carbon emissions (3 items, $\alpha=.79$), and (4) perception that reductions in carbon emissions would be *freely chosen* (2 items, $r(116)=.68, p<.001$); (5) the perceived *descriptive norm* to reduce carbon emissions (3 items, $\alpha=.82$) and (6) the perceived *injunctive norm* to reduce carbon

emissions (3 items, $\alpha=.73$); and (7) group identification (3 items, $\alpha=.76$). See Appendix S5 for full items.

Results

The primary results are reported in Table 4. Correlations among outcome measures are reported in Table S1.

Interest in Reducing Personal Carbon Emissions

Appeal type significantly affected interest in reducing personal carbon emissions, $F(2, 115)=4.43, p=.014, \eta_p^2=.07$. Participants reported greater interest in reducing their carbon emissions in response to the working-together normative appeal ($M=3.83$) than in response to either the normative-information appeal ($M=3.18$), $B=0.65 [0.07, 1.22], SE=0.29, t(115)=2.24, p=.027, d=0.50 [0.02, 0.98]$, or the control appeal ($M=2.99$), $B=0.83 [0.27, 1.40], SE=0.29, t(115)=2.91, p=.004, d=0.70 [0.21, 1.18]$. As in Experiments 1-5, the difference between the latter appeals was not significant, $t<1, p>.25, d=0.16 [0.27, 0.58]$.

Perceptions and Psychological Effects of the Flier

Feeling of working together in reducing carbon emissions. Appeal type also affected feelings of working together in reducing carbon emissions, $F(2, 115)=7.77, p<.001, \eta_p^2=.12$. Participants reported greater feelings of working together in response to the working-together normative appeal ($M=4.38$) than in response to either the normative-information appeal ($M=3.69$), $B=0.69 [0.04, 1.34], SE=0.33, t(115)=2.10, p=.038, d=0.47 [-0.01, 0.95]$, or the control appeal ($M=3.10$), $B=1.27 [0.63, 1.92], SE=0.32, t(115)=3.93, p<.001, d=0.89 [0.40, 1.38]$. Again the normative-information appeal increased feelings of working together relative to the control appeal but to a lesser degree, $B=0.59 [0.01, 1.17], SE=0.29, t(115)=2.00, p=.048, d=0.47 [0.04, 0.90]$.

Feeling of social pressure. Appeal type marginally significantly affected feelings of social pressure, $F(2, 115)=2.79, p=.065, \eta_p^2=.05$. The normative-information appeal increased feelings of social pressure ($M=2.99$) relative to both the control appeal ($M=2.39$), $B=0.61$ [.06, 1.15], $SE=0.27, t(115)=2.21, p=.029, d=0.45$ [0.02, 0.87], and, marginally, the working-together normative appeal ($M=2.46$), $B=0.54$ [-0.07, 1.14], $SE=0.31, t(115)=-1.75, p=.082, d=0.41$ [-0.07, 0.89]. The latter appeals did not differ, $t<1, p>.25, d=0.06$ [-0.41, 0.53]. Thus again, the working-together message attenuated the increased social pressure evoked by the normative-information appeal.

Feeling of free choice. Appeal type significantly affected feelings of free choice, $F(2, 115)=3.74, p=.027, \eta_p^2=.06$. Interestingly, participants reported greater free choice in response to the working-together normative appeal ($M=4.77$) than either the normative-information appeal ($M=4.12$), $B=0.65$ [0.05, 1.26], $SE=0.31, t(115)=2.13, p=.035, d=0.52$ [0.04, 1.00], or the control appeal ($M=3.97$), $B=0.80$ [0.20, 1.40], $SE=0.30, t(115)=2.64, p=.009, d=0.65$ [0.17, 1.13]. The latter appeals did not differ, $t<1, p>.25, d=0.11$ [-0.31, 0.54].

Descriptive and injunctive norms. Perceptions of descriptive and injunctive norms did not vary by appeal type, $F<1, p>.25, \eta_p^2=.02$, and $F(2, 115)=2.02, p=.138, \eta_p^2=.03$, respectively. We suspect that, even in the absence of an explicit norm statement, participants assumed that their peers were making efforts to reduce carbon emissions. Indeed, the mean level of both the perceived descriptive ($M_{\text{grand}}=3.52, SD=0.79$) and injunctive norm ($M_{\text{grand}}=3.64, SD=0.70$) exceeded the scale midpoint (3), one-samples $t(117)=7.16, p<.001$, and $t(117)=9.99, p<.001$, respectively. Additionally, the control-appeal means for perceived descriptive ($M=3.41$) and injunctive norms ($M=3.72$) were higher than those in the charitable giving contexts (Experiment 4, $M_{\text{descriptive}}=2.40, t(106)=7.13, p<.001, M_{\text{injunctive}}=2.74, t(106)=7.35, p<.001$, and Experiment 5,

$M_{\text{descriptive}}=2.07, t(99)=9.68, p<.001, M_{\text{injunctive}}=2.38, t(99)=9.54, p<.001).$

Group Identification. There was no effect of appeal type, $F(2, 115)=1.12, p>.25,$
 $\eta_p^2=.02.$

Table 4*Condition Means and Contrasts Comparing Normative-Information Appeals and Working-together Normative Appeals in Experiment*

6

Outcome	Control Appeal	Normative-Information Appeal	Working-Together Normative Appeal	Contrast Comparing the Two Normative Appeals
<i>Normative Behavior (Self-Reported)</i>				
Interest in Reducing Personal Carbon Emissions (7-point scale)	2.99 ^a (0.16)	3.18 ^a (0.19)	3.83 ^b (0.25)	$t(115)=2.24, p=.027$
<i>Perceptions and Psychological Effects of the Flier</i>				
Feelings of Working Together to Reduce Carbon Emissions (7-point scale)	3.10 ^a (0.18)	3.69 ^b (0.19)	4.38 ^c (0.31)	$t(115)=2.10, p=.038$
Feeling of Social Pressure to Reduce Carbon Emissions (7-point scale)	2.39 ^a (0.18)	2.99 ^b (0.23)	2.45 ^{a*} (0.19)	$t(115)=1.75, p=.082$
Feeling of Free Choice in Reducing Carbon Emissions (7-point scale)	3.97 ^a (0.20)	4.12 ^a (0.21)	4.77 ^b (0.19)	$t(115)=2.13, p=.035$
Perceived Descriptive Norm (5-point scale)	3.41 ^a (0.11)	3.64 ^a (0.15)	3.52 ^a (0.11)	$t(115)<1, p>.25$
Perceived Injunctive norm (5-point scale)	3.72 ^a (0.09)	3.71 ^a (0.12)	3.42 ^{b*} (0.11)	$t(115)=-1.77, p=.080$
Group Identification (7-point scale)	4.40 ^a (0.16)	4.17 ^a (0.17)	4.53 ^a (0.16)	$t(115)=1.44, p=.153$

Note. Standard errors of the means are presented in parentheses. For each outcome, means with different superscripts differ significantly ($ps<.05$). Means with an additional asterisk (*) differ marginally from means with a different superscript ($p<.10$)

Discussion

As in the prior studies, only the working-together normative appeal in Experiment 6 facilitated greater interest in behavior change; the normative-information appeal did not. The working-together normative appeal also increased participants' feelings of working together with others in changing their behavior while mitigating increased feelings of social pressure. Moreover, Experiment 6 found this evidence in an important and very different behavioral context than the charitable-giving context examined previously: interest in reducing personal carbon emissions.

Omnibus Mediation Model Across Experiments 4-6

To provide a complete understanding of how the psychological changes contributed to interest in personal behavior change across studies, we combined data from Experiments 4-6 ($N=472$) and conducted an omnibus test of mediation using the R package *lavaan* (Rosseel, 2012) to examine our three mediators, feelings of working together, feelings of social pressure, and feelings of free choice, simultaneously. The results within each experiment are similar (see Appendix S6, Figures S6, S7, and S8). We dummy coded the type of appeal so the normative-information appeal was the omitted base group. This allowed us to compare (1) with the first dummy code, the working-together normative appeal to the normative-information appeal, and (2) with the second dummy code, the normative-information appeal to the control appeal. The full results are presented in Figure 6. We did not include Experiment 2 in this analysis because of the measurement issues noted in that study, though the results are similar including it (see Appendix S6 and Figure S3). We did not include Experiment 1 or the replication of Experiment 1 because neither assessed all three process measures and the replication did not include a control appeal.

Combining Experiments 4-6, the working-together normative appeals, as compared to the normative-information appeals, facilitated interest in personal behavior change because they maximized participants' feelings of working together with others in changing their behavior while minimizing participants' feelings of social pressure. For these appeals, there was a significant positive indirect effect for feelings of working together, $p=.040$, 95% CI: [0.01, 0.28], such that the working-together normative appeals, relative to the normative-information appeals, increased feelings of working together, $b=0.32$ [0.02, 0.63], $SE=0.16$, $z=2.08$, $p=0.037$, which predicted greater interest in personal behavior change, $b=0.45$ [0.39, 0.51], $SE=0.03$, $z=13.65$, $p<.001$. There was also a significant indirect effect of feelings of social pressure, $p=.014$, 95% CI: [0.01, 0.13], such that the working-together normative appeals reduced feelings of social pressure, $b=-0.63$ [-0.92, -0.34], $SE=0.15$, $z=-4.22$, $p<.001$, which predicted less interest in personal behavior change, $b=-0.11$ [-0.18, -0.04], $SE=0.04$, $z=-3.01$, $p=.003$. The indirect effect for feelings of free choice was not significant, $p>.25$, 95% CI: [-0.02, 0.05]. Although the working-together normative appeals significantly increased feelings of free choice relative to the normative-information appeals, $b=0.47$ [0.17, 0.77], $SE=0.16$, $z=3.02$, $p=.003$, feelings of free choice did not predict interest in personal behavior change, $b=0.03$ [-0.04, 0.10], $SE=0.04$, $z=0.96$, $p>.25$. The effect of the working-together normative appeals on interest in personal behavior change was reduced when controlling for these processes, $b=0.26$ [0.03, 0.48], $SE=0.11$, $z=2.24$, $p=.025$, supporting the interpretation that heightened feelings of working together and lessened feelings of social pressure contributed to their effectiveness.

By contrast, the normative-information appeals were undermined by the greater social pressure they induced. (In the discussion of these results, the signs of the paths examined are reversed for conceptual clarity, that is, to reference the effect of normative-information appeals

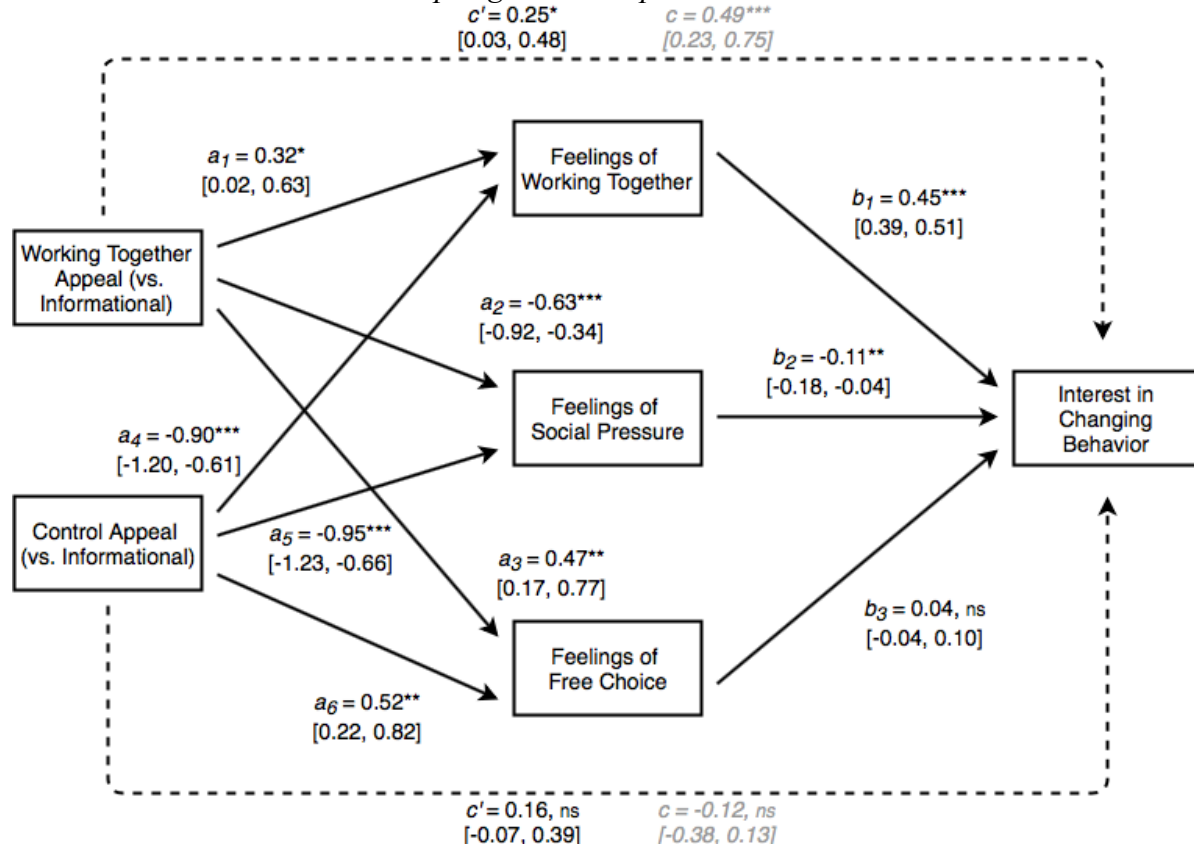
as compared to control appeals.) For these appeals, there was a significant positive indirect effect for feelings of working together, $p < .001$, 95% CI: [-0.55, -0.26], such that the normative-information appeals, compared to the control appeals, increased feelings of working together, $b = 0.90$ [0.61, 1.20], $SE = 0.15$, $z = 5.96$, $p < .001$, which predicted greater interest in personal behavior change. However, there was also a significant negative indirect effect through feelings of social pressure, $p = .006$, 95% CI: [0.03, 0.18], such that the normative-information appeals increased feelings of social pressure, $b = 0.95$ [0.66, 1.23], $SE = 0.15$, $z = 6.52$, $p < .001$, which predicted less interest in personal behavior change. In turn, the normative-information appeals did not predict interest in personal behavior change when controlling for these processes, $b = -0.16$ [-0.39, 0.07], $SE = 0.12$, $z = -1.38$, $p = .168$. The results are consistent with the interpretation that these processes offset each other. Finally, the indirect effect for feelings of free choice was not significant, $p > .25$, 95% CI: [-0.02, 0.06]. The normative-information appeals decreased feelings of free choice, $b = -0.52$ [-0.82, -0.22], $SE = 0.15$, $z = -3.44$, $p = .001$, but feelings of free choice did not predict interest in personal behavior change.

The analyses support our primary hypothesis, that normative appeals to contribute to the solution of collective action problems are more effective when they invite people to work together with others, and our secondary hypotheses, that this is because working-together normative appeals foster in participants a feeling of working together that is motivational while mitigating high levels of social pressure that normative appeals can otherwise trigger. Interestingly, feelings of free choice, although enhanced by working-together normative appeals relative to normative-information appeals, did not predict interest in personal behavior change in models that also included social pressure. At least in the contexts examined here, feelings of social pressure played a greater role than did feelings of free choice. Certainly, free choice could

play a larger role in other contexts.

Figure 6

Omnibus Mediation Model Collapsing Across Experiments 4-6



Note. $N=472$. Note that, in the text, the signs have been reversed to reference the effect of normative-information appeals relative to control appeals. See Appendix S6 and Figures S3 and S6-S9 for separate omnibus mediation analyses for each experiment and an analysis including Experiment 2. 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 appeals on the mediators compared to the normative-information appeals, a_4 - a_6 is the effect of the control appeals on the mediators compared to the normative-information appeals), 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} $p > .10$, ⁺ $p < .10$, * $p < .05$, ** $p < .010$, *** $p < .001$

Exploratory Analyses: Does Culture Moderate the Effects?

Reactance is particularly common among European Americans in Western cultural contexts (Iyengar & Lepper, 1999; Jonas, Graupmann, Kayser, Zanna, Traut-Mattausch, & Frey,

2009), where people tend to define themselves by their independent qualities and characteristics (Markus & Kitayama, 2010), and where the present research was conducted. When the self is defined more in interdependent terms, social pressures and obligations may be routine experiences, not threats to be warded off to preserve the independence or autonomy of the self. Illustrating this, in one line of studies, priming words like *accommodate* and *coordinate* undermined motivation among European Americans but not Asian Americans (Hamedani, Markus, & Fu, 2013; see also Iyengar & Lepper, 1999). If independent selves are more reactive to social pressure, working-together normative appeals, which reduce this pressure, may be especially relevant for people from more independent cultural backgrounds.

While the present studies were not designed to test the role of culture, we can begin to examine it by comparing White and Asian Americans who may be, respectively, relatively more independent and more interdependent even within the common American context (Oyserman, Coon, & Kemmelmeier, 2002). For further details of these analyses, see Appendix S7. These comparisons are necessarily limited and post-hoc. Future research designed specifically to examine cultural processes may compare across groups with greater precision and distinction.

We examined responses from Experiments 4-6, as these studies provided complete process measures. Consistent with a cultural analysis, while White Americans showed greater interest in behavior change in response to working-together normative appeals than to normative-information appeals ($M_{\text{Diff}}=0.92$ scale points; $d=0.82$, 95% CI: [0.39, 1.23]), Asian Americans did not ($M_{\text{Diff}}=-0.06$ scale points; $d=-0.05$, 95% CI: [-0.49, 0.39]), a significant race \times condition interaction. See Table 5A.

Examination of the process measures was further informative. There was no difference between Whites and Asians in feelings of working together, and feelings of working together

were similarly predictive of behavioral interest, consistent with the view that people in both cultural contexts share a motivation to work with others toward common goals (Appendix S7 and Table 5B). However, feelings of social pressure rose in response to normative-information appeals relative to control appeals more for White Americans ($M_{\text{Diff}}=1.35$ scale points) than for Asian Americans ($M_{\text{Diff}}=0.38$), a significant race \times condition interaction, and thus spiked higher for White Americans in the normative-information condition (see Table 5C). They then declined similarly for both groups in response to working-together normative appeals.

This analysis excluded participants who identified as multiracial (including White/Asian biracial) or another race (e.g., Black or Hispanic) ($N=170$), as this group does not provide as clear a theoretical test as White and Asian participants. We report results among this group in the supplement (see Appendix S7 and Table S7). However, the positive effects of working-together normative appeals on interest in behavior change were not restricted to White participants but also evident among multi- and other-race participants.

Table 5

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

	Race of Participants	
	White Americans ($N=151$)	Asian Americans ($N=139$)
<i>A. Self-Reported Interest in Behavior Change</i>		
Control Appeals	2.76 ^a	2.65 ^a
Normative-Information Appeals	2.84 ^a	2.90 ^a
Working-Together Normative Appeals	3.76 ^b	2.84 ^a
<i>B. Feelings of Working Together</i>		
Control Appeals	2.29 ^a	2.54 ^a
Normative-Information Appeals	3.22 ^b	2.96 ^a
Working-Together Normative Appeals	3.75 ^c	3.42 ^b
<i>C. Feelings of Social Pressure</i>		

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

General Discussion

In five laboratory and one field experiment, appeals that represented social norms as an opportunity to join with others to work toward a common goal motivated people to contribute to the solution of collective action problems, even in relatively private behavioral contexts. By contrast, appeals that included the same normative information without reference to working together produced no change in behavior or interest in behavior change, even meta-analyzing across studies (see Table 6, Row A).

Table 6*Meta-analytic Comparison of Condition Effects on Behavior or Behavioral Interest and Process Measures*

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>
A. Behavior change / interest in behavior change	0.60 [0.41, 0.79]	<.001	0.11 [-0.07, 0.29]	.250	0.52 [0.34, 0.69]	<.001
B. Feelings of working together	0.93 [0.73, 1.12]	<.001	0.55 [0.30, 0.80]	<.001	0.39 [0.23, 0.54]	<.001
C. Feelings of social pressure	0.26 [0.07, 0.45]	.008	0.73 [0.53, 0.92]	<.001	-.48 [-0.67, -0.28]	<.001
D. Feelings of free choice	-0.02 [-0.42, 0.37]	>.25	-0.38 [-0.70, -0.05]	.020	0.35 [0.16, 0.55]	<.001

Note. 95% CI for effect sizes indicated in brackets. For study-by-study results, see Tables S3-S6 and Figures S4-S5. (A) includes Experiment 1, Replication of Experiment 1 (column 3 only, since there was no control appeal in this study), Experiment 2, and Experiments 4-6. Experiment 3 was excluded, as it examined restroom-level change in paper towel use not personal behavior, but see Table S3 for an analysis including this study. (B) includes Experiment 1, Replication of Experiment 1 (column 3 only), Experiment 2, Pilot Study for Experiment 3, and Experiments 4-6. (C) and (D) include Experiments 2 and 4-6.

This pattern held across diverse contexts: from appeals for donations to three different charities to appeals to reduce paper towel use and personal carbon emissions. Each context represents a classic collective action problem—a problem whose solution requires the contributions of many individuals, such as to produce an adequate charitable response to need or to create a more sustainable world (Sparkman, Howe, & Walton, 2020). Traditionally, such problems have been seen as especially difficult to solve specifically because their collective nature allows each person to take advantage of the sacrifices of others without contributing themselves (Olson, 1965; Rogers et al., 2018). Yet our results suggest that inviting people to join with others in their community to address a collective problem can motivate personal and relatively private contributions.

We also found evidence of the psychological processes that mediated behavior change. Working-together normative appeals fostered in participants feelings of working together with others in making a difference and, simultaneously, mitigated increased feelings of social pressure that arose from normative-information appeals (see Table 6, Rows B and C). These processes independently contributed to greater motivation to follow the norm (Figure 6).

On a theoretical level, the results highlight the nature of the perceived relationship between the person being asked to change and the group requesting this change as an important dimension of normative appeals. When an appeal simply presents normative information in asking people to change, it risks seeming to imply that to recipients that they are subject to social pressure, and this feeling constrains personal change. Yet when an appeal invites people to join with others to work toward a common problem, people experience less pressure and, moreover, a feeling of working together that enhances their motivation to contribute. Appeals to norms need not coerce. They can also inspire people to act with others for the common good.

Potential Boundary Conditions and Future Directions

Our theoretical analysis suggests several potential boundary conditions, each of which represents an important direction for future research.

Direct appeals. Our studies examined direct appeals to individuals to change their behavior in line with a group norm. We have suggested that such appeals foreground people's relationship with the group whose norm is referenced. When normative facts or cues are conveyed without an explicit request to change, the nature of the perceived relationship with the group may be less salient, and other aspects of norms may drive behavioral response (Cialdini et al., 1991; Sparkman & Walton, 2017).

Reference group. The reference group in our studies was a university community. Yet reference groups vary. If it seems unlikely that a group will work together, or that it would be able to effect change even if it tried (De Cremer, 1999; Doherty & Weber, 2016; Kramer et al., 1995; van Zomeren, Spears, Fischer, & Leach, 2004), working-together normative appeals may seem false, insincere, or even manipulative, and be less likely to motivate people to change their own behavior.

People's pre-existing relationship to the group may shape the mechanisms we examined in the current research. Our studies referenced an in-group important to participants' identity, students' affiliation with their university in the United States. Average ratings of identification were indeed high across studies (e.g., 79.7% of participants in Studies 4-6 reported group identification above the midpoint). Perhaps it is when people identify with a group that the nature of this relationship, including the perception of coercive social pressure and the opportunity to work together to make a positive change, are most relevant. Future studies in contexts with greater variability could test whether group identification—or related constructs, such as the

degree to which people admire, respect, or seek to join a group—makes these feeling especially impactful.

The presence of the norm. A question not addressed in the current studies is whether cues of working together would motivate collective action even in the absence of normative information. Certainly, this possibility is raised by the influence of working-together cues on intrinsic motivation for personal tasks: Just the opportunity to work together with a group may be rewarding (Carr & Walton, 2014). Yet there may be complexities to this question. In the context of collective action problems, references to working together alone may lead people to impute a norm—that is, to readily imagine a normative community of people working together toward a goal, which invites their contribution. If so, explicit reference to the norm may not be necessary to obtain behavioral effects, even if the assumption of that normative community contributes to people’s experience.

However, explicit references to norms and invitations to work together could also be mutually reinforcing. For instance, if a behavior appears uncommon, unusual, or particularly costly, then explicit reference to a norm may give credence to the idea that there really is a community engaged with the problem with whom one could work together, leading invitations to work together to have more of an impact when a norm is also referenced.

The level of the norm. Would working-together normative appeals be effective if the base rate were lower (e.g., “Let’s do it together. 30% of people have reduced their carbon emissions. Join in!”)? Certainly, when a norm is weaker people may experience less motivation to comply, and perhaps less feelings of working together and of social pressure. However, the focus theory of norms suggests that whatever aspect of a norm is salient is most impactful. Thus, if the reference to an opportunity to work with others is salient it may be motivational, even with

a lower norm. Consistent with this reasoning, even a numeric minority can be motivating if attention is drawn to an increase in the norm over time (i.e., dynamic norms, Mortensen, Neel, Cialdini, Jaeger, Jacobson, & Ringel, 2017; Sparkman & Walton, 2017, 2019). It is also possible to represent norms without specifying their level (e.g., “Let’s do it together. Many people have reduced their carbon emissions. Join in!”), which might be especially effective in low-norm contexts.

The question of the base rate is important as the present research carries significant implications for policy and practice (Sparkman et al., 2020). It is exciting to imagine diverse collective action problems that might be addressed by inviting people to join a group in making a change for the common good. Yet contexts vary in the extent to which people are already engaged in a desired behavior. In future field studies testing working-together normative appeals, whatever norm information is provided should be accurate. A question for such studies, then, is whether and how base rates affect the processes observed here.

The present studies were designed primarily as theory tests. Thus, we kept the base rate (65%) constant so as to reduce variability and to test effects as often understood in the literature (cf. Goldstein et al., 2008) and in a way that applies to many normative but non-unanimous behaviors. The number appears to have been credible (in debriefing, no participant questioned it) and it was in the range of the observed rates (in Experiment 2, 61.5% of students donated at least \$1 in the working-together condition). Additionally, in most of the studies, participants simply imagined seeing the flier, and so presumably treated the figure as an assumption. In Experiment 3, the only study in which we embedded content in the real-world, we removed experimental materials immediately following the two-week test period. The current research establishes the foundation for future research both in the field and the lab that explores how normative base

rates may or may not interact with working-together normative appeals.

Culture. The exploratory analyses presented above suggest the importance of underlying cultural processes to the present effects. As the world increasingly becomes multicultural, it is essential to understand how normative appeals vary in their effects across cultural contexts. Future research should systematically test how diverse cultural groups respond to working-together and other normative appeals, both to understand what kinds of appeals are most or least effective in diverse cultural contexts and to inform theories of cultural processes.

The possibility that working-together normative appeals may be especially effective for independent selves, however, is particularly important for efforts to mitigate global climate change. Global climate emissions come disproportionately from Western countries and, within these countries, especially from wealthier individuals (Sharma, 2011). Yet wealthy, Westerners are the “weirdest” people in the world. They are most likely to have independent selves (Henrich, Heine, & Norenzayan, 2010) that render them reactive to social influence attempts (Hamedani et al., 2013; & Iyengar & Lepper, 1999). In identifying a means to circumvent this reactance in response to normative appeals, our research provides a promising way to reach the most challenging individuals to reach and those whose decisions and behaviors matter most.

Development. Age also affects people’s sense of self and social goals. In particular, adolescents can be both especially reactive to social pressure and especially responsive to opportunities to work with others to make the world better (Bryan et al., 2016; Bryan, Yeager, & Hinojosa, 2019; Yeager et al., 2014). They may thus be most responsive to working-together norms, a possibility that can be fruitfully explored in future research.

Why Were Normative-Information Appeals Ineffective?

In contrast to previous research (e.g., Agerström et al., 2016; Schultz et al., 2008; Terrier

& Marfaing, 2015), we found that appeals that provided normative information alone did not change behavioral intentions or behavior. This seemed to be at least in part because such appeals produced reactance. Why did we observe this process here, as compared to past research?

Since comparable process measures were not assessed in past studies, we have less insight into the underlying mechanisms elsewhere. However, there are several possibilities. First, the nature of the perceived relationship between the person and the group whose norm is referenced need not always be salient in response to norms, as suggested by the boundary conditions discussed above. When norms are represented indirectly (Cialdini et al., 1990; Keizer et al., 2008), or referenced explicitly but without a direct appeal to change behavior (Sparkman & Walton, 2017), the person's relationship to the group may be less salient. People may also be less vulnerable to feelings of social pressure when they have less attachment to the reference group. Second, it is possible that appeals in prior studies created feelings of social pressure but nonetheless motivated behavior change, for instance if they also facilitated feelings of working together. This could be the case if normative appeals explicitly referenced working together (e.g., Goldstein et al., 2008; Nolan et al., 2008) but even if they did not, as we found (Table 6, Row B). Finally, public behavior under the scrutiny of others can shift as people comply to social pressure, a process very different from the motivational processes in relatively private contexts examined here (e.g., Gerber, Green, & Larimer, 2008).

Psychological Processes

There are also exciting opportunities to further examine mediating processes. For instance, reference to working together toward a common goal may dislodge the perception that people act in narrow self-interested ways, an assumption that can lead people to follow suit and act in selfish ways (Miller, 1999).

Additionally, there is a notable fit between the representation that a norm is changing (dynamic norms) and the representation that people are working together toward a collective goal (working-together norms) (see Sparkman et al., 2020). Often, norms change *because* people are working together toward a goal. Moreover, the processes the two representations instigate may be mutually reinforcing. When others are changing (i.e., dynamic norms), a change that had seemed overly difficult can seem possible; one that had seemed unimportant can seem imperative; and one that had seemed inconsistent with one's personal identity can seem fitting (Sparkman & Walton, 2019). Similarly, perhaps reference to working together lead people to see a behavior as a process or goal, an effort one can join, and the people who engage in a behavior as a kind of person one can become, rather than a fixed type of person who one is or is not. Such representations of process can motivate change (Klein & O'Brien, 2017; Lockwood & Kunda, 1997). Thus, the intersection of dynamic and working-together norms—a *growing* movement of people are working together—may be particularly powerful in instigating individual and collective behavior change, a hypothesis that could be tested in 2×2 designs.

Future research could also explore how processes engendered by working-together normative appeals unfold over time, in interaction with other mechanisms and with social contexts, in ways that could cause lasting change. For instance, in the present studies, working-together normative appeals did not affect participants' identification with their in-group immediately (Experiments 1, 2, 4-6). However, if such appeals inspire people to work with a group toward a common goal, the pursuit of that goal over time may deepen their identification with the group (van Zomeren, Leach, & Spears, 2010). In turn, this increased identification may potentiate future behavior change in line with group norms, as suggested by research on social identity theory (e.g., Hornsey, 2008; Terry & Hogg, 1996). A recent study found that

encouraging high school students to initiate school campaigns to spread anti-bullying norms caused this norm to spread through peer networks to reduce school-wide discipline problems (Paluck, Shepherd, & Aronow, 2016). Perhaps interlocking working-together and group identification processes contributed to these effects.

Conclusion

Often, norms are seen as a barrier to change: Driven by a desire to not stand out and to avoid sanction, people succumb to group pressure, follow along, and become, as Deutsch and Gerard (1955) wrote, a “mirror or puppet of the group” (p. 635), or “self-stereotype” and blindly adopt group behaviors (Turner, 1991). While norms can reinforce the status quo, the present research shows they can also convey a psychologically potent invitation to individuals to come together to reconstitute a present state of affairs. As the world increasingly faces challenges that necessitate the coordinated actions of many people, highlighting opportunities to work with others toward shared goals may be instrumental to instigate change and solve collective problems.

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