

Does Observing Reciprocity or Exploitation Affect Elevation, a
Mechanism Driving Prosociality?

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Accepted for publication in Evolutionary Human Sciences

Abstract

Fitness is enhanced by determining when to behave prosocially. *Elevation*, an uplifting emotion elicited by witnessing exemplary prosociality, upregulates prosociality in the presence of prosocial others, as such contexts render prosociality profitable and/or antisociality costly. Prior research examines responses to a single highly prosocial individual. However, the profitability of enhancing prosociality hinges not only on potential interactions with a single actor, but also on the actions of others. Accordingly, information regarding how others respond to the prosocial exemplar may influence elevation elicitation and corresponding changes in prosocial motivation. If others reciprocate the exemplar's prosociality, or pay prosociality forward, this expands opportunities for the observer to profit by increasing prosociality, and thus could enhance elevation elicitation. Conversely, if others exploit the exemplar, this may diminish the profitability of prosociality, as the observer who acts prosocially may similarly be exploited and/or the resources with which the exemplar could reciprocate will be depleted. Conducting three online studies of Americans in which information regarding the responses of others to a prosocial exemplar was manipulated, we find that, against predictions, prosocial responses by the beneficiaries of prosociality generally do not enhance elevation among observers, whereas, consonant with predictions, antisocial responses markedly diminish elevation among observers.

Keywords: prosociality; emotion; elevation; exploitation

Introduction

A growing literature explores the emotion that Haidt and colleagues (Haidt, 2000, 2003a, 2003b; Keltner and Haidt, 2003; Algoe and Haidt, 2009) termed *elevation*, a positive, uplifting feeling, elicited by witnessing exemplary prosocial behavior, that motivates increased prosociality in the observer (reviewed in Thomson and Siegel, 2017; Pohling and Diessner, 2016). We theorize that elevation is part of an evolved mechanism that adjusts the actor's inclination to behave prosocially in response to indications that, by virtue of the presence of other prosocial actors, the immediate environment is one in which prosociality will yield benefits. Here, we explore the responses of this mechanism to the social dynamics observed by the actor, asking how the reactions of recipients of prosociality influence elevation elicitation and subsequent prosocial motivation. Specifically, we examine whether the evocative power of the prosocial actions of a single exemplary individual is enhanced by prosocial reactions (in the form of direct or indirect reciprocity) from the beneficiaries of such actions, and, conversely, whether antisocial responses to the prosocial actions of an exemplary individual degrade the potential of said actions to elicit elevation. The answers to these questions can shed light on the workings of the elevation mechanism, and have translational implications regarding the potential of different social events to initiate or impede cascades of contagious prosocial behavior.

To summarize our model of elevation, we argue as follows: First, the payoffs to the individual resulting from incurring costs to provide benefits to others (or, less directly, contributing to a larger cooperative enterprise) hinge on the likelihood that such costs will subsequently be outweighed by benefits the actor receives from others in virtue of her actions. To sketch the possibilities in their starkest terms, when, in their immediate surroundings, individuals are amidst people most of whom cooperate for the public good and/or punish free-

riders, prosocial acts are more likely to be directly or indirectly reciprocated, and cooperative ventures will generally yield greater gains, as most or all of the relevant parties will invest in the venture. Likewise, behaving in a self-interested, antisocial manner in the presence of prosocial actors will frequently be costly, both because they will exclude one from rewarding cooperative ventures, and because prosocial punishers may punish one for behaving selfishly. Conversely, when the individual is surrounded by a substantial proportion of antisocial others, prosocial acts will rarely be directly or indirectly reciprocated, and, instead, the prosocial actor will often be exploited by others. Similarly, behaving in a self-interested, antisocial manner will generally not be punished, as others will not be willing to pay the costs of punishment to enhance security for third parties. Second, holding aside for now the complexities of social dynamics—the topic of the present paper—observing an exemplary prosocial individual is a powerful cue that the current setting is one in which prosociality may be rewarded and antisociality may be punished. Engaging an emotional driver of prosociality in the presence of such an individual thus temporarily upregulates prosocial inclinations in a manner benefiting the actor. Lastly, because any given setting entails some uncertainty regarding how others will respond to prosocial or antisocial actions, interpretations of immediate events are fundamentally colored by previous experience. We argue that actors approach a given event with a representation, based on past experience, of the prior probability that others will behave prosocially. Elsewhere, we extensively demonstrate that this attitude, which we term *idealism*, predicts the extent to which a specific prosocial event elicits elevation.

From its inception, much research on elevation has focused on observers' reactions to a single exemplary prosocial target (see Thomson and Siegel, 2017; Pohling and Diessner, 2016).

There are several ways that the actions of one person might index the likely profitability of prosocial action, as follows:

First, the prosocial individual might herself constitute a prospective cooperative partner. Elevation may function completely or partially to establish a dyadic partnership with the exemplar. Consistent with this, observers experiencing elevation are positively inclined toward the observed individual, and are motivated to approach and offer praise and other rewards (Algoe and Haidt, 2009). However, there is also considerable evidence that prosocial motivations upregulated by elevation are not uniquely focused on the exemplary individual. Indeed, a common finding is that, in both their stated desires and their measured behaviors, elevated participants evince enhanced prosociality toward people unconnected to the observed prosocial actor. (Although stated desires indicate an increase in broadly prosocial motivation, it remains unknown whether elevation-driven prosociality would be directed at third parties if participants could focus their efforts exclusively on the exemplary individual.)

Second, even if the elevation mechanism is not designed to exclusively target the exemplary individual as a cooperative partner, a single observed prosocial can nonetheless adaptively upregulate prosociality if their presence is a cue of an environment suitable for other cooperative ventures. In general, individuals who behave in a highly prosocial manner when surrounded by selfish individuals will not persist for long, as costly exploitation without offsetting benefits will force them to either desist, leave, or be weakened to the point of being unable to continue acting prosocially. Accordingly, the observer can conclude that the presence of an exemplary prosocial individual will frequently index a social environment in which prosociality pays off, and this is especially true if the exemplary individual is seen to persist in prosocial behavior over time.

Third, if witnessing an exemplary prosocial actor increases one's own prosocial actions, these in turn feed into the social milieu. Although much depends on the timecourse of interactions, the number and density of social connections, and the baseline prior attitudes that the interactants bring to the situation, under the right conditions, virtuous cycles of positive feedback can occur whereby an exemplary prosocial actor can push a group toward an equilibrium in which high levels of prosociality are common—a context in which it pays for the observer to join in this virtuous cycle and behave prosocially.

Note that both the second and third possibilities listed above rely on individuals other than the exemplary prosocial actor as the source of benefits making it profitable for the observer to upregulate prosocial motivations. If, per the second possibility, the exemplary prosocial individual indexes a highly prosocial environment, then the observer who acts prosocially will be rewarded not merely by the focal individual, but by others as well; likewise, others are likely to punish selfish behavior by the observer. If, per the third possibility, the presence of the exemplary prosocial individual is informative because of the possibility of a virtuous cycle of increasing prosociality, then the observer who acts prosocially will both contribute to, and benefit from, this cycle, while the observer who acts selfishly may be increasingly punished by others. Of these two circumstances, the third is potentially more expansive in scope than the second, since contagious prosociality can progressively increase the number of prosocial individuals with whom profitable interactions might occur. Lastly, note that, when the number of prosocial actors is sufficiently large and/or their interactions are sufficiently stable over time, a prosocial milieu can be sustained through indirect rather than direct reciprocity, that is, prosocial actors receive benefits not from those whom they benefit, but from third parties who witness or learn of their actions (Alexander, 1987; Nowak and Sigmund, 2005).

If, per the second and third possibilities, the benefits of upregulating prosocial motivation in the presence of an exemplary prosocial individual stem at least in part from others' responses to the observer's enhanced prosociality, then information regarding reactions by the focal individual's beneficiaries is relevant, and thus should influence elevation elicitation. Specifically, elevation should be enhanced relative to that elicited by the actions of the exemplary individual if recipients of her prosociality either reciprocate (i.e., pay the prosociality back), or themselves demonstrate high levels of prosociality (i.e., either behave from baseline in an exemplary manner, or else enhance their prosociality, that is, pay the prosociality forward). Of these two circumstances, the latter can be expected to be even more evocative than the former, as a large or ever-expanding set of prosocial individuals enhances the likelihood that the observer who increases his own prosociality will benefit thereby, since payoffs do not depend exclusively on the propensity or capacity of any given recipient to reciprocate.

Via direct or indirect reciprocity, people like those observed responding to the exemplar are one avenue via which elevation-motivated prosociality can pay off. If so, what if, rather than responding to the exemplar by either paying back his generosity or paying it forward, others do neither? This nonresponsiveness may degrade the evocative power of a single prosocial exemplar, as observing such reactions should indicate that payoffs from enhancing one's prosociality may be limited to the focal individual's direct or indirect reciprocity—a narrower source of benefits than the larger community of actors.

Finally, and critically, witnessing others actively exploiting an exemplary prosocial actor should markedly erode the capacity of the latter's actions to evoke elevation and corresponding prosocial motivation in the observer. First, if a prosocial actor is exploited, this will often diminish said actor's ability to reciprocate should the observer act prosocially. Second,

observing such exploitation should indicate that not only would any prosocial actions by the observer be less likely to elicit direct or indirect reciprocity from others in the immediate environment, but, moreover, the observer would be more likely to suffer exploitation herself. The presence of selfish, exploitative individuals can lead to a cascade wherein prosocial individuals reduce their contributions in light of the risk of exploitation; this spurs others to do likewise, creating a downward spiral (reviewed in Fehr and Schurtenberger, 2018). More broadly, consonant with the adaptively-relevant fact that dangers are often more imminent than, and preclude, opportunities, across many domains, negative events have greater attentional, emotional, and motivational salience than positive events (Rozin and Royzman, 2001; Baumeister *et al.*, 2001). Accordingly, seeing an exemplary prosocial actor being exploited should markedly inhibit elevation elicitation.

To explore the above possibilities, in three experiments, we investigated the effects on elevation elicitation of social stimuli beyond those of a single exemplary prosocial actor. All study protocols reported in this paper were approved by the University of California, Los Angeles Office of the Human Research Protection Program. Informed consent was obtained before participation. Data and analysis code for all studies are at <https://osf.io/6m2ya/>.

Study 1

Study 1 Methods

Based on results from our prior work (currently under review elsewhere), we targeted a sample size of 1,800 (300 per condition). 1,804 U.S. participants were recruited in April of 2017 via Amazon Mechanical Turk (500+ completed HITs, 95% approval) in exchange for \$1.20-\$1.30, depending on the length of the survey. Data were prescreened for repeat participation,

minimal completeness, answering “catch questions,” excessively short completion time, and technical problems reported by participants; see Supplement for details. The final sample consisted of 1,616 adults (54% female; 72.5% white), age 18-88 ($M = 36.7$, $SD = 11.9$).

In Study 1, we employed as a stimulus an edited version of *Unsung Hero*, a Thai television commercial depicting a young man engaging in various charitable acts toward strangers in his urban environment (e.g., giving money to a beggar; feeding a stray dog; leaving a gift of food for an elderly neighbor); recipients express gratitude toward their benefactor (e.g., a hug from the elderly neighbor; a smile from the former beggar) and provide benefits to their benefactor (e.g., the dog assists the protagonist) (see Supplement for all stimuli discussed in this paper). In a between-subjects design, participants in a control condition watched a video of a parkour athlete performing acrobatics in an urban environment – an entertaining (and arguably admirably exceptional) performance by a young man, but one lacking prosociality. As a second experimental condition, we edited the *Unsung Hero* video further, removing scenes of gratitude from and reciprocation by the protagonist’s beneficiaries. As a matched control for this condition, we created an equivalently shortened parkour video. Note that, because acts of reciprocation are themselves prosocial, the shortened version of *Unsung Hero* contains fewer prosocial acts. Likewise, in the longer version multiple prosocial individuals are depicted (the protagonist and his reciprocating beneficiaries), but in the shorter version only a single prosocial individual (the protagonist) is shown. To examine the effects of the number of prosocial individuals, and number of prosocial acts, witnessed independent of the issue of reciprocity, using real-life videos collected from the Internet, we created a montage of video clips, each depicting a different individual engaged in one of a wide variety of prosocial acts (e.g., giving food to a beggar; inoculating poor children; etc.). As a control condition for witnessing multiple

actors, we employed a video, of equivalent length, depicting a montage of neutral content featuring a similar variety of settings and people. Participants were randomly assigned to condition.

In all conditions, participants first completed our highly face-valid self-report measure assessing idealism, the expectation that others will behave prosocially (e.g., "most people are basically honest", "people cannot be good to each other" [reverse coded], etc.) (see Supplement for all measures discussed herein). They then watched an unremarkable 30-second video of commuters on a passenger train, then completed our self-report elevation scale which, resembling those used by prior elevation researchers, consists of items employing emotion terms (e.g., "inspired," "uplifted"), somatic symptoms (e.g., "tears in eyes"), and behavioral tendencies (e.g., "be a good person"). This initial procedure is intended to place participants in a neutral emotional state and to familiarize them with our elevation scale. After several demographic questions (distracting from the aforementioned scale), participants watched the assigned video, then completed the elevation scale again, allowing for measurement of the effects of the stimulus video on emotional state.

Study 1 Results

Our elevation scale was internally reliable ($\alpha = 0.97$; see Supplement for details). Elevation levels in each condition are visualized in Figure 1 (for the effects of condition on each subscale of the elevation measure, see Supplement Figure 1). As anticipated, the control conditions (Neutral Montage, Parkour, Parkour Shortened) evince lower elevation levels than the prosocial conditions (Prosocial Montage, *Unsung Hero*, *Unsung Hero* Shortened): ΔM (difference in means) = -1.27 , 95% CI [-1.33 , -1.20], $t(1, 480.50) = -38.26$, $p < .001$ (see

Supplement for additional analyses). Among the prosocial conditions, *Unsung Hero* elicits more elevation than its shortened version or than the Prosocial Montage, with no significant difference between the latter two (Table 1). Our idealism scale was internally reliable ($\alpha = 0.93$; see Supplement for details). Idealism significantly interacted with condition type (prosocial versus control) to predict elevation (Supplement Table 1) such that idealism was a significant predictor of elevation in all prosocial conditions and no control conditions (Supplement Table 4).

Study 1 Discussion

Per elementary predictions, in all three prosocial conditions, both in aggregate and by subscale, elevation was increased relative to that elicited in any of the control conditions. Likewise, per core predictions of our model, in all three prosocial conditions post-stimulus elevation correlated positively with pre-stimulus idealism. Addressing the key issue here, the experimental video depicting both prosociality and reciprocation seemed to elicit more elevation than either the same video edited to remove evidence of reciprocation, or the montage video depicting prosocial acts by multiple individuals without reciprocation; the latter two stimuli elicited identical levels of elevation.

These results suggest that reciprocated prosocial acts may be more elevating than unreciprocated prosocial acts, consistent with the notion that observers are assessing not merely the presence of an exemplary prosocial actor, but also the milieu in which the payoffs for such actions do or do not occur. However, it is unclear whether the lesser elevation elicited by the shortened *Unsung Hero* video owes to the absence of reciprocation, or instead derives from either the smaller number of prosocial acts depicted, the smaller number of prosocial individuals depicted, or both. The montage video was intended to test the importance of reciprocity, as it

depicted multiple prosocial acts by multiple individuals, none of which involved reciprocation. However, it is difficult to conclude from the lack of difference between the montage condition and the shortened *Unsung Hero* condition that reciprocation is key, as the latter had higher production values and depicted a consistent narrative, such that the former was more taxing to watch, plausibly influencing elevation elicitation. Lastly, *Unsung Hero* and the parkour video are both accompanied by music; this soundtrack was slightly jumpy in the shortened version of *Unsung Hero*, while the prosocial montage contained no sound at all. Given the power of music to evoke strong emotions (Balteş, Avram, Miclea, & Miu, 2011), this inconsistency across conditions constituted a potential confound. We therefore conducted a second study in which we held the video content of the stimulus constant, and manipulated the information presented to participants using text at the end of the video.

Study 2

Study 2 Methods

In Study 2, a final sample size of 600 was targeted (100 per condition) based on estimates derived from Study 1 results. 607 U.S. participants were recruited in June of 2017, via Mechanical Turk as in Study 1, in exchange for \$1.30. Exclusion criteria were the same as in Study 1; see Supplement for details. The final sample consisted of 495 adults (55% female; 71.7% white), age 19-74 ($M = 36.6$, $SD = 12.0$); post-hoc analyses indicate that the power to detect an effect of the size observed in Study 1 using this sample was nearly 100% (see Supplement).

To compare the effects on elevation of direct reciprocity, indirect reciprocity, and a sole exemplary prosocial individual, in a between-subjects design, we employed the shortened

version of the *Unsung Hero* video used in Study 1 followed by scrolling text that recounted either (i) direct reciprocation by the protagonist's beneficiaries (termed the Pay-It-Back condition), or (ii) prosocial actions directed at third parties by his beneficiaries (termed the Pay-It-Forward condition). To control for the increased number of prosocial actions depicted, we created a third version in which the same video was followed by text recounting additional prosocial acts by the protagonist, but containing no information about his beneficiaries' reactions (termed the Lone-Altruist condition). To explore whether, as predicted, elevation elicitation is diminished by observing exploitation, we created two conditions in which the text recounts exploitative responses from the protagonist's beneficiaries. In one (termed the Exploited condition), the text consists solely of accounts of this exploitation. However, because this condition contains a smaller total number of prosocial actions than in the Pay-It-Back, Pay-It-Forward, and Lone-Altruist conditions, we also created a condition (termed the Martyr condition) in which the Exploited condition's accounts of exploitative responses are presented together with the descriptions of the protagonist's additional prosocial actions contained in the Lone-Altruist condition. Lastly, a quasi-control condition (termed the No-Additional-Information condition) was created by pairing the prosocial video with text providing no information about prosocial or antisocial acts. Participants were randomly assigned to condition. Study 2 was pre-registered (see <https://osf.io/vcpyg/>).

Study 2 Results

Our elevation scale was again internally reliable ($\alpha = 0.96$; see Supplement for details). Elevation levels in each condition are visualized in Figure 2 (for effects of condition on each elevation subscale, see Supplement Figure 2). Among the conditions that include no

evidence of antisociality, there are no significant differences in elevation levels $F(3, 326) = .45$, $MSE = .52$, $p = .719$, $\eta^2_G = .004$ (see Supplement for additional analyses). These conditions elicit more elevation than do those that include evidence of antisociality: $\Delta M = 0.51$, 95% CI [.36, .65], $t(294.67) = 6.80$, $p < .001$. Among the latter, the Martyr condition is more elevating than the Exploited condition: $\Delta M = .33$, 95% CI [.08, .57], $t(160.79) = 2.64$, $p = .009$. Our idealism scale was again internally reliable ($\alpha = 0.93$; see Supplement for details). Condition and idealism were significant predictors of elevation, but the interaction was not significant (Supplement Table 2). Analyzing conditions separately, idealism significantly predicted elevation in four of the conditions (Supplement Table 4).

Study 2 Discussion

In contrast to Study 1, Study 2 reveals no clear added effect of evidence of reciprocation, as the elevation elicited in the Pay-It-Back condition did not differ from that in the Lone-Altruist condition; nor was there a positive influence of indirect reciprocity, as the Pay-It-Forward condition likewise elicited essentially identical levels of elevation. However, consistent with predictions, there is clear evidence of the inhibitory effect of the presence of antisocial individuals on elevation elicitation, as both the Exploited condition and the Martyr condition produced less elevation than any of the purely prosocial conditions, with the Exploited condition being the least elevating.

Ceteris paribus, we might expect that, independent of the identity of the individuals responsible, additional evidence of prosocial actions should heighten elevation elicitation. However, in addition to there being no differences in elevation between the Pay-It-Back, Pay-It-Forward, and Lone-Altruist conditions, these conditions all elicited the same level of elevation as

the No-Additional-Information condition in which the text was uninformative regarding additional prosocial actions – resulting in a smaller total number of prosocial actions depicted. Given the lack of difference between the No-Additional-Information condition and the other prosocial conditions, it is possible that either participants did not attend fully to the text, or else the video stimulus, with its greater realism, was sufficiently more evocative than the text that the information presented in the latter had little effect. Granted, the depressive effects of the Exploited and Martyr conditions on elevation indicate that the information presented in the text did register with participants. However, both general negativity bias and error-management considerations (Haselton and Nettle, 2006) regarding the possibility of greater impacts on fitness of failing to detect cheaters relative to failing to detect cooperators (but see Delton *et al.*, 2011) indicate that text recounting exploitation can be expected to have a greater absolute effect than text recounting additional prosocial acts and/or individuals. Hence, it is possible that text following the video has an effect on elevation, but this effect is more easily detected when it is negative than when it is positive, making the lack of difference between the positive conditions impossible to interpret. Finally, we note that participants’ previous familiarity with the *Unsung Hero* video (widely viewed on the Internet) could have reduced the effectiveness of the altered endings, yet we failed to measure this.

Study 3

Study 3 Methods

In Study 3, a final sample size of 600 was again targeted (100 per condition). 604 U.S. participants were recruited in July 2018, via Mechanical Turk as in Study 1, in exchange for

\$1.30. Exclusion criteria were the same as in Study 1. The final sample consisted of 476 adults (48% female; 72.7% white), age 18-76 ($M = 35.4$, $SD = 11.4$).

To address Study 2's limitations, we replicated the Study 2 design, substituting text accounts of the story depicted in the video, and melding this with the texts that followed the video in the various conditions of Study 2 (participants were again randomly assigned to condition). While this sacrifices the evocative power of video, by muting the contrast between the initial depiction of prosociality and the manipulations that follow, we obtain a clearer test of whether said manipulations influence the elicitation of elevation. Additionally, we altered superficial details of the story to mask similarity to *Unsung Hero* in order to reduce the likelihood that previous familiarity with *Unsung Hero* colors participants' interpretation of the narrative; in addition, following completion of dependent measures, participants were queried as to their familiarity with *Unsung Hero*. Lastly, we used a slightly refined version of our idealism scale (see Supplement). All other methods were identical to those of Study 2. Study 3 was pre-registered (see <https://osf.io/dn6wk/>).

Study 3 Results

Our elevation scale was once more reliable ($\alpha = 0.95$; see Supplement for details). Elevation levels in each condition are visualized in Figure 2 (for effects of condition on elevation subscales, see Supplement Figure 2). Once again, the conditions that do not include evidence of antisociality elicit more elevation than the conditions that do: $\Delta M = .47$, 95% CI [.33, .62], $t(266.38) = 6.40$, $p < .001$. Replicating Study 2, there are no differences in elevation among the four conditions lacking evidence of antisociality: $F(3, 328) = 1.05$, $MSE = .53$, $p = .372$, $\eta^2_G = .009$ (see Supplement for additional analyses). Unlike Study 2, the two conditions containing

evidence of antisociality do not significantly differ from one another: $\Delta M = .04$, 95% CI $[-.20, .29]$, $t(141.74) = .35$, $p = .726$. Our idealism scale was again internally reliable ($\alpha = 0.82$; see Supplement for details). Condition and idealism significantly predicted elevation, but the interaction was not significant (Supplement Table 3); idealism predicted elevation in all conditions (Supplement Table 4). Lastly, in an ANOVA modeling elevation as a function of condition, previous familiarity with *Unsung Hero*, and their interaction, we find no significant interaction, and main effects of condition and having previously viewed the *Unsung Hero* video. Non-naive participants reported higher elevation (see Supplement Tables 2 and 3 and Supplement Figure 3). This is unlikely to be due to self-selection for previous viewing, as idealism does not predict prior viewing (see Supplement).

Study 3 Discussion

Presumably reflecting the lower evocative power of our text accounts relative to professionally produced videos, responses across subscales (particularly in regard to somatic items) are slightly depressed in Study 3 compared to Studies 1 and 2 (see Supplement Figure 2). Despite this minor difference, overall, Study 3 replicated the results of Study 2 – once again there are no significant differences between the conditions that exclusively portray prosocial behavior, suggesting that, within the confines of our experimental paradigm, elevation elicitation is insensitive to evidence of either direct or indirect reciprocity, nor is it influenced by evidence of larger numbers of either prosocial acts or prosocial actors. In contrast, robustly replicating our prior findings, accounts of prosocial behavior being met by exploitation markedly erode the elicitation of elevation. Unlike Study 2, we find no difference between a depiction of an actor who persists in being prosocial in the face of exploitation and a depiction of an actor whose

various altruistic acts are collectively followed by exploitation—suggesting that the salient feature is the presence of exploitation, not prosocial responses to exploitation. Prior familiarity with *Unsung Hero* predicts greater elevation across conditions, suggesting that our attempts to mask the source of our textual stimuli were incompletely successful. Given evidence suggesting that such prior familiarity, a likely methodological confound, inflates elevation scores more in the conditions in which exploitation occurs (see Supplement Figure 3), the depressive effects of the exploitation on elevation may be even stronger than our results indicate.

General Discussion

Across three studies, we find that, consonant with both our core model, baseline idealism generally predicts the experience of elevation in response to prosocial stimuli, indicating that, per the hypothesized mechanism, the propensity to upregulate prosocial motives after having observed prosocial behavior is contingent on prior expectations regarding the likelihood that others will act prosocially. Our model is premised on the insight that, when attempting to forecast whether behaving prosocially will be profitable, there is always uncertainty in interpreting limited observations of others' actions, hence it pays to weigh these observations in light of past experience. Similar considerations led us to predict that observing the beneficiaries of prosocial behavior acting in kind, either by reciprocating toward their benefactor or by benefiting others, would enhance the elicitation of elevation, as seeing multiple others behaving prosocially provides additional information as to the likely payoffs for the witness who responds with an emotion driving prosociality. However, despite observing some support for this prediction in Study 1, our overall results indicate that elevation elicitation appears not to be influenced by these factors, nor is it affected by the simple dimensions of number of prosocial acts, or of prosocial actors, observed.

At least four possible explanations apply. First, if elevation does not serve the adaptive function that we have sketched, then predictions derived from this model will generally fail. While we cannot rule this out, the nature of the relationship between idealism and elevation—predicted a priori by, and exclusive to, our account, and repeatedly supported here and elsewhere—militates against this. Second, it is possible that our core model is correct, but that we have underestimated the importance of the presence of a single exemplary prosocial actor. Perhaps, if the focal individual's actions are sufficiently beneficial to others and sufficiently consistent over the observed period, information concerning others' prosocial behavior adds little to the assessed profitability of prosociality, as the observer who upregulates prosociality will ultimately benefit from the focal individual through direct or indirect reciprocity. Third, it is possible that the aforementioned results reflect methodological limitations. Emotions elicited by brief videos or shallow text descriptions are necessarily weak echoes of those experienced in real situations. Gradations of elevation that would be evident in responses to actual events may therefore be compressed in our results, to the point that they are unobservable. That witnessing exploitation produces measurably different results using the same methods need not vitiate this explanation, as, owing to error management and negativity bias, the absolute effects of cues of exploitation on elevation elicitation may be much greater than the effects of cues of the presence of directly or indirectly reciprocating beneficiaries of prosociality, and hence such corrosive effects may be evident even in artificial contexts such as our experiments. Fourth, participants' responses may in part reflect the real social interaction in which they are engaged—interacting with the experimenters who are employing them to experience a pleasing video—rather than being exclusively driven by the fictitious stimuli. Presenting a video depicting prosociality, compared to sharing a merely entertaining video, might be more likely regarded as invitation to

cooperate or an attempt to manipulate; some participants' emotions and cooperative motives could be at least partially directed towards the experimenter who "introduced" them to the characters in the video. It is unclear if or how variation in the details of the cooperative narrative might influence the participant's relationship with the researchers.

Consonant with predictions, observing antisocial responses markedly diminishes elevation elicited by an exemplary prosocial actor. Whether because exploiters a) provide contrasting information about the immediate prevalence of prosociality; b) themselves pose a threat to an observer who engages in increased prosociality; c) impair the prosocial actor's ability to reward the observer for prosociality; or d) for all of these reasons, the presence of antisocial actors reduces the expected payoffs of prosociality, and thus should diminish elevation elicitation. That this diminution indeed occurs, and yet is not absolute, underlines the power of a single exemplary prosocial actor to elicit elevation. In exploring these dynamics, a key question for future research will be to determine whether diminished elevation occurs because antisociality elicits a negatively-valenced emotion, such as moral outrage or moral disgust (see Haidt, 2000), that subserves the punishment of antisocial others and competes with elevation, or whether observing antisociality exercises a direct depressive effect on elevation elicitation. Either way, tempering elevation elicitation in the presence of exploitation is consonant with our central thesis that the function of elevation is to adjust the motivation to behave prosocially in light of the assessed profitability of such actions in the current context.

Unlike in Study 2, in Study 3, we find that the corrosive effects on elevation elicitation of witnessing exploitation are independent of whether the prosocial protagonist persists in providing benefits in the face of abuse. If the null effect is more reliable, this would suggest that martyrs who sacrifice for others while suffering their depredations do not hold unique evocative

power in regard to elevation. History is replete with celebrated prosocial martyrs, hence the latter finding may reflect the skeletal nature of our depictions of reactions to suffering exploitation. However, it is also possible that detailed depictions of such martyrs' sacrifices will elicit emotions that overlap with, but are not isomorphic with, elevation. If elevation serves to adjust prosocial motivation in light of the assessed immediate profitability of prosociality, then exploited martyrs may inspire admiration rather than elevation, since exploitation remains a deterrent to upregulating prosociality independent of the martyr's actions.

Although here we have operationalized idealism only in the most generic terms (e.g., "most people are basically honest", etc.) our overarching model suggests that individuals likely hold not one attitude of idealism/cynicism, but many, each specific to a given community or social category. In combination with idealism's influence on elevation elicitation and subsequent contagious transmission of prosociality, this potentially illuminates how multiple social equilibria can occur, such that groups or communities exist across the spectrum from highly prosocial to highly antisocial. Relatedly, here we have conceptualized attitudes in an artificially narrow sense. If attitudes are representations of the fitness affordances of others for the observer, then what we have termed idealism is necessarily a gross simplification, as actual attitudes should also contain information about whether the observer would be accepted as a prosocial partner by members of the specified group or category; whether the group's aims align or conflict with the observer's goals; etc. In future research it will be important to move beyond measurements of idealism writ large, and instead explore how more fully specified attitudes predict elevation in response to observed behaviors. Likewise, the present work relies exclusively on U.S. Mechanical Turk participants; given likely cultural variation in both broad and specific idealisms, and expectable cultural variation in responses to antisociality (Leung and

Cohen, 2011), in the future it will be vital to conduct this research across cultures and subcultures. Lastly, our findings suggest that interventions intended to shift the equilibrium toward greater prosociality must be carefully designed and deployed, as the elicitation of elevation, and thus the sparking of virtuous cycles of increased prosociality, may at best be handicapped, and at worst precluded, if individuals modeling marked prosociality are exploited by others in the community.

Predictor	<i>b</i>	95% CI	<i>T</i> (816)	<i>p</i>
Intercept	2.02	[1.93, 2.11]	44.13	< .001
<i>Unsung Hero</i> Shortened (dummy)	-0.37	[-0.49, -0.24]	-5.68	< .001
Prosocial Montage (dummy)	-0.42	[-0.55, -0.29]	-6.38	< .001

Note. *Unsung Hero* is treated as reference group, with dummy variables for other conditions. Model fit: $F(2, 816) = 24.56, p < .001, R^2 = .06$

Table 1. Linear regression model of elevation score as a function of condition, among prosocial conditions in Study 1.

Author Contributions: DF and TS conceived the project, with input from AS and CH. TS created study materials with input from DF, AS, and CH, and oversaw data collection. AS conducted the analyses. DF wrote the manuscript with principal input from AS, and additional input from CH and TS.

Financial Support: This research was supported by the U.S. Air Force Office of Scientific Research under Awards #FA9550-15-1-0137 to DF and #FA9550-115-1-0469 to CH.

Ethics Statement: The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008.

Conflict of Interest: None.

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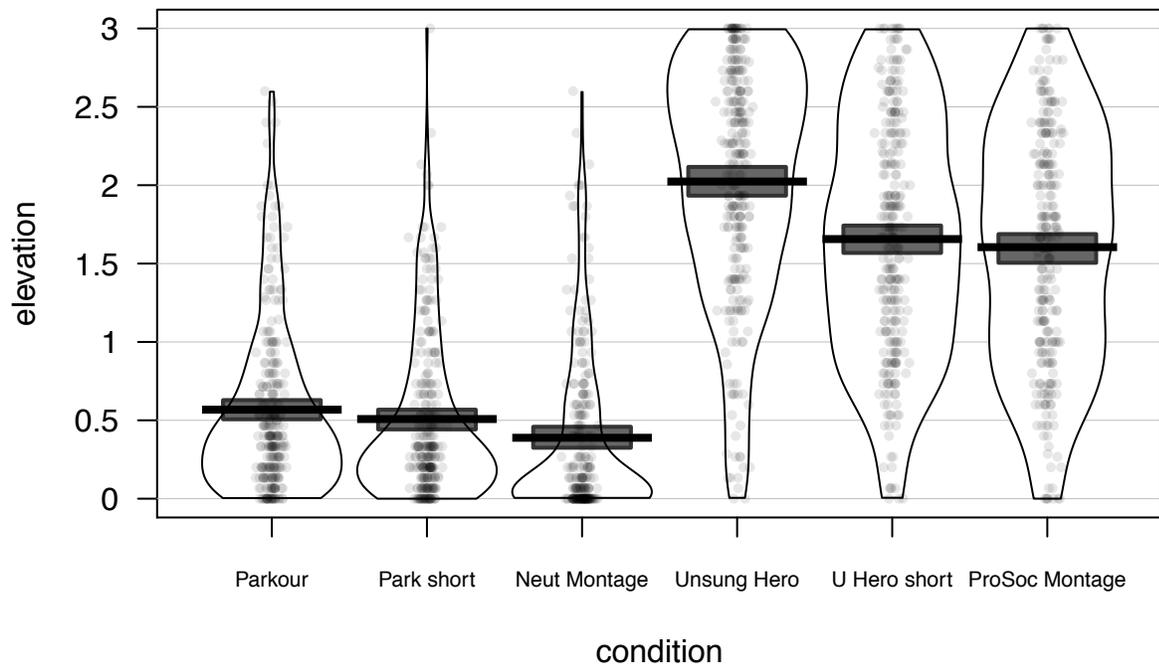
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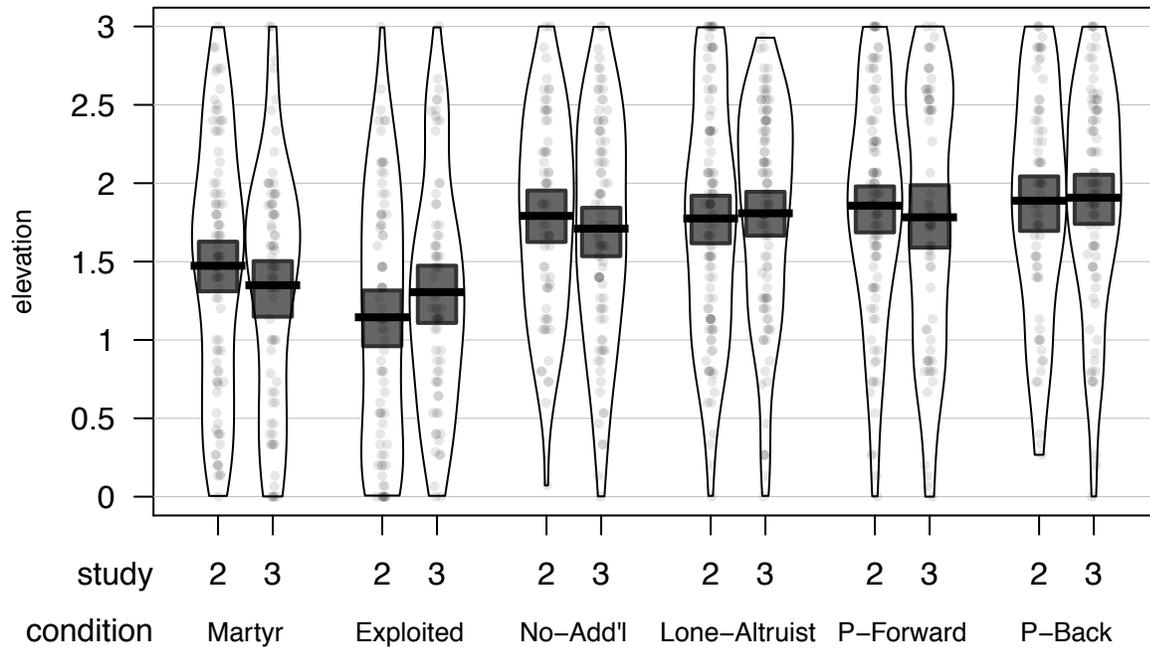
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Figure Captions

Figure 1. Elevation levels by condition in Study 1. Scatterplot points are raw data, jittered to reduce overlap. Beans show smoothed density of data points. Bars and boxes represent means and Bayesian 95% highest density intervals, respectively.

Figure 2. Elevation levels by condition and study, for Studies 2 and 3. Scatterplot points are raw data, jittered to reduce overlap. Beans show smoothed density of data points. Bars and boxes represent means and Bayesian 95% highest density intervals, respectively.





Supplement | Does Observed Reciprocity or Exploitation Affect Elevation, a Mechanism
Driving Prosociality?

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Abstract

Fitness is enhanced by determining when to behave prosocially. *Elevation*, an uplifting emotion elicited by witnessing exemplary prosociality, upregulates prosociality in the presence of prosocial others, as such contexts render prosociality profitable and/or antisociality costly. Prior research examines responses to a single highly prosocial individual. However, the profitability of enhancing prosociality hinges not only on potential interactions with a single actor, but also on the actions of others. Accordingly, information regarding how others respond to the prosocial exemplar may influence elevation elicitation and corresponding changes in prosocial motivation. If others reciprocate the exemplar's prosociality, or pay prosociality forward, this expands opportunities for the observer to profit by increasing prosociality, and thus could enhance elevation elicitation. Conversely, if others exploit the exemplar, this may diminish the profitability of prosociality, as the observer who acts prosocially may similarly be exploited and/or the resources with which the exemplar could reciprocate will be depleted. Conducting three online studies of Americans in which information regarding the responses of others to a prosocial exemplar was manipulated, we find that, against predictions, prosocial responses by the beneficiaries of prosociality generally do not enhance elevation among observers, whereas, consonant with predictions, antisocial responses markedly diminish elevation among observers.

Additional Results

Elevation subscales and positive affect

In main text, we report elevation levels in each condition of each study. For similar information for elevation's three subscales (somatic symptoms, folk affect terms, and prosocial motives) and a measure of positive affect, see Figures 1 & 2.

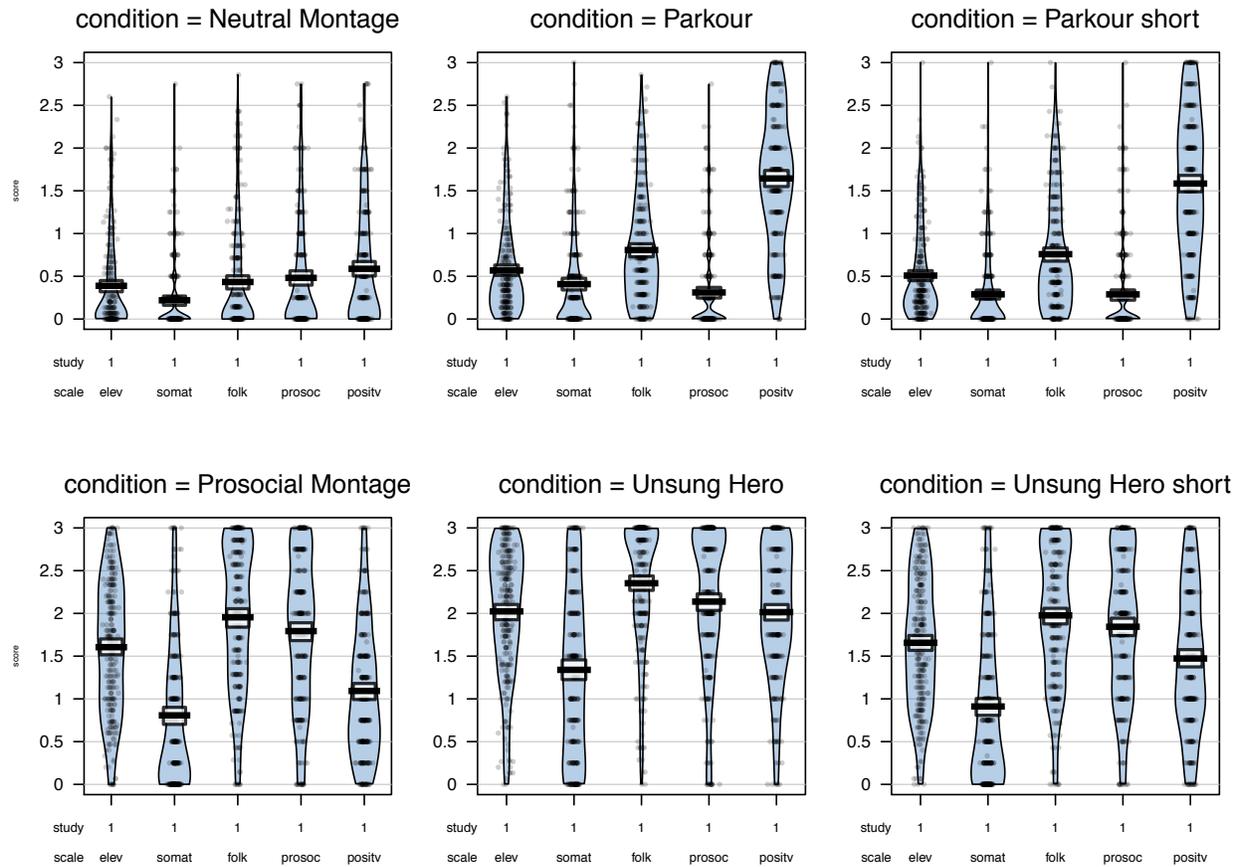


Figure 1. Elevation, subscale, and positive affect by condition, Study 1. Scatterplot points are raw data, jittered to reduce overlap. Beans show smoothed density of data points. Bars and boxes represent means and Bayesian 95% highest density intervals, respectively. Scales represented are the overall elevation scale (elev), somatic subscale (somat), folk affect terms subscale (folk), prosocial motives subscale (prosoc) and the positive affect scale (positv).

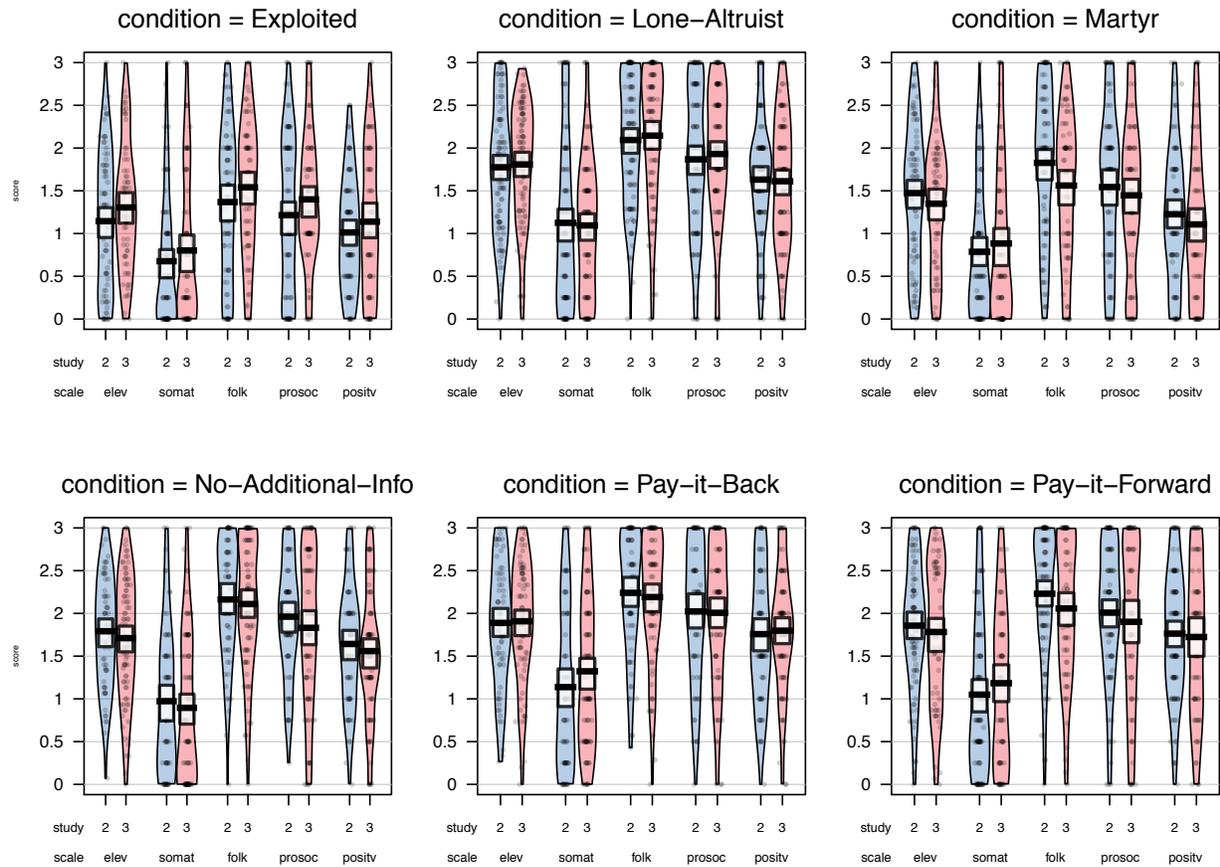


Figure 2. Elevation, subscale, and positive affect by condition, Study 2 & 3. Scatterplot points are raw data, jittered to reduce overlap. Beans show smoothed density of data points. Bars and boxes represent means and Bayesian 95% highest density intervals, respectively. Scales represented are the overall elevation scale (elev), somatic subscale (somat), folk affect terms subscale (folk), prosocial motives subscale (prosoc) and the positive affect scale (positv).

Table 1

ANOVA model of elevation score as a function of condition type (prosocial versus control) and idealism, in Study 1.

Effect	F	df_1	df_2	MSE	p	$\hat{\eta}_G^2$
Prosocial	1,171.47	1	1341	0.47	< .001	.466
Idealism	37.22	1	1341	0.47	< .001	.027
Prosocial \times Idealism	7.57	1	1341	0.47	.006	.006

Correlations between idealism and elevation

In previous work (Sparks et al, in review) we have reported that idealism predicts elevation in response to a prosocial video (Unsung Hero) but not control videos. The relationship between idealism and elevation in each condition of the current three studies is reported in Table 4.

Table 2

ANOVA model of elevation score as a function of condition type (prosocial versus control) and idealism, in Study 2.

Effect	F	df_1	df_2	MSE	p	$\hat{\eta}_G^2$
Condition	12.63	5	483	0.53	< .001	.116
Idealism	28.76	1	483	0.53	< .001	.056
Condition \times Idealism	0.86	5	483	0.53	.508	.009

In Study 1, idealism significantly interacted with condition type (prosocial versus control) to predict elevation (Table 1) such that idealism was a significant predictor of elevation in all prosocial conditions and no control conditions (Table 4). Note that the idealism measure was accidentally dropped from the Parkour condition and that Study 1's *Unsung Hero* condition was included in the meta-analyses reported by Sparks et al.

Table 3

ANOVA model of elevation score as a function of condition type (prosocial versus control) and idealism, in Study 3.

Effect	F	df_1	df_2	MSE	p	$\hat{\eta}_G^2$
Condition	9.97	5	464	0.49	< .001	.097
Idealism	56.73	1	464	0.49	< .001	.109
Condition \times Idealism	0.27	5	464	0.49	.932	.003

In Study 2, condition and idealism were significant predictors of elevation, but the interaction was not significant (Table 2). Analyzing conditions separately, idealism significantly predicted elevation in four of the conditions; the exceptions were the Pay-it-Back and Martyr conditions (Table 4). In Study 3 condition and idealism again were significant predictors of elevation, but the interaction was not significant (Table 3); idealism predicts elevation in all conditions (Table 4).

Table 4

Correlations between idealism and elevation, by study and condition

study	condition	Correlation [CIs]	df	p
Study 1	Prosocial Montage	.28 [.17 .39]	262	< .001
Study 1	Neutral Montage	.10 [-.03 .22]	247	.119
Study 1	Unsung Hero	.19 [.07 .30]	274	.002
Study 1	Unsung Hero short	.15 [.03 .26]	277	.012
Study 1	Parkour short	.08 [-.04 .20]	275	.172
Study 2	Lone-Altruist	.33 [.14 .49]	100	.001
Study 2	Pay-it-Back	.07 [-.17 .30]	67	.572
Study 2	No-Additional-Info	.30 [.06 .51]	63	.015
Study 2	Pay-it-Forward	.24 [.04 .42]	92	.020
Study 2	Martyr	.16 [-.05 .36]	85	.135
Study 2	Exploited	.30 [.09 .49]	76	.007
Study 3	No-Additional-Info	.28 [.07 .46]	84	.009
Study 3	Lone-Altruist	.43 [.25 .58]	95	< .001
Study 3	Exploited	.40 [.18 .58]	67	.001
Study 3	Martyr	.23 [.01 .44]	73	.043
Study 3	Pay-it-Forward	.34 [.11 .54]	64	.005
Study 3	Pay-it-Back	.27 [.06 .46]	81	.013

Table 5

*ANOVA model of elevation score as a function of condition and previous familiarity with *Unsung Hero* in Study 3.*

Effect	F	df_1	df_2	MSE	p	$\hat{\eta}_G^2$
Condition	8.90	5	461	0.54	< .001	.088
Seen before	6.74	1	461	0.54	.010	.014
Condition \times Seen before	0.89	5	461	0.54	.490	.010

Does previous familiarity with *Unsung Hero* video matter?

Participants who had previously seen the *Unsung Hero* video might differ from naive viewers in at least two ways. First, idealists might be more likely to seek out and/or watch this type of video. Second, our efforts to experimentally alter the story details might have unpredictable effects on those who have previously seen it. In (only) Study 3, participants indicated if they had seen the *Unsung Hero* video.

There is no indication that previous familiarity with the video is related to idealism; if anything, naive viewers tended to be slightly more idealistic: $\Delta M = 0.14$, 95% CI $[-0.09, 0.36]$, $t(180.63) = 1.18$, $p = .238$.

Figure 3 depicts the pattern of elevation responses by condition, split based on previous familiarity with the video. An ANOVA with condition, previous familiarity, and their interaction as predictors of elevation (Table 5) indicates that both condition and previous familiarity with the video are significant factors, but their interaction is not. An alternative model substituting condition valence (negative vs non-negative) for condition (Table 6) also finds condition valence and previous familiarity to be significant predictors, and the interaction between these is a marginally insignificant predictor.

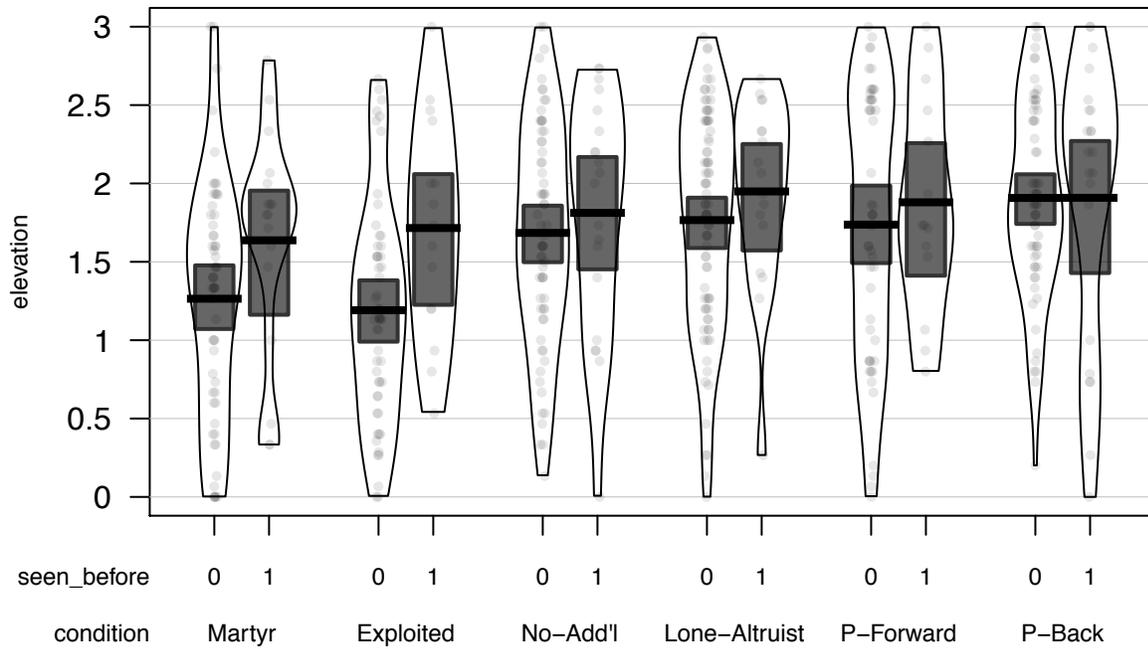


Figure 3. Elevation levels by condition, split by previous familiarity with the Unsung Hero video. There is a main effect whereby those who had previously seen the video (seen_before = 1) report higher elevation levels. There is weak evidence that this effect may be stronger for the negative conditions.

In summary, there is a main effect whereby those who have previously seen Unsung Hero report more elevation than those who have not. There is no evidence that these two groups differ in idealism. There is no strong evidence that the effect of experience with the video differs by condition, although there are trends hinting that the negative conditions may have stronger effects.

Table 6

*ANOVA model of elevation score as a function of condition valence (negative or non-negative) and previous familiarity with *Unsung Hero* in Study 3.*

Effect	F	df_1	df_2	MSE	p	$\hat{\eta}_G^2$
Negative	41.67	1	469	0.53	< .001	.082
Seen before	7.03	1	469	0.53	.008	.015
Negative \times Seen before	3.59	1	469	0.53	.059	.008

Sex Differences

We generally observe minor sex differences, with women reporting slightly higher levels of elevation than men in prosocial conditions. See Tables 7 - 9 and Figures 4 - 6.

Table 7

ANOVA table for Study 1.

Effect	F	df_1	df_2	MSE	p	$\hat{\eta}_G^2$
Condition	324.99	5	1592	0.42	< .001	.505
Sex	10.22	1	1592	0.42	.001	.006
Condition \times Sex	7.16	5	1592	0.42	< .001	.022

Table 8

ANOVA table for Study 2.

Effect	F	df_1	df_2	MSE	p	$\hat{\eta}_G^2$
Condition	12.64	5	480	0.54	< .001	.116
Sex	16.74	1	480	0.54	< .001	.034
Condition \times Sex	0.27	5	480	0.54	.932	.003

Table 9

ANOVA table for Study 3.

Effect	F	df_1	df_2	MSE	p	$\hat{\eta}_G^2$
Condition	9.45	5	459	0.53	< .001	.093
Sex	9.13	1	459	0.53	.003	.020
Condition \times Sex	0.59	5	459	0.53	.708	.006

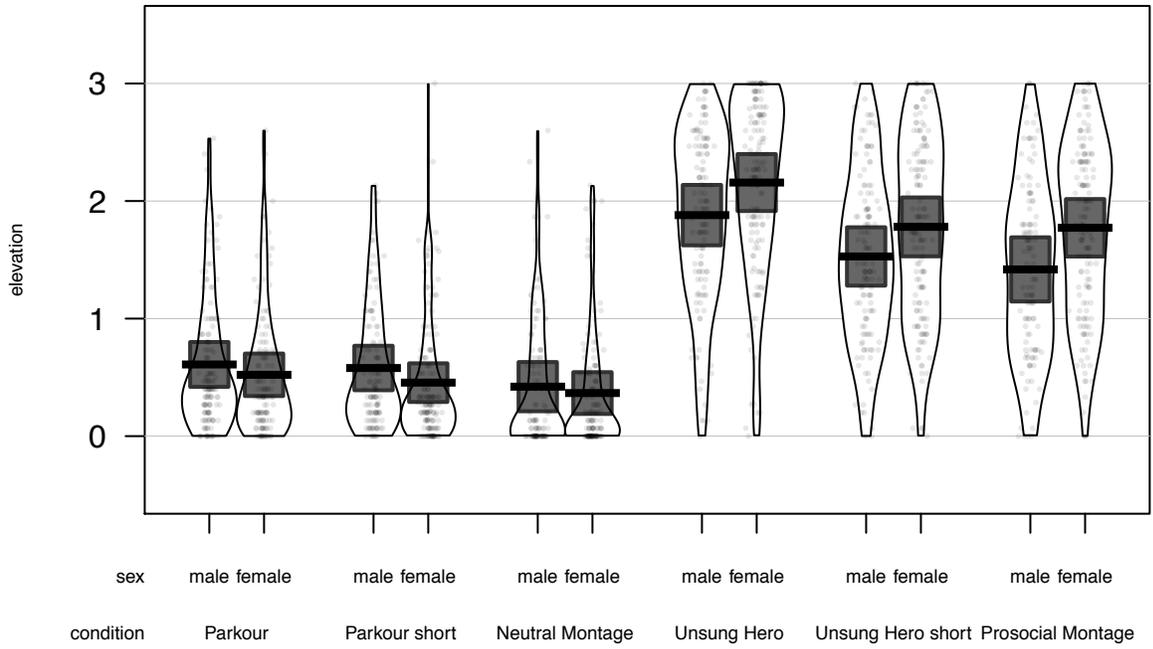


Figure 4. Sex differences in Study 1

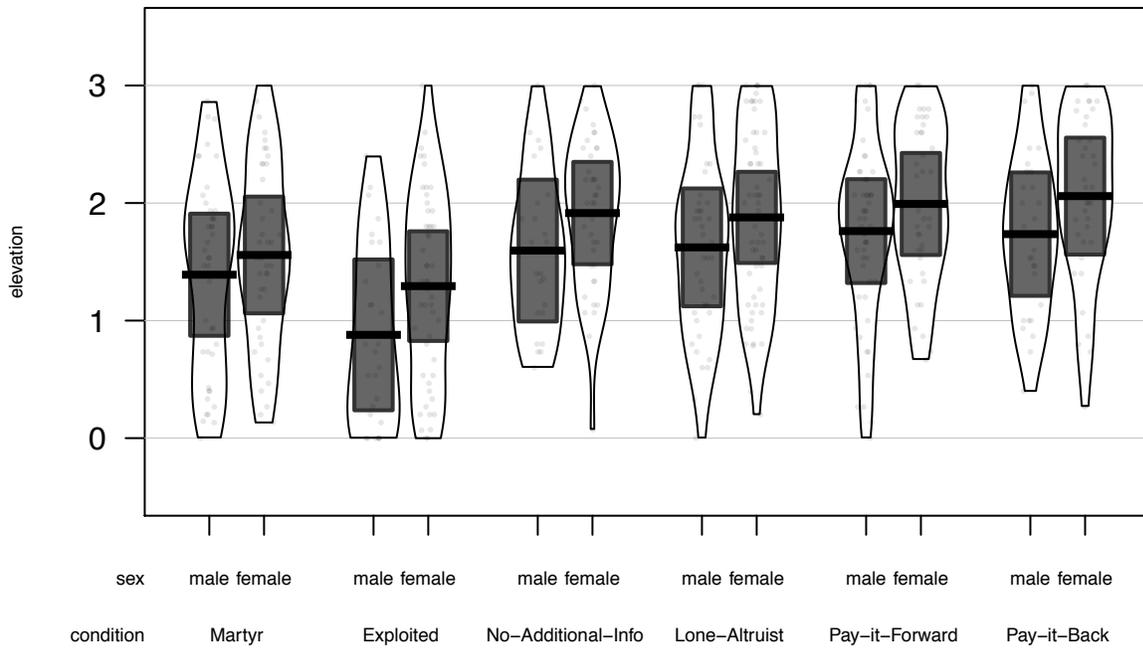


Figure 5. Sex differences in Study 2

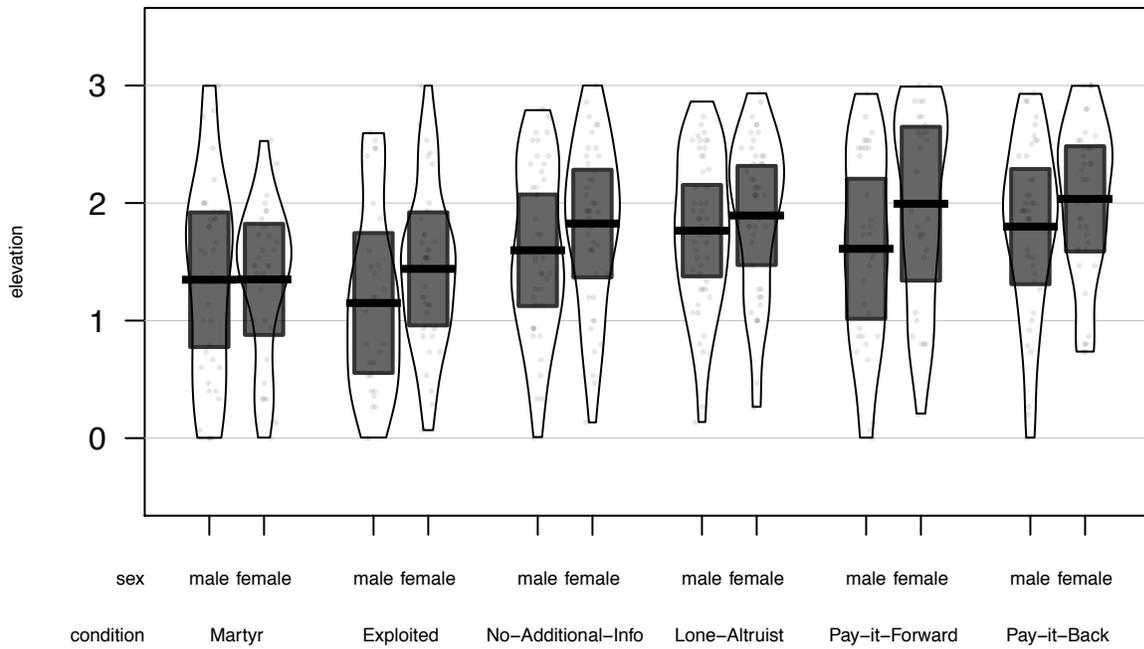


Figure 6. Sex differences in Study 3

Methods Details

Study 1

1. Idealism Scale (Sparks et al., n.d.)

Instructions: Please rate your level of agreement with the following statements about people in general. 1-strongly disagree to 7-strongly agree

Items:

- People don't try to be fair
- Most people are not trustworthy

- People try to be helpful
- If in doubt, I trust others
- The actions of most people are often admirable
- Most people are basically good-natured and kind
- Most people trust others
- I am optimistic about humanity
- Most people care about more than just themselves
- People are just looking out for themselves
- People can be good to each other
- People try to take advantage of you if they get the chance
- Most people are basically dishonest
- There's is very little good in the world
- You can't be too careful in dealing with people

2. Presentation of an affectively neutral video:

[<https://www.youtube.com/embed-/HbZZ0iJx-fE?rel=0&showinfo=0>]

3. Elevation Scale (Sparks et al., n.d.) (listed here by subscale for purposes of exposition only; in actual presentation, no subscale headings appear, and items from all subscales are interspersed)

Instructions: How much did the passage make you feel... [0-not at all to 3-strongly]

Items:

Emotion terms subscale:

- Uplifted
- Heartwarming feeling (in the metaphorical sense)
- Compassion

- Admiration
- Touched
- Moved
- Inspired

Behavioral tendencies subscale:

- Feel close to other people
- Want to help
- Want to be better person
- Want to find new ways to help

Somatic symptoms subscale:

- Tears in eyes
- Lump in throat
- The physical sensation of warmth in the chest
- Goose bumps / chills / tingles

Positive Affect scale:

- Happy
- Amused
- Entertained
- Delighted

4. Demographics 1

Items:

- Gender
- Age

- Parental status
 - Height
 - Type of device used to complete survey
5. Presentation of affectively positive video

Conditions:

- Unsung Hero (prosocial narrative):
<https://www.youtube.com/embed/BJIExFjyvyI?rel=0&showinfo=0>
- Parkour video (control):
<https://www.youtube.com/embed/Mhh66ufIG30?rel=0&showinfo=0>
- Unsung Hero, short (prosocial narrative without reciprocity):
<https://www.youtube.com/embed/QpVQQeHgmtY?rel=0&showinfo=0>
- Parkour video, short (control):
<https://www.youtube.com/embed/DBqSqitAx8w?rel=0&showinfo=0>
- Prosocial Montage:
<https://www.youtube.com/embed/bmVO8HEUM9E?rel=0&showinfo=0>
- Control Montage:
<https://www.youtube.com/embed/KrUJeM1Eru0?rel=0&showinfo=0>

6. Elevation Scale (same as previous)

7. Study Checks

Items:

- Sound problems
- Playback problems
- Attention check (If you go outside on a clear day and look up, what color should the sky usually be?)

8. Demographics 2

Items:

- Political orientation (very liberal to very conservative)
- Ethnicity
- Yearly income
- Highest level of education completed

Study 2

1. Idealism Scale (see Study 1)
2. Presentation of an affectively neutral video (see Study 1)
3. Elevation Scale (see Study 1)
4. Demographics 1 (see Study 1)
5. Presentation of hybrid video/text stimuli (participants in all conditions watch the shortened version of the *Unsung Hero* video used in Study 1, which depicts the protagonist's prosocial actions, but does not depict the responses of those whom he benefits. The video is then followed by one of six text-based vignette endings that continue the narrative.)

Vignette endings:

- Pay-It-Back condition (direct reciprocation by the beneficiaries)

[<https://www.youtube.com/embed/mjyjAYhZry4?rel=0&showinfo=0>]

In the weeks that followed, several things happened to the young man. While cooking dinner, he sat down to rest, and, tired from a long day, fell asleep. He was awakened by the dog barking and pawing at him, and realized that the food on the stove had caught fire; he put out the fire just in time. While helping the street vendor move her cart, he strained his back. Every evening she brought him food, and arranged for her brother to give him medication and hot compresses; he soon recovered. The old woman who lived next door observed that he accidentally left his door ajar when leaving for work; she locked the door and closed it for him. Lastly, on payday, after he had paid for his lunch at the cafe, his wallet fell out of his pocket. The homeless girl, sitting with her mother across the street, saw what happened; she ran over, picked up the wallet, caught up with him, and returned it to him.

- Pay-It-Forward condition (prosocial actions directed at third parties by the beneficiaries) [<https://www.youtube.com/embed/-SNaF-dtWGI?rel=0&showinfo=0>]

In the weeks that followed, several things happened in the young man's neighborhood. While preparing food, the cook sat down to rest, and, tired from a long day, fell asleep. He was awakened by the dog barking and pawing at him, and realized that the food on the stove had caught fire; he put out the fire just in time. While moving some boxes, the shopkeeper strained his back. The street vendor brought him food every evening, and arranged for her brother to give him medication and hot compresses; he soon recovered. The young man's elderly neighbor observed that another resident of the building accidentally left his door ajar when leaving for work; she locked the door and closed it for him. Lastly, on payday, after he paid for his lunch at the cafe, a stranger accidentally forgot his wallet. The homeless girl, sitting with her mother across the street, saw what happened; she ran over, picked up the wallet, caught up with the man, and returned it to him.

- Lone-Altruist condition (additional prosocial acts by the protagonist) [https://www.youtube.com/embed/p7_4NnzKX8o?rel=0&showinfo=0]

In the weeks that followed, several things happened in the young man's neighborhood. While preparing food, the cook sat down to rest, and, tired from a long day, fell asleep. While the cook was asleep, his stove caught fire; the young man, passing by, saw the flames and put out the fire just in time. While moving some boxes, the shopkeeper strained his back. The young man brought him food every evening, and gave him medication and hot compresses; he soon recovered. The young man observed that the elderly neighbor accidentally left her door ajar when leaving for work; he locked the door and closed it for her. Lastly, a stranger was eating lunch at the cafe on payday; after the stranger paid for his lunch, he accidentally forgot his wallet. The young man saw what happened, picked up the wallet, caught up with the stranger, and returned it to him.

- Exploited condition (protagonist exploited by his beneficiaries)

[<https://www.youtube.com/embed/zAbdqdlyX4U?rel=0&showinfo=0>]

In the weeks that followed, several things happened to the young man. He came home to find that the dog had run away. While he was helping the street vendor move her cart, he twisted his ankle painfully. The street vendor rolled her eyes and kept pushing the cart down the road. The old woman who lived next door observed that he accidentally left his door ajar when leaving for work; she snuck inside and stole some fruit from his pantry. Lastly, on payday, while he was walking down the street, his wallet fell out of his pocket. The young homeless girl noticed but said nothing; when he wasn't looking, she quickly picked up his wallet and put it in her pocket.

- Martyr condition (protagonist continues acting prosocially following exploitation by his beneficiaries) [https://www.youtube.com/embed/x9Wj_Fl8KrA?rel=0&showinfo=0]

In the weeks that followed, several things happened to the young man. He came home to find that the dog had run away. While he was helping the street vendor move her cart, he twisted his ankle painfully. The street vendor rolled her eyes and kept pushing the cart down the road. The old woman who lived next door observed that he accidentally left his door ajar when leaving for work; she snuck inside, and the young man returned and caught her stealing his fruit. Lastly, on payday, his wallet fell out of his pocket. The young homeless girl saw this, and when she thought he wasn't looking, she quickly picked up his wallet and put it in her pocket. The young man noticed but said nothing.

Later, when moving her cart, the street vendor strained her back. Every evening the young man brought her food, and arranged for his brother to give her medication and hot compresses; she soon recovered. The young man noticed that he hadn't seen his elderly neighbor all day. Worried, he went into her apartment and saw her passed out, slumped in a chair. He rushed her to the hospital, and later, after discovering she had had a stroke, paid

for her medical bills. Finally, when he saw the young homeless girl and her mother begging on the street, he put money in their cup.

*No-Additional-Information condition (no further prosocial or antisocial acts)

[https://www.youtube.com/embed/fQlO1eFA_r8?rel=0&showinfo=0]

In the weeks that followed, several things happened to the young man. He came home to find that the dog, tired from chasing squirrels, was asleep on the rug. On payday, while he was helping the street vendor move her cart, his wallet fell out of his pocket. He noticed, picked up his wallet, and put it in a deeper pocket. The old woman who lived next door left her door ajar as she listened to music on the radio in the morning. Lastly, the homeless girl sat next to her mother and did her homework in the afternoon.

6. Elevation Scale (see Study 1)

7. Study Checks

Items:

- Sound problems
- Playback problems
- Attention self-report (Did you watch all the videos / Did you pay attention to the passage at the end of the second video?)
- Video/passage attention check (Which of the following did you see in the second video?)
- General attention check (If you go outside on a clear day and look up, what color should the sky usually be?)

8. Demographics 2 (see Study 1)

Study 3

1. Idealism Scale (Sparks et al., n.d.)

Instructions: Please think about the kinds of people who you tend to encounter in your daily life, but don't know very well. These people are not family or friends or someone you've had many conversations with. They are acquaintances or strangers who seem typical of the social circle(s) that you are a part of. We will call these people your "broader community" – please think about this group when you answer these questions.

Please rate your level of agreement with the following statements about your broader community. 1-strongly disagree to 7-strongly agree

Items:

- Life is beautiful in my broader community.
- In my broader community, it is important to make sure you are not exploited.
- If there's something I need that my family and close friends cannot help with, I know that my broader community will help.
- I prefer to keep a distance from most people in my broader community.
- I am treated right by my broader community.
- My broader community is full of great people.
- In my broader community, people do not trust each other.
- In my broader community, people do not try to take advantage of you, even if they get the chance.
- Most people are basically honest in my broader community.
- I am pessimistic about my broader community.

2. Presentation of an affectively neutral video (see Study 1)

3. Elevation Scale (see Study 1)
4. Demographics 1 (see Study 1)
5. Presentation of vignette stimuli (participants in all conditions read the same base vignette, and then are randomly assigned to one of six possible ending conditions)

Base vignette:

Jim is in his early twenties, and lives in large city where he has many friends and acquaintances. One day, Jim walks down the street on his way to work. City life bustles around him; street vendors hawk breakfast foods, the occasional dog passes by, and parents walk their children to school. Jim takes this route every day, and he's familiar with the sights, people, and sounds of his neighborhood. He notices an older street vendor struggling to push his food cart onto the curb; he approaches and, after a quiet nod, helps him get the heavy cart up onto the sidewalk before continuing on his way. He stops at his favorite cafe for a quick bite to eat before work, and sits outside on the patio. While he is eating and chatting with a friend on Facebook, a worryingly thin stray dog cautiously approaches, begging for food. Although Jim works hard, his job doesn't pay very well, and his morning cafe stops are one of the few small luxuries he affords himself. He looks down at the hungry stray, gazes for a moment at his breakfast, then divides the meal in half and shares it with the dog.

The next morning, Jim is on the phone with his cousin who lives across town when he realizes that he doesn't hear the usual noises from the apartment next door. An elderly man, who Jim has never met, moved in next door a month ago, and normally he turns on the TV in the morning. Concerned, he goes over to his apartment to check on him. He discovers that the old man is okay, but Jim still worries that he's having difficulty taking care of himself. That evening, after work, Jim stops at the store, buys several bags of groceries, and leaves them outside his neighbor's door. The next day, the elderly man tries to pay him back, but Jim refuses, knowing that his neighbor has little money of his own; he accepts a hug instead.

Jim continues these acts of kindness throughout his neighborhood. For example, the bus he rides to work is usually crowded, and Jim always gives up his seat for older people who are standing, or for other passengers who look tired or sick.

One day, while walking to work, Jim notices a mother and her little girl begging on a street corner, dressed in dirty clothes with holes, and sitting on a ragged piece of cardboard. Other people walk past, ignoring them. Jim pauses, then opens his wallet and pulls out the largest bills he has, putting them in the cup held by the young daughter. The little girl looks sad and ashamed, and takes Jim's money without making eye contact. Over the weeks that follow, Jim comes back to give the mother and child cash whenever he can. One day, on his way to work, when Jim approaches their usual spot on the corner, he sees that the woman is alone. Deeply worried, he starts looking around for the little girl, and rushes up to the mother to make sure everything is okay. Then, as he gets closer, he sees the daughter walking down the sidewalk toward her mother, dressed in brand new school clothes and carrying a backpack. She smiles proudly when she sees Jim. He realizes that the mother had been able to use his donations to help her daughter in school. Jim looks at the woman and she smiles, her eyes filling with tears as she looks at the kind man who has helped her family without asking for anything in return.

Vignette Endings:

- Pay-It-Back condition (direct reciprocation by the beneficiaries)

In the weeks that followed, several things happened to Jim. While cooking dinner, he sat down to rest, and, tired from a long day, fell asleep. He was awakened by the stray dog barking and pawing at him, and realized that the food on the stove had caught fire. Jim was able to put out the fire just in time.

The next week, Jim threw out his back helping the street vendor with his cart. Jim visited the local clinic, where they told him to rest and recover. The street vendor brought him

meals every evening, and gave him pain medication and hot compresses, and Jim soon recovered. Soon after, the elderly man who lived next door observed that Jim accidentally left his door ajar when leaving for work, so the neighbor locked the door and closed it for him. Lastly, on payday, Jim's wallet fell out of his pocket as he walked home from work. The homeless girl, sitting with her mother across the street, saw what happened. The girl ran over, picked up the wallet, caught up with Jim, and returned it to him with a smile.

- Pay-It-Forward condition (prosocial actions directed at third parties by the beneficiaries)

In the weeks that followed, several things happened in Jim's neighborhood. While prepping food, the cook from Jim's favorite cafe sat down to rest, and, tired from a long day, fell asleep. He was awakened by the stray dog barking and pawing at him, and realized that the food on the stove had caught fire. The cook was able to put out the fire just in time.

The next week, a local shopkeeper strained his back moving some heavy boxes. The shopkeeper visited the local clinic, where they told him to rest and recover. The street vendor, who usually set up his cart in front of the shopkeeper's store, brought him food every evening, and arranged for his sister to give him medication and hot compresses; he soon recovered. Also, Jim's elderly neighbor observed that another resident of the building accidentally left her door ajar when leaving for work, so he locked the door and closed it for the neighbor. Lastly, on payday, after he paid for his lunch at the cafe, a stranger accidentally forgot his wallet. The homeless girl, sitting with her mother across the street, saw what happened. The girl ran over, picked up the wallet, caught up with the stranger, and returned it to the stranger with a smile.

- Lone-Altruist condition (additional prosocial acts by the protagonist)

In the weeks that followed, several things happened to Jim. While prepping food, the cook from Jim's favorite cafe sat down to rest, and, tired from a long day, fell asleep. While

the cook was asleep, his stove caught fire. Jim, enjoying an after-work meal with some friends, saw the smoke and put out the fire just in time.

The next week, the street vendor threw out his back moving heavy boxes of produce. The vendor visited the local clinic, where they told him to rest and recover. Jim brought him meals every evening, and gave him pain medication and hot compresses, and the street vendor soon recovered. Soon after, Jim observed that his elderly neighbor accidentally left his door ajar when leaving for work. Worried, Jim locked the door and closed it for him. Lastly, a stranger was eating lunch at the cafe on payday; after the stranger paid for her lunch, she accidentally forgot her wallet. Jim saw what happened, picked up the wallet, and caught up with the stranger to return her wallet.

- Exploited condition (protagonist exploited by his beneficiaries)

In the weeks that followed, several things happened to Jim. The stray dog ran up to his table at the cafe one morning and grabbed Jim's entire breakfast before sprinting off. Then, while he was helping the street vendor move his cart, Jim twisted his ankle painfully. The street vendor just kept pushing the cart down the road as Jim limped behind him, alone.

The next week, the old man who lived next door observed that Jim accidentally left his door ajar when leaving for work. While Jim was away, the old man snuck inside and stole Jim's small television. Lastly, on payday, while Jim was walking down the street, his wallet fell out of his pocket. The young homeless girl saw what happened, and, when Jim wasn't looking, she quickly picked up his wallet, slipped the cash in her pocket, and dropped the wallet back on the street.

- Martyr condition (protagonist continues acting prosocially following exploitation by his beneficiaries)

In the weeks that followed, several things happened to Jim. The stray dog ran up to his

table at the cafe one morning and grabbed Jim's entire breakfast before sprinting off. Then, while he was helping the street vendor move his cart, Jim twisted his ankle painfully. The street vendor just kept pushing the cart down the road as Jim limped behind him, alone. Later, the street vendor threw out his back moving heavy boxes of produce. The vendor visited the local clinic, where they told him to rest and recover. Jim brought him meals every evening, and gave him pain medication and hot compresses, and the street vendor recovered.

The next week, the old man who lived next door observed that Jim accidentally left his door ajar when leaving for work. The neighbor snuck inside, but Jim returned home and caught him stealing his small television. Soon after, Jim observed that his elderly neighbor accidentally left his door ajar when leaving for work. Worried, Jim locked the door and closed it for him.

Lastly, on payday, while Jim was walking down the street, his wallet fell out of his pocket. The young homeless girl saw what happened but said nothing, and, when she thought Jim wasn't looking, she quickly picked up his wallet, slipped the cash in her pocket, and dropped the wallet back on the street. Jim saw what she did but picked up the wallet and said nothing. when Jim saw the young homeless girl and her mother begging on the street, he put money in their cup.

- No-Additional-Information condition (no further prosocial or antisocial acts)

In the weeks that followed, several things happened to Jim. Eating at his local cafe, he chatted with the chef about soccer. Walking home, Jim noticed a group of dogs playing in the local park. On payday, his wallet fell out of his pocket. Jim noticed, picked up his wallet, and put it in a deeper pocket. Finally, while moving some furniture around in his apartment, Jim threw out his back. Jim visited the local clinic, where they told him to rest and recover. After a few weeks of taking it easy, Jim felt back to normal.

6. Elevation Scale (see Study 1)

7. Study Checks

Items:

- Attention self-report (Did you pay attention to the passage?)
- Vignette attention check (Which of the following did you read in the passage?)
- General attention check (If you go outside on a clear day and look up, what color should the sky usually be?)

8. Demographics 2 (see Study 1)

Table 10

Scale reliabilities (alphas) by study.

	1	2	3
idealism	0.93	0.93	0.82
elevation	0.97	0.96	0.95
elevation_pre	0.95	0.94	0.98
somatic	0.88	0.88	0.85
somatic_pre	0.81	0.80	0.94
folk affect	0.96	0.96	0.94
folk affect pre	0.93	0.93	0.96
prosocial_motives	0.95	0.93	0.91
prosocial_motives_pre	0.86	0.85	0.93
positive_affect	0.86	0.83	0.83
positive_affect_pre	0.85	0.83	0.92

Note. Emotion measured before the experimental manipulation labelled pre.

Scale Reliabilities

Internal reliability information for the scale measures used in these studies is reported in Table 10

Power Analysis and Sample Size

Study 2 uses modified versions of the prosocial story. In study 1, the full *Unsung Hero* video elicited greater elevation levels than other prosocial conditions; the associated effect size ($d = -0.51$) can be used in a post-hoc power estimation for contrasts of emotion levels between conditions of Study 2 that added anti-social information versus those that did not. Based on the final sample of the latter study, power to detect an effect of this size, at $p = .01$, was nearly 100%.

Elimination decisions

Tables 11 to 20 summarize raw response frequencies among all participants for various variables used to filter down to our final samples. After data were filtered based on those criteria, a final filter was applied based on suspiciously quick finishing (study 1 = 86; study 2 = 4 ; study 3 = 8; see R code for details).

Study 3 included an attention check question (“check2”) that many participants failed. In retrospect it was a bad question because it asked the participant to recall a minor details (“In the passage you read, who does Jim talk on the phone with?”). Jim was on the phone with his cousin, but the specific person he spoke to was not relevant to anything else in the story. (The story included this detail to convey that Jim is not a lonely or isolated person.) All of the answer options are various types of close partners or family members, relationship types that might become conflated with “cousin” for such a minor character. So, we did not filter based on this variable.

Table 11

Response frequencies for filtering variables - Study 1

device	audio1	audio2	playback	check
Desktop computer: 623	no : 32	no : 14	1 :1749	blue:1800
Laptop computer :1069	Other - Write In: 11	yes :1199	2 : 42	pink: 3
Phone : 49	yes :1758	NA's: 591	3 : 6	NA's: 1
Tablet : 60	NA's : 3	–	NA's: 7	–
NA's : 3	–	–	–	–

Table 12

Response frequencies for filtering variables applying to all conditions - Study 2 (1 of 2)

device	audio1	audio2
Desktop computer:258	no : 12	no : 8
Laptop computer :330	Other - Write In: 10	Other - Write In: 2
Phone : 11	yes :581	yes :591
Tablet : 7	NA's : 4	NA's : 6
NA's : 1	–	–
–	–	–
–	–	–

Table 13

Response frequencies for filtering variables applying to all conditions - Study 2 (2 of 2)

	playback	check_blue_4	bananas_1_check
	1 :562	antelope: 1	a cat : 15
	2 : 34	blue :604	a school: 17
	3 : 8	pink : 1	bananas :550
	NA's: 3	snack : 1	boats : 6
	–	–	cubicles: 5
	–	–	mango : 11
	–	–	NA's : 3

Table 14

Response frequencies for filtering variable specific to condition 'Lone Altruist' - Study 2

	wallet_4
	his checkbook: 2
	his jacket : 1
	his phone : 1
	his wallet :121

Table 15

Response frequencies for filtering variable specific to condition 'Exploitation' - Study 2

	girl1
	begging on the street :29
	eating an ice cream cone : 2
	going to school : 5
	playing with neighborhood kids: 2
	stealing wallets :60

Table 16

Response frequencies for filtering variable specific to condition 'Pay-it-Back' - Study 2

wallet_2
his jacket: 2
his keys : 2
his wallet:83

Table 17

Response frequencies for filtering variable specific to condition 'Pay-it-Forward' - Study 2

wallet_3
his checkbook : 1
his credit card: 1
his jacket : 3
his wallet :104

Table 18

Response frequencies for filtering variable specific to condition 'No-Additional-Info' - Study 2

girl2
begging on the street :14
doing homework :62
going to school : 5
playing with neighborhood kids: 1
stealing wallets : 1

Table 19

Response frequencies for filtering variable specific to condition 'Martyr' - Study 2

girl3
begging on the street:62
doing homework : 2
going to school : 4
stealing wallets :37

Table 20

Response frequencies for filtering variables - Study 3

device	check1	check2	check3
Desktop computer:273	a cat : 11	his best friend: 92	no : 9
Laptop computer :304	a school: 13	his brother : 67	yes :561
Phone : 17	a train :556	his cousin :308	yes, but I did not pay close attention:
Tablet : 9	boats : 7	his girlfriend : 22	NA's : 3
NA's : 1	cubicles: 12	his grandmother: 26	–
–	mangoes : 2	his mother : 83	–
–	NA's : 3	NA's : 6	–