



Collective streaks motivate prosocial behavior

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ABSTRACT

We introduce a novel method for perpetuating prosocial behavior: highlighting *collective streaks* of behavior across individuals (e.g., “the last X people in a row have done it”). In 11 experiments (total $N = 12,688$), asking people to join a short ongoing streak of charitable donors was more effective than informing them of a high percentage of previous donors (e.g., “X% of people have done it”), because streaks increased feelings of personal impact on subsequent donors. Collective streaks can be effective even when their members are anonymous, and offer a way to encourage prosocial behaviors whether or not they are already popular: stating that 5% of people have donated is far from motivating, stating that 5 people in a row have donated induces further donation. Our findings illustrate how learning about the behavior of even a few peers can be a psychologically powerful motivator, particularly when they enable individuals to influence future others.

1. Introduction

One of the most powerful ways to increase adoption of a prosocial behavior is to simply tell people how popular it already is. Policymakers, organizations, and researchers have successfully used such *descriptive social norms* (Cialdini & Trost, 1998) to promote environmentally sustainable behaviors (Goldstein et al., 2008), energy conservation (Allcott & Rogers, 2014; Schultz et al., 2007), and charitable donations (Frey & Meier, 2004; Gugenishvili et al., 2022), and have explored how presentation, timing, and targeting can make such messages more effective (for reviews, see Miller & Prentice, 2016; Rogers et al., 2018). Because descriptive social norms work in part by changing subjective perceptions of norm adoption (Tankard & Paluck, 2016), they are often most effective when describing a prevalent behavior, and can have little impact or even backfire when they instead highlight how few people have already adopted a norm (Lazić & Žeželj, 2025; Rogers et al., 2018).

Of course, people can decide to behave prosocially when unsure of how many others have done so, or even when aware that few have. As such, researchers have explored drivers of prosocial behaviors that do not hinge on those behaviors already being widespread. Some examples include highlighting that a norm is becoming more popular over time (*dynamic norms*; Sparkman & Walton, 2017), or that advocates are adopting a norm themselves (Kraft-Todd et al., 2018). Here we propose an additional method to promote a prosocial behavior, regardless of its

prevalence: highlighting that an ongoing streak of other people have already done so.

1.1. Perceptions of streaks, their causes, and their impacts

A streak is commonly defined as the same event occurring three or more times in sequence (Carlson & Shu, 2007). Psychologists and economists alike have studied when and how people perceive streaks among sequences of events (Caruso et al., 2010; Sun & Wang, 2010), and whether those perceptions can lead to biased statistical inferences and decisions (Asparouhova et al., 2009; Hahn & Warren, 2009; Rabin, 2002). Classic work on perceptions of randomness in judgment and decision-making explores how people both underestimate the frequency of random streaks in a sequence of independent events, such as coin flips (Kahneman & Tversky, 1972; Wagenaar, 1970), and question the independence of events when streaks extend beyond a handful of events in a row (Oskarsson et al., 2009; Tversky & Kahneman, 1971).

Research on streaks of human behaviors has often focused on sequences by the same individual (Gilovich et al., 1985; Kang et al., 2022; Mehr et al., 2025; Silverman et al., 2023) or team (Walker & Gilovich, 2021), or on the use of public versus private information in economic games (Anderson & Holt, 1997; Hung & Plott, 2001). For example, reminding an individual how many days in a row that they have exercised or studied a language can increase their likelihood to continue

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those behaviors (Silverman & Barasch, 2023). Work on human streaks has broadened our understanding of the intersection between statistical and social reasoning, and helped resolve complex questions such as determining the actual and perceived likelihood of the “hot hand” in expert performance (Gilovich et al., 1985; J. B. Miller & Sanjurjo, 2018). However, work in this area typically focuses on streaks generated by the same individuals or groups. Here we instead focus on *collective streaks*, in which each action in a sequence is performed by a different person, as a promising and less-explored tool to increase norm compliance.

Descriptive social norms are directly informative about the popularity of a behavior, whereas short streaks occur frequently in even random sequences, such that they may provide little diagnostic information about the overall prevalence of a behavior (Wagenaar, 1970). Unlike carefully designed dynamic norm messages (Sparkman & Walton, 2017), merely learning about a short streak of actors may provide less insight into whether a behavior is actually becoming more popular. However, research on conformity tells us that observing even a few people perform a behavior can induce an individual to do the same (Milgram et al., 1969), even when the behavior in question may be unwise or nonsensical (Anderson & Holt, 1997; Asch, 1956). People may fear that they will incur bad luck by breaking a streak, a superstition that can influence behavior even among those who do not believe it (Risen, 2015).

Streaks may reframe a decision to act prosocially as being about whether to continue the streak, akin to prior work on social thresholds or “tipping points” for donation goals and other collective behaviors (Anik & Norton, 2019; Centola et al., 2018; Davenport & Winet, 2022). Finally, because they highlight a few actors rather than a large, more anonymous group, streaks may increase social connection or decrease psychological distance to other prosocial actors specifically (Goldy & Piff, 2020; Henderson et al., 2012). They may also increase a general desire to help others with one's own actions, such as in “pay it forward” scenarios (Gray et al., 2014).

1.2. Streaks as a way to increase perceived personal impact on others

We suspect that one unique reason streaks may be effective at

encouraging prosocial behavior is because they can change a decision-maker's perceptions of their personal impact on the decisions of others, or in other words, their direct social influence (Cialdini & Goldstein, 2004; Silver & Small, 2023). To illustrate this, imagine two situations depicted in Fig. 1, in which many people are asked to make a charitable donation, one at a time. In the first situation, Actor A has just learned that the last five people in a row chose to donate, giving them the opportunity to continue (or break) that streak. If Actor A knows that the next person in line (Actor B) will learn of their decision to continue or break the streak, they can infer that their action may have a direct influence on Actor B's own behavior, who may in turn influence Actor C, and so on. In the second situation, Actor A is only told that 80% of people have donated so far, but does not know the actual numbers involved – how many were asked, and how many chose to donate.

After merely learning about the percentage of past donors, it is possible that Actor A would feel that their decision could influence Actor B and subsequent others. However, Actor B will only have access to the overall donation rate, and Actor A has little way to gauge whether their own decision will have an appreciable impact on that donation rate, which would be necessary in order for the resulting (new) percentage to influence Actor B. As a result, we predict that Actor A will feel a greater ability to influence Actor B and future others when told about a streak of individual past donors rather than an overall donation percentage, and thus, that streak-based messages may be effective at encouraging prosocial behavior.

We document the effects of collective streaks in four studies and seven supplemental studies, focusing on situations where people are asked to make actual charitable donations. We test whether streaks increase donation likelihood as much or more than descriptive social norms (Study 1), and compare the efficacy of streaks vs. the same number of donors not in a streak (Study 2). We then assess several potential psychological mediators underlying the effectiveness of collective streaks, including obligation and social pressure, and examine why personal impact may be an especially effective driver of collective streaks (Studies 3 and 4).

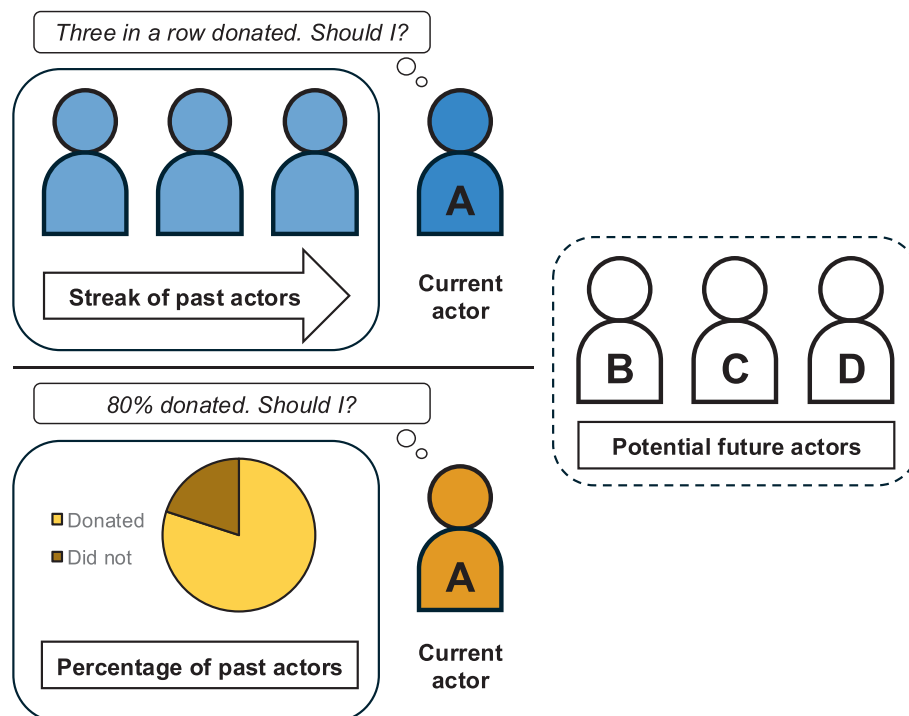


Fig. 1. Examples of streak vs. percentage-based messaging. Note: Hypothetical streak-based (upper left) and percentage-based (lower left) message scenarios.

2. Study 1: Can streaks increase charitable donations?

2.1. Overview

We assigned participants to read a message describing a high percentage or short collective streak of past participants who made a charitable donation, or no message. We then asked them whether they wanted to donate to charity themselves.

2.2. Methods

2.2.1. Transparency and openness

For this and all subsequent studies, we report how we determined our sample size, all data exclusions (if any), all manipulations, and all measures administered. Data were analyzed using R, version 4.4.1 (R Core Team, 2020). All studies were preregistered, and all the studies, measures, manipulations, and data/participant exclusions are reported in the manuscript or accompanying Supplementary Material. Data, stimuli, analysis scripts, and preregistrations are posted at the following link: https://osf.io/ymz56/files/osfstorage?view_only=04d05a5a2cd74c1d9e38406160061a61

2.2.2. Participants

Participants were 1000 users of Prolific Academic (507 males, 476 females, 13 other, 4 prefer not to answer, $M_{age} = 38.76$ years, $SD = 13.20$ years) who were paid \$0.50 USD for their participation. In this and all studies, we based our sample size on a power analysis conducted in R using the *pwr* package to ensure a minimum statistical power of 0.8 for our primary analysis with an effect size based on pilot data using a similar experimental design. Following our preregistration, we excluded 41 participants who failed one or more manipulation, attention, or comprehension checks, which left 959 participants in the data set. A sensitivity analysis revealed that the smallest effect size that could be detected in a binomial GLM with this sample at 80% power ($\alpha = 0.05$) would be $OR = 1.26$.

2.2.3. Procedure

Participants were told that they were eligible for a \$0.15 USD bonus in addition to their base compensation for participating in the survey, which would bring their total compensation to \$0.65 USD. They were told that they could keep the bonus, or donate to a charity of their choice from a list of five preselected options, including Doctors Without Borders and the Wounded Warrior Project. The full list of charities is available in the SI Appendix (Section A).

Participants were randomly assigned to one of three possible conditions that determined what they read next in the survey. Participants in the *high percentage* condition ($n = 312$) were told that ~80% of past participants in the survey had chosen to donate their bonus to charity, while those in the *short streak* condition ($n = 315$) were told that the last ~8 participants in a row who took the survey had chosen to donate. The actual number shown was randomly jittered in each direction (79–81% and 7–9 donors respectively). Participants in the *control* condition ($n = 332$) saw no message before choosing whether to donate. Participants in the two non-control conditions saw their assigned message in white text, followed underneath by a message in red text that directly asked them to donate with one of two randomized wordings (“keep the streak going” or “don’t break the streak” in the short streak condition; “keep our numbers up” or “don’t lower our numbers” in the high percentage condition). To avoid participants only being shown round numbers, the specific number or percentage shown could randomly vary by 1 in either direction (e.g., a streak of 7, 8, or 9; a percentage of 79%, 80%, or 81%).

At this point, participants were asked whether they wanted to donate their bonus to charity, or keep it for themselves. Those who chose to donate were then asked to select which charity from the preselected list to receive their donation. Participants were then asked a manipulation check to see if they remembered the information they were told (if any)

about streaks or percentages, an attentional check, basic demographic measures, and free response items to guess what they thought the study was about and report comments or glitches in the survey. The complete text of all questions is available in the SI Appendix (Section A).

2.3. Results

We analyzed participant donation decisions by fitting a binomial generalized linear model to our data in R (R Core Team, 2020). The dependent variable was the participant's decision to keep their bonus or donate it to charity, and the between-subjects fixed factor was the assigned condition (*control*, *high percentage*, or *short streak*).

Did streaks make participants more likely to donate to charity? As Fig. 2 shows, participants in the *short streak* condition donated at higher rates (52.70%) than participants in both the *high percentage* condition (44.23%), $b = 0.34$, $SE = 0.16$, $z = 2.12$, $p = 0.03$, 95% CI_b [0.03, 0.66], $OR = 1.40$, 95% CI_{OR} [1.03, 1.93], and the *control* condition (40.06%), $b = 0.51$, $SE = 0.16$, $z = 3.21$, $p < 0.01$, 95% CI_b [0.20, 0.82], $OR = 1.67$, 95% CI_{OR} [1.22, 2.28]. There was not a significant difference in donation rates between the *high percentage* and *control* conditions, $b = 0.17$, $SE = 0.16$, $z = 1.07$, $p = 0.28$, 95% CI_b [−0.14, 0.48], $OR = 1.19$, 95% CI_{OR} [0.87, 1.62]. Being told about a short ongoing streak of past donors made participants more likely to donate to charity compared to receiving a message about a higher percentage of donors, and compared to no message at all.

2.4. Discussion

Participants in Study 1 were more likely to donate to charity when they were told about an ongoing short streak of past donors compared to a high percentage of past donors, and compared to no information at all. Could this have been due to the particular values we chose for streaks and percentages? In the supplement, we report an additional study which replicates the efficacy of an even shorter streak (4 donors in a row) compared to a control condition, but does not find similar efficacy for an even higher donation rate, 96% (SI Appendix, Section D). While these results demonstrate that streaks can effectively promote prosocial behavior, they do not address the possibility that participants were responding to the mere number of previous donors, rather than the fact that those donors were configured in a streak. Study 2 tested this possibility.

3. Study 2: Do donors need to be in a streak?

3.1. Overview

We assigned participants to read a message describing a collective streak of past donors, the same number of donors but not in a streak, or no message. We then asked them whether they wanted to donate to charity themselves.

3.2. Methods

3.2.1. Participants

Participants were 1202 users of Prolific Academic (542 males, 615 females, 39 other, 6 prefer not to answer, $M_{age} = 34.27$ years, $SD = 12.47$ years) who were paid \$0.50 USD for their participation. Following our preregistration, we excluded 34 participants who failed one or more attention checks in the survey, which left 1168 participants in the data set. A sensitivity analysis revealed that the smallest effect size that could be detected in a binomial GLM with this sample at 80% power ($\alpha = 0.05$) would be $OR = 1.23$.

3.2.2. Procedure

Participants were told that they were eligible for a \$0.15 USD bonus in addition to their base compensation for participating in the survey,

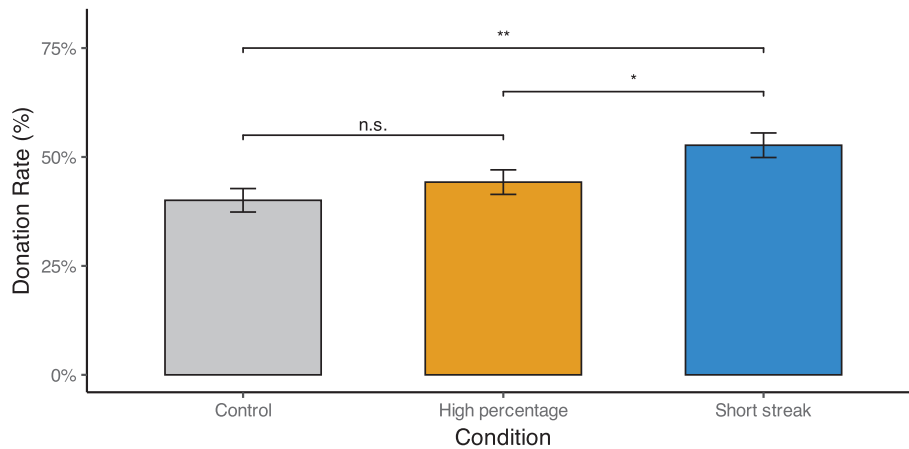


Fig. 2. Participants' Donation Rates in Study 1. Note: The x-axis shows the assigned condition, and the y-axis shows the percent of participants in that condition who chose to donate to charity. Error bars indicate ± 1 SEM. Asterisks indicate significance (*: $p < 0.05$, **: $p < 0.01$).

which would bring their total compensation to \$0.65 USD. They were told that they could keep the bonus, or donate it to a charity of their choice, from the same list used in Study 1.

Participants were randomly assigned to one of three possible conditions that determined what they read next in the survey. Participants in the *streak* condition ($n = 396$) were told that “recently, the last 4 people in a row donated.” Participants in the *non-streak* condition ($n = 403$) instead saw the message “recently, 4 people donated,” with no mention of a streak. Participants in the *control* condition ($n = 403$) saw no message.

At this point, as in Study 1, participants decided whether they wanted to donate their bonus to charity, or keep it for themselves. They then answered similar demographic and exploratory measures as those used in Study 1. The complete text of all questions is available in the SI Appendix (Section A).

3.3. Results

Did the message participants read influence the likelihood that they would donate their bonus to charity? We analyzed participant donation decisions by fitting a binomial generalized linear model to our data in R. The dependent variable was the participant's decision to keep their bonus or donate it to charity, and the between-subjects fixed factor was the assigned condition (*control*, *no streak*, or *streak*). As Fig. 3 shows, participants in the *streak* condition donated at higher rates (52.73%) than participants in both the *control* condition (44.02%), $b = 0.35$, $SE =$

0.14, $z = 2.43$, $p = 0.02$, 95% CI_b [0.07, 0.63], $OR = 1.42$, 95% CI_{OR} [1.07, 1.88], and the *no streak* condition (45.64%), $b = 0.28$, $SE = 0.14$, $z = 1.97$, $p = 0.049$, 95% CI_b [0.002, 0.57], $OR = 1.33$, 95% CI_{OR} [1.00, 1.76], which did not differ from one another, $b = 0.07$, $SE = 0.14$, $z = 0.46$, $p = 0.65$, 95% CI_b [-0.22, 0.35], $OR = 1.07$, 95% CI_{OR} [0.81, 1.42]. This pattern of results persisted when controlling for participant age and gender (streak-control: $b = 0.36$, $SE = 0.15$, $z = 2.45$, $p = 0.01$, 95% CI [0.07, 0.65]; streak-no streak: $b = 0.28$, $SE = 0.15$, $z = 1.89$, $p = 0.06$, 95% CI [-0.01, 0.56]).

3.4. Discussion

Participants in Study 2 were more likely to donate to charity when they were told about a small number of donors compared to a control condition, but only when we specified that those donors were part of an ongoing streak. To further explore the features of a streak necessary to promote donation, in the supplement, we report an additional experiment (SI Appendix, Section G) which compares a streak of three donors to two other messages: a broken streak (three donors followed by one non-donor) and a scattered pattern (three donors who were non-consecutive). We found that only the ongoing streak message increased donation rates compared to a control condition, suggesting that streaks need to be ongoing and contiguous to reliably promote prosocial behavior. But why do streaks encourage donations at all? In Study 3, we tried to understand what made short collective streaks effective at promoting prosocial behavior.

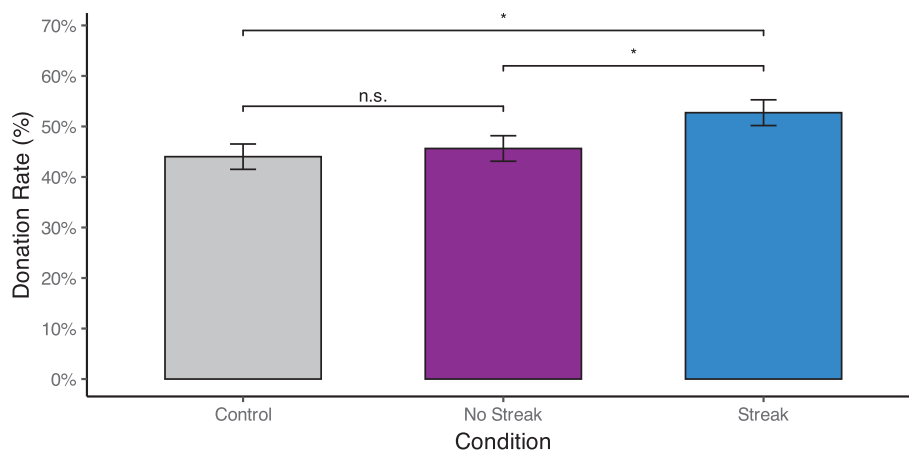


Fig. 3. Participants' Donation Rates in Study 2. Note: The x-axis shows the assigned condition, and the y-axis shows the percentage of participants in that condition who chose to donate to charity. Error bars indicate ± 1 SEM. Asterisks indicate significance (*: $p < 0.05$).

4. Study 3: Why are collective streaks effective?

4.1. Overview

We assigned participants to read a message describing a high percentage or short streak of past participants who made a charitable donation. We then asked them three questions about their feelings about donating and about past and future donations. Finally, we asked them whether they wanted to donate to charity themselves.

4.2. Methods

4.2.1. Participants

Participants were 1001 users of Prolific Academic (502 males, 477 females, 17 other, 5 prefer not to answer, $M_{\text{age}} = 31.74$ years, $SD = 11.24$ years) who were paid \$0.40 USD for their participation. Following our preregistration, we excluded 38 participants who failed a manipulation check, 25 participants who failed an attention check, and 18 participants who failed both, which left 920 participants in the data set. A sensitivity analysis revealed that the smallest effect size that could be detected in a binomial GLM with this sample at 80% power ($\alpha = 0.05$) would be $OR = 1.21$.

4.2.2. Procedure

Participants were told that they were eligible for a bonus (\$0.10 USD) in addition to their base compensation for participating in the survey, which would bring their total compensation to \$0.50 USD. They were told that they could keep the bonus, or donate it to a charity of their choice from a list of the same charities used in Study 1.

At this point, participants were randomly assigned to one of two possible conditions that determined what they read next in the survey. Participants in the *high percentage* condition ($n = 485$) were told that 80% of past participants in the survey had chosen to donate their bonus, while those in the *short streak* condition ($n = 516$) were told that the last 20 participants in a row who took the survey had chosen to donate. The specific number or percentage could randomly vary by 3 in either direction (e.g. 17 to 23, 77 to 83), and participants in both conditions saw their assigned message in white text, followed by the same generic donation appeals used in Study 1.

After seeing the streak or percentage message but before deciding whether or not to donate themselves, all participants were asked three questions about their feelings of obligation related to the donation decision (Anik & Norton, 2019). The first question asked about *personal impact*: "How much personal impact will your decision to donate have on whether or not future participants also donate?" (7-point scale; 1 - No impact, 7 - A great deal of impact). The second question asked about *responsibility*: "How responsible do you feel towards the previous donors described above?" (7-point scale; 1 - Not at all responsible, 7 - Very responsible). The third question asked about *pressure*: "How much do you feel that the previous donors described above are counting on you to donate?" (7-point scale; 1 - Not at all, 7 - A great deal). The three questions were presented in random order.

After answering these questions, participants made their donation decisions. Those who chose to donate were then asked to select a charity from the preselected list where their donation would be sent. Participants were then asked to write a brief explanation of why they decided to donate or keep their bonus, their estimate of how many participants before them previously donated (from 0% to 100%), how close they felt to the past donors described in their streak- or percentage-based message (7-point scale with pictures of increasingly overlapping pairs of circles), and how much each of the following three feelings factored into their donation decision: 1) bad luck or karma, 2) superstitious feelings, and 3) feelings of guilt (5-point scales; 1 - Not at all to 5 - Very much). They then answered three questions about their preference for making decisions based on rational analysis or intuition (Walco & Risen, 2017), reported their current happiness, a manipulation check to see if they

remembered the information they were told about streaks or percentages, an attentional check, basic demographic measures, and three free response items to guess what they thought the study was about and report comments or glitches in the survey. Participants also completed an additional attentional check at the beginning of the survey asking them to retype a photo of several handwritten English sentences. The complete text of all questions is available in the SI Appendix (Section A).

4.3. Results

4.3.1. Personal impact, responsibility, and pressure

Did participants report greater feelings of obligation based on which kind of message they were shown? We conducted a series of linear regressions in R with our three obligation measures as dependent variables, and the assigned condition as the independent variable. Participants reported feeling higher personal impact after reading about an ongoing streak of donors ($M = 4.19$, $SD = 1.87$) than after reading about a high percentage of previous donors ($M = 3.84$, $SD = 1.93$), $b = 0.35$, $SE = 0.13$, $t(918) = 2.82$, $p_{\text{Holm}} = 0.01$, 95% CI_b [0.11, 0.60]. However, there was no difference by condition in reported levels of responsibility, ($M_{\text{streak}} = 3.79$, $SD_{\text{streak}} = 2.13$, $M_{\text{percentage}} = 3.59$, $SD_{\text{percentage}} = 2.12$; $b = 0.20$, $SE = 0.14$, $t(918) = 1.43$, $p_{\text{Holm}} = 0.31$, 95% CI_b [-0.07, 0.48]), or pressure, ($M_{\text{streak}} = 4.08$, $SD_{\text{streak}} = 2.08$, $M_{\text{percentage}} = 4.24$, $SD_{\text{percentage}} = 2.08$; $b = -0.16$, $SE = 0.14$, $t(918) = -1.17$, $p_{\text{Holm}} = 0.31$, 95% CI_b [-0.43, 0.11]).

4.3.2. Donation decisions

Did the message participants read influence the likelihood that they would donate their bonus to charity? We analyzed participant donation decisions by fitting a binomial generalized linear mixed model to our data in R. The dependent variable was the participant's decision to keep their bonus or donate it to charity, the between-subjects fixed factor was the assigned condition (*high percentage* or *short streak*), and the random variation (jitter) around the streak or percentage number was included as a random intercept. The model revealed that participants in the *short streak* condition donated at a marginally higher rate (63.16%) than participants in the *high percentage* condition (57.08%), $b = 0.25$, $SE = 0.14$, $z = 1.85$, $p = 0.07$, 95% CI_b [-0.01, 0.51], $OR = 1.29$, 95% CI_{OR} [0.99, 1.68]. A general linear model without any random terms yielded the same pattern of results.

How did participants' feelings of obligation influence their donation decisions? Adding the average of our three obligation measures to our donation model as a fixed effect, along with the interaction between that term and condition, revealed a significant effect of obligation, $b = 0.40$, $SE = 0.06$, $z = 6.54$, $p < 0.001$, 95% CI_b [0.28, 0.52], but no effect of condition, $b = -0.28$, $SE = 0.36$, $z = -0.79$, $p = 0.43$, 95% CI_b [-1.00, 0.43], and no interaction between condition and obligation, $b = 0.14$, $SE = 0.09$, $z = 1.53$, $p = 0.13$, 95% CI_b [-0.04, 0.32]. To further investigate this relationship, we turned to a mediation analysis, given that our experimental design involved manipulation of our predictor and measurement of the mediator before the outcome variable, which precludes some common concerns related to mediation in behavioral research (Spencer et al., 2005). We constructed a parallel mediation model in R using the *lavaan* package (Rosseel, 2012) with diagonal weighted least squares robust estimation and bootstrapped standard errors with 5000 iterations. We entered two conditions (0 = percentage, 1 = streak) into the regression predicting donation decisions (0 = no, 1 = yes), with personal impact, responsibility, and pressure as our potential mediators. The streak (vs. percentage) message increased feelings of personal impact on future donors ($b = 0.35$, $SE = 0.12$, $z = 2.84$, $p < 0.01$, 95% CI_b [0.11, 0.60]), which in turn increased the likelihood to donate ($b = 0.12$, $SE = 0.03$, $z = 4.81$, $p < 0.001$, 95% CI_b [0.07, 0.17]). In this parallel mediation, the impact of streaks on donation decisions was fully mediated ($b = 0.09$, $SE = 0.08$, $z = 1.08$, $p = 0.28$, 95% CI_b [-0.07, 0.24]). While feelings of responsibility also predicted donation decisions ($b = 0.15$, $SE = 0.03$, $z = 5.82$, $p < 0.001$, 95% CI_b [0.10,

0.20]), they were not predicted by condition ($b = 0.20$, $SE = 0.14$, $z = 1.43$, $p = 0.15$, 95% CI_b $[-0.07, 0.48]$), and feelings of pressure were both unaffected by condition and did not predict donations. Fig. 4 shows the unstandardized regression coefficients of the mediation model. Streak-based messages increased feelings of personal impact on future potential donors, which in turn increased donations.

4.3.3. Karma, superstition, and guilt

Did the message participants read influence how much they reported karma, superstition, or guilt influencing their donation decision? A series of linear regressions revealed no difference by condition in feelings of karma ($M_{\text{streak}} = 1.49$, $SD_{\text{streak}} = 0.99$, $M_{\text{percentage}} = 1.58$, $SD_{\text{percentage}} = 1.05$; $b = -0.09$, $SE = 0.07$, $t(918) = -1.33$, $p_{\text{holm}} = 0.37$, 95% CI_b $[-0.22, 0.04]$), superstition ($M_{\text{streak}} = 1.40$, $SD_{\text{streak}} = 0.87$, $M_{\text{percentage}} = 1.51$, $SD_{\text{percentage}} = 0.97$; $b = -0.11$, $SE = 0.06$, $t(918) = -1.85$, $p_{\text{holm}} = 0.19$, 95% CI_b $[-0.23, 0.01]$), or guilt ($M_{\text{streak}} = 2.23$, $SD_{\text{streak}} = 1.30$, $M_{\text{percentage}} = 2.15$, $SD_{\text{percentage}} = 1.33$; $b = 0.07$, $SE = 0.09$, $t(918) = 0.86$, $p_{\text{holm}} = 0.39$, 95% CI_b $[-0.10, 0.24]$).

4.3.4. Closeness to past donors

In both conditions, participants who donated reported feeling closer to past donors ($M_{\text{streak}} = 4.41$, $SD_{\text{streak}} = 1.95$, $M_{\text{percentage}} = 4.70$, $SD_{\text{percentage}} = 1.82$) than participants who didn't donate ($M_{\text{streak}} = 2.30$, $SD_{\text{streak}} = 1.42$, $M_{\text{percentage}} = 2.24$, $SD_{\text{percentage}} = 1.46$), $b = 2.46$, $SE = 0.17$, $t(916) = 14.87$, $p < 0.001$, 95% CI_b $[2.14, 2.78]$. However, there was no main effect of condition ($b = 0.06$, $SE = 0.18$, $t(916) = 0.34$, $p = 0.73$, 95% CI_b $[-0.29, 0.42]$), and no interaction between the donation decision and the condition ($b = -0.35$, $SE = 0.23$, $t(916) = -1.53$, $p = 0.13$, 95% CI_b $[-0.81, 0.10]$).

4.3.5. Estimates of overall donation rate

Participants in the streak condition estimated that the percentage of past participants who donated was lower than did participants in the high percentage condition, $b = -9.46$, $SE = 2.06$, $t(916) = -4.60$, $p < 0.001$, 95% CI_b $[-13.49, -5.42]$. There was also a main effect of donation decisions, $b = 15.34$, $SE = 1.88$, $t(916) = 8.15$, $p < 0.001$, 95% CI_b $[11.65, 19.04]$, and a marginally significant interaction between these estimates and the participants' own donation decisions, with those who donated estimating that the rate was higher ($M_{\text{streak}} = 69.60\%$, $SD_{\text{streak}} = 18.94\%$, $M_{\text{percentage}} = 73.98\%$, $SD_{\text{percentage}} = 15.27\%$) than those who didn't donate ($M_{\text{streak}} = 49.18\%$, $SD_{\text{streak}} = 22.07\%$, $M_{\text{percentage}} = 58.63\%$, $SD_{\text{percentage}} = 23.26\%$), $b = 5.08$, $SE = 2.65$, $t(916) = 1.91$, $p = 0.06$, 95% CI_b $[-0.13, 10.28]$.

4.4. Discussion

Participants in Study 3 who were told about an ongoing streak of past donors felt stronger feelings of personal impact towards potential future donors compared to those told the overall percentage of past donors. We did not find evidence that streak-based messages increased feelings of pressure or responsibility related to previous donors, or closeness to past donors. We also did not see any difference between conditions in feelings of superstition, karma, or guilt related to their decision, though it is unclear how comfortable participants would be admitting such feelings (Risen, 2015). While the average difference in donation rates between the streak and percentage conditions was smaller than in earlier studies, this may be because we asked participants to think critically about past and future donors after they read the appeal, but before making their own decision (Jacobson et al., 2011). In the supplement, we report an additional study where we asked participants to critically rank and compare charities before donating, which similarly reduced the effectiveness of streak-based messages (SI Appendix, Section B).

While Study 3's results provided evidence that streaks engendered more personal impact than traditional descriptive social norms, they may prompt other distinct feelings as well. In the supplement, we report an additional study (SI Appendix, Section F) in which we showed participants streak- and percentage-based messages and asked them about feelings of "not wanting to drop the ball" as well as about their feelings of responsibility to external stakeholders such as the charitable organizations being considered. We found that streaks increased feelings of "not wanting to drop the ball" relative to percentages, but not feelings of responsibility towards external others. While streaks do not seem to increase feelings of direct responsibility towards past donors, as shown in Study 3, they may make people report a desire to continue a streak inherited from those donors.

Streak-based messages lowered participant estimates of past donation rates, which makes their effectiveness slightly surprising, since such an effect would seem likely to depress donations. One challenge in interpreting this result is that participants estimated past donation rates after making their own donation decisions, which may have biased those estimates. In Study 4, we asked whether the increased feelings of personal impact engendered by streaks would persist even if participants were directly asked to estimate past donation rates before deciding whether to donate themselves.

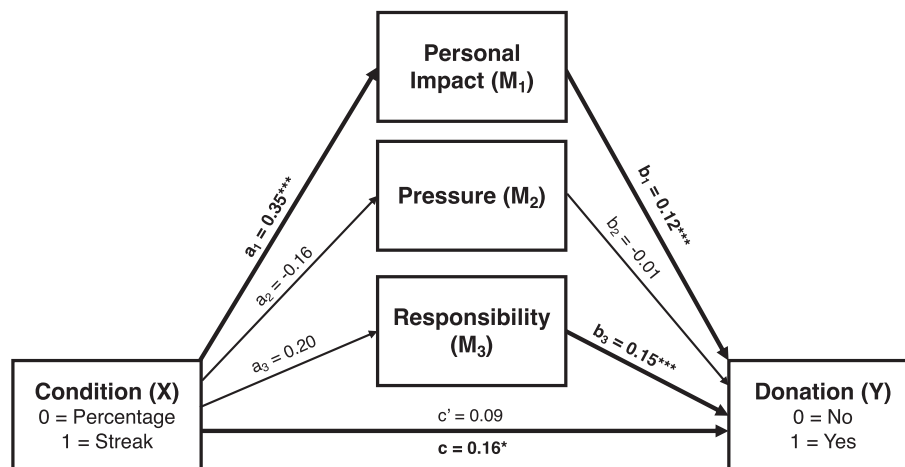


Fig. 4. Mediation analysis in Study 3. Note: Unstandardized regression coefficients are shown from the mediation and the outcome regression models. Asterisks indicate significance (*: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$).

5. Study 4: How do streaks influence estimates of past donation rates?

5.1. Overview

We assigned participants to read a message describing a high percentage or short streak of past participants who made a charitable donation, and then asked them about their estimate of the percentage of previous participants who had donated, their sense of personal impact towards potential future donors in the study, and whether they wanted to donate to charity themselves.

5.2. Methods

5.2.1. Participants

Participants were 1007 users of Prolific Academic (560 males, 431 females, 13 other, 3 prefer not to answer, $M_{age} = 31.33$ years, $SD = 11.89$ years) who were paid \$0.40 USD for their participation. Following our preregistration, we excluded 43 participants who failed a manipulation check, 20 participants who failed an attention check, and 11 participants who failed both, which left 933 participants in the data set. A sensitivity analysis revealed that the smallest effect size that could be detected in a binomial GLM with this sample at 80% power ($\alpha = 0.05$) would be $OR = 1.21$.

5.2.2. Procedure

Participants were told that they were eligible for a \$0.10 USD bonus in addition to their base compensation for participating in the survey, which would bring their total compensation to \$0.50 USD. They were told that they could keep the bonus or donate it to a charity of their choice from a list of the same five charities used in Study 1.

At this point, participants were randomly assigned to one of two possible conditions that determined what they read next in the survey. Participants in the *high percentage* condition ($n = 488$) were told that “X % of participants who took this survey have chosen to make a donation to charity,” where X was a number between 77 and 83. Participants in the *short streak* condition ($n = 520$) were instead told that “[t]he last X participants who took this survey have chosen to make a donation to charity,” where X was a number between 17 and 23. Participants in both conditions saw their assigned message in white text, followed by the same generic donation appeals used in Study 1.

After seeing the streak or percentage message but before deciding whether or not to donate themselves, participants were asked two different questions about the donation decision, in random order. The first question asked about the *estimated donation rate* of other participants in the study: “Out of all the participants who have taken this survey so far, what percent do you think chose to donate?” (0% - 100%). The second question asked about *personal impact*: “How much personal impact will your decision to donate have on whether or not future participants also donate?” (7-point scale; 1 - No impact, 7 - A great deal of impact).

After answering these two questions, participants made their donation decisions. Those who chose to donate were then asked to select a charity from the preselected list where their donation would be sent. Participants were then asked to write a brief explanation of why they decided to donate or keep their bonus and asked to indicate how good they felt about their decision (101-point scale; 0 - Not at all, 100 - Extremely). They then answered a manipulation check to see if they remembered the information they were told about streaks or percentages, attentional checks, basic demographic measures, and three free response items to guess what they thought the study was about and report comments or glitches in the survey. The complete text of all questions is available in the SI Appendix (Section A).

5.3. Results

5.3.1. Personal impact and estimated donation rates

Did participants' feelings of personal impact on future participants or estimates of the donation rates of past participants depend on whether participants were told about a descriptive social norm or a streak? We fit a series of linear regressions in R with personal impact and estimated donation rate as the dependent variables, and the assigned condition (short streak or high percentage) as the independent variable.

As in Study 3, participants estimated that the percentage of past participants who donated was lower in the streak condition ($M = 60.31\%$, $SD = 25.06\%$) compared to the percentage condition ($M = 71.97\%$, $SD = 17.93\%$), $b = -11.66$, $SE = 1.43$, $t(931) = -8.15$, $p < 0.001$, 95% $CI_b [-14.47, -8.85]$. However, participants did not report feeling higher personal impact in the streak condition ($M = 3.72$, $SD = 1.89$) compared to the percentage condition ($M = 3.73$, $SD = 1.85$), $b = -0.01$, $SE = 0.12$, $t(931) = -0.10$, $p = 0.92$, 95% $CI_b [-0.25, 0.23]$. When we ran an additional model predicting personal impact with condition while controlling for the estimated donation rate, a positive main effect of streaks over percentages emerged, $b = 0.33$, $SE = 0.12$, $t(930) = 2.79$, $p < 0.01$, 95% $CI_b [0.10, 0.57]$.

5.3.2. Donation decisions

Did the message participants read influence the likelihood that they would donate their bonus to charity? We analyzed participant donation decisions by fitting a binomial generalized linear model to our data in R. The dependent variable was the participant's decision to keep their bonus or donate it to charity, the within-subjects fixed factors were the participant's feelings of personal impact and estimated donation rate of previous donors, and the between-subjects fixed factor was the assigned condition (*high percentage* or *short streak*). The analysis revealed that participants in the *short streak* condition donated at a higher rate (61.73%) than participants in the *high percentage* condition (59.35%), $b = 0.51$, $SE = 0.16$, $z = 3.21$, $p < 0.01$, 95% $CI_b [0.20, 0.83]$, $OR = 1.67$, 95% $CI_{OR} [1.22, 2.29]$. Further, donation rates were also positively predicted by both personal impact, $b = 0.32$, $SE = 0.04$, $z = 7.54$, $p < 0.01$, 95% $CI_b [0.24, 0.41]$, $OR = 1.38$, 95% $CI_{OR} [1.27, 1.50]$, and by estimated donation rates, $b = 0.03$, $SE = 0.004$, $z = 7.59$, $p < 0.01$, 95% $CI_b [0.02, 0.04]$, $OR = 1.03$, 95% $CI_{OR} [1.02, 1.04]$. While our preregistered model included all three terms, a simpler model which only included condition as a fixed effect did not yield a significant effect of condition, $b = 0.10$, $SE = 0.13$, $z = 0.75$, $p = 0.46$, 95% $CI_b [-0.16, 0.36]$, $OR = 1.11$, 95% $CI_{OR} [0.85, 1.44]$.

To further investigate the relationship between estimated donation rates and personal impact on donation decisions, we turned to a mediation-based approach, given that our experimental design was similar to Study 3. We constructed a serial mediation model in R using the *lavaan* package with diagonal weighted least squares robust estimation and bootstrapped standard errors with 5000 iterations. We entered two conditions (0 = percentage, 1 = streak) into the regression predicting donation decisions (0 = no, 1 = yes), with estimated donation rates and personal impact as the first and second serial mediators, respectively. The short streak (vs. high percentage) message increased feelings of personal impact on future donors ($b = 0.05$, $SE = 0.02$, $z = 2.86$, $p < 0.01$, 95% $CI_b [0.01, 0.08]$), which in turn increased the likelihood to donate ($b = 1.16$, $SE = 0.14$, $z = 8.49$, $p < 0.001$, 95% $CI_b [0.89, 1.43]$). While a higher estimated donation rate also increased feelings of personal impact ($b = 0.42$, $SE = 0.04$, $z = 11.60$, $p < 0.001$, 95% $CI_b [0.35, 0.49]$), estimated donation rates were lower after reading about short streaks ($b = -0.12$, $SE = 0.01$, $z = -8.33$, $p < 0.01$, 95% $CI_b [-0.14, -0.09]$). As a result, the overall direct effect of streaks on donations in the mediation model was positive, $b = 0.24$, $SE = 0.08$, $z = 3.07$, $p < 0.01$, 95% $CI_b [0.09, 0.39]$, even in the presence of a negative indirect serial mediation of estimated donation rates and personal impact on donation, $b = -0.06$, $SE = 0.01$, $z = -5.19$, $p < 0.001$, 95% $CI_b [-0.08, -0.04]$. This model suggests that estimated donation rate

suppressed personal impact's mediation of the relationship between condition and donation decisions, a pattern known as inconsistent mediation (MacKinnon et al., 2000). Fig. 5 shows the unstandardized regression coefficients of the serial mediation model in Study 4. As this figure suggests, streak-based messages decreased estimates of past donation rates compared to descriptive social norms, but simultaneously increased feelings of personal impact on future potential donors, which in turn increased donations.

5.4. Discussion

The results of Study 4 support Study 3's finding that, compared to descriptive social norms, streak-based messages increase feelings of personal impact over future participants but lower estimates of past rates of prosocial behavior, even before participants make their own donation decisions. By contrast, with percentage-based messages used in traditional descriptive social norms, participants can estimate a high rate of past donations because they have just been given that information. The inconsistent mediation pattern in this study suggests that descriptive social norms increase donation rates in part by providing clear information that participants can use to update their subjective perceptions of norm compliance; streak-based messages, in contrast, increase feelings of personal impact enough to have a positive influence on donation rates, in spite of their negative impact on estimates of past donation rates.

As in Study 3, the effectiveness of streak-based messages in Study 4 was weaker than other studies, which we again attribute to the fact that we induced participants to think about social influence, and in this case, to explicitly estimate donation rates before making their own decisions about whether to donate. This pattern of results is consistent with other cases of partial or inconsistent mediation, where simultaneously eliciting and modeling multiple influences on donations can increase variance on certain causal pathways, which in turn can make direct effects harder to observe (Ledermann et al., 2025).

If personal impact is a primary route by which streaks encourage donations, a reasonable question is whether such a process could also encourage other kinds of behavior, even socially undesirable kinds. In two supplemental experiments, we tested whether streaks could promote hypothetical non-monetary prosocial behavior, specifically volunteering (SI Appendix, Section H), as well as antisocial behavior (keeping instead of donating their bonus; SI Appendix, Section E). In the first of those studies, we found that streaks increased self-reported willingness to volunteer relative to a control condition. In the second, we found no evidence that an “antisocial” streak message increased the likelihood of keeping a monetary bonus compared to a control condition.

6. General discussion

Across 11 studies with over 12,000 participants, being invited to join an ongoing collective streak of donors made people more likely to donate to charity, even when compared to a traditional descriptive social norm message (Study 1), and even for very short streaks (Study S3). We observed this effect for a streak of donors, but not for the same number of donors not in a streak (Studies 2 and S6), or in a streak which had already been broken (Study S6). The effectiveness of streaks appeared to be driven by increased feelings of personal impact on potential future prosocial actors (Study 3), even though streaks also lowered estimates of past donation rates (Study 4). Finally, we found evidence that streaks may work for promoting other kinds of prosocial behavior such as volunteering (Study S7), but not antisocial behavior (Study S4). Taken together, these results suggest that short collective streaks can be an effective and easily deployable way to promote prosocial behavior.

Several features of streak-based messages may make them particularly easy to implement in the field to encourage prosocial behavior in situations where traditional descriptive social norms are less useful. First, streaks are frequent. Even when they are not actively encouraged, they can be found naturally whenever at least three people consecutively perform the same action. Second, streaks are flexible, because what counts as a streak can be defined in a way that makes them easy to find. For example, a grocery store could track streaks of customers who choose to make a small donation with their purchase within each individual checkout line, across an entire store, or even across multiple stores. Third, collective streaks are robust to being broken in ways that individual goal failures and broken personal streaks are often not (Soman & Cheema, 2004). If one person decides to break a streak, the next person in a line may not know this, and either way, can easily start a new one. Fourth, tracking streaks can be simple. Traditional descriptive social norms require calculating overall percentages of compliance, which includes what percentage of people did not comply with the norm. Many organizations treat these statistics, such as email or advertisement click-through rates, as proprietary information, perhaps because the numbers are often surprisingly low. Streaks have comparatively little diagnostic use, which may make organizations more willing to track and share them.

There are several limitations to keep in mind when interpreting our results. First, while participants in the studies were making actual donations to real charities, the amounts of money involved were modest, typically on the order of \$0.10 or \$0.15 USD. However, these amounts did represent a potential 25% pay increase for the surveys in question, roughly 1% of an average online platform worker's weekly earnings in the same time period (Peer et al., 2017). Future work should directly test whether or not streak-based messages are effective with larger donation amounts, when donations are spread over a longer range of time or with more time between them, when donations are more recent, and with a

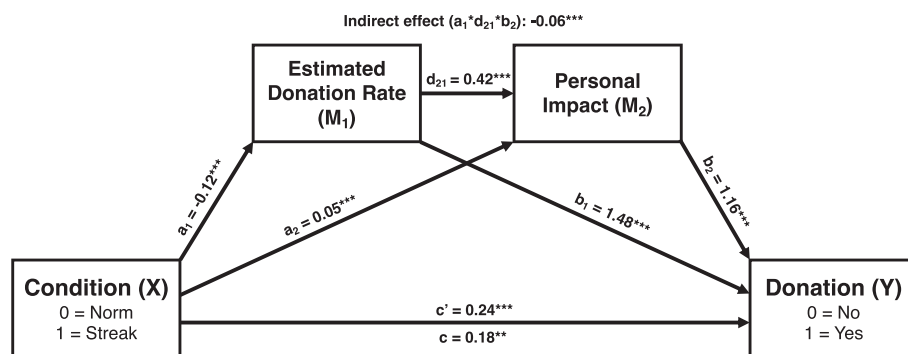


Fig. 5. Mediation analysis in Study 4. Note: Unstandardized regression coefficients are shown from the mediation and the outcome regression models. Asterisks indicate significance (*: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$).

wider range of prosocial acts, such as environmental conservation behaviors (Converse & Austin, 2021). Second, participants in our donation studies were able to choose which charity to donate to from a list of options, rather than being required to donate to a particular cause. While more work is needed to see if streaks possess the same impact when there is no choice in donation targets, it is plausible that this would only make them more effective, as the same donation target could make individual donors in a streak feel more connected (Prentice & Paluck, 2020). Third, while Studies 3 and 4 demonstrated that feelings of personal impact drive the impact of streaks, our mediation analyses cannot rule out the possibility that one or more unmodeled confounders are contributing to both personal impact and the likelihood of donating. For example, being asked to join an ongoing streak of several people performing an action may also have additional persuasive power for a variety of reasons related to both individual and collective psychological dynamics. For a potential prosocial actor, being invited to continue or break a streak may make them feel less like one anonymous actor in a crowd, potentially satisfying desires for uniqueness (Imhoff & Erb, 2009; Simonson & Nowlis, 2000) and distinctiveness (Brewer, 1991; Chan et al., 2012).

Our samples were all recruited via online survey platforms, which in recent years have come under scrutiny for concerns about inauthentic and even LLM-generated responses (Westwood, 2025). However, the bulk of our data were collected well before LLMs became a cost-effective tool to deploy in online survey research (Asher et al., 2026). Additionally, our preregistered exclusion criteria relied on grammar, comprehension, and attentional checks to identify actual human participants who could read and understand our instructions in English, though a robustness analysis suggests that these exclusions did not appreciably change our primary model results (SI Appendix, Section I).

The donation decisions in our studies were only observable to the experimenter, not to other participants. Face-to-face interactions would likely have less anonymity. For example, in a checkout line, people ahead or behind the current customer may be able to see their decision. However, given the power of social observability and proximity to increase conformity (Bicchieri et al., 2022; Schwartz et al., 2013; Yang & Hsee, 2021), we suspect that our studies were a relatively conservative test of the effectiveness of streak-based messages. Situations in which members of the streak can see each other's decisions (and know or suspect that they are being observed) could make streaks even more effective, due to factors such as impression and reputation management (e.g., Leimgruber et al., 2012; Sezer, 2022), as well as perceived desirability or acceptability of behavior (Dear et al., 2019). Similarly, while we tested messages describing streaks with as few as three actors and as many as 20, future work should systematically test how the number of actors in a streak impacts efficacy and perceived personal impact. Similarly, longer collective streaks may simply seem less plausible, as is often the case for other kinds of streaks (Sun & Wang, 2010).

We can imagine several kinds of situations when streaks will be no more effective than descriptive social norms, or perhaps less effective. Participants in Study 3 did not report excess feelings of guilt or pressure after reading about streaks, but in situations where donors feel resentful or manipulated by streak-based messaging, streaks could potentially increase compliance (the number of donations) while decreasing the degree of compliance (the average amount donated). Likewise, uncertainty about whether or not others will learn about one's own prosocial action may interfere with streak effectiveness, because it would interrupt the feeling of personal impact on those donors. Additionally, asking people to think critically about the past behavior of others, as we did in Study 4, or about the efficacy of their donation, as we did in Study S1, seemed to reduce the efficacy of streaks. Like traditional descriptive norms, streak-based messages may have more impact in situations when donation decisions are less deliberative (Jacobson et al., 2011).

Notably, in all of our studies, we followed up the streak information (e.g. "the last 4 participants donated") with a plea which explicitly referred to this pattern of donations as a streak (e.g. "keep the streak

going!"). While we included these messages to ensure that participants realized that there was an ongoing streak, and were careful to include matched messages encouraging donation in our non-streak conditions, it remains an open question whether people naturally notice and respond to streaks in prosocial behavior situations even when they are not explicitly pointed out. Future work should test the salience of streaks as a potential boundary condition for this phenomenon.

Is following a streak rational? After all, learning the overall percentage of others' decisions will almost always be more informative than learning about a recent streak. In the supplement, we report an additional study in which most participants preferred to learn about percentages of past donors rather than streaks when making a donation decision (SI Appendix, Section C). However, even though short streaks should not convey useful information about future events (Oskarsson et al., 2009; Wagenaar, 1970), a streak may give the impression that normative behavior is changing, even when that impression is not necessarily warranted. Indeed, work on dynamic norms (Converse & Austin, 2021; Sparkman & Walton, 2017) suggests that highlighting a behavior's growing prevalence increases its adoption, a result that has also been found in efforts to increase early adoption of online platforms (Boudreau, 2021). Despite their low diagnostic value about past behavior of others, streaks may be useful because of what they suggest about the future, whether or not that suggestion is accurate.

We found that streaks increased feelings of personal impact on future donors, as well as a feeling of not wanting to "drop the ball", which we interpret as a kind of physical metaphor about the interpersonal connections engendered by collective streaks. While we did not find evidence that streaks increased feelings of responsibility to stakeholders relevant to the donation decision, we suspect that personal impact is not the only route by which they may influence behavior. For example, learning about an ongoing streak may change the reference point of an individual's decision from overall prevalence of a behavior to the actions of those already in the streak, as well as the next person "in line." Such a shift in reference points could increase the perceived marginal value of future actions, akin to proposed mechanisms for the identifiable victim effect (Jenni & Loewenstein, 1997) and goal-gradient effects in motivation (e.g. Bonezzi et al., 2011; Emanuel et al., 2022). Future research should explore the effectiveness of collective streaks not just for encouraging other kinds of prosociality, but behavior more generally.

Practitioners already know many ways to use peer influence to promote behavior for the social good (Frank, 2020), and streak-based messages will not be appropriate for every kind of behavior or every setting. However, many of the biggest social challenges today necessitate increasing adoption of currently unpopular behaviors (Sparkman & Walton, 2019), which often presents a paradox: many people may be reluctant to commit until most people already have. As a result, traditional descriptive norms may be less effective for behavior that is desirable but not yet popular. Collective streaks may be an effective way to increase prosocial behavior, particularly when such behavior is in short supply.

Open practices

Data, materials, stimuli, analysis scripts, and preregistrations for all studies are posted at the following link:

https://osf.io/ymz56/files/osfstorage?view_only=04d05a5a2cd74c1d9e38406160061a61

CRediT authorship contribution statement

David E. Levari: Writing – review & editing, Writing – original draft, Investigation, Formal analysis, Conceptualization. **Michael I. Norton:** Writing – review & editing, Writing – original draft, Conceptualization.

Ethical considerations

The protocols for all studies were approved by Harvard University's Committee on the Use of Human Subjects and were carried out in accordance with the provisions of the World Medical Association Declaration of Helsinki. The authors declare no conflicts of interest with respect to the authorship or the publication of this article.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jesp.2026.104941>.

References

- Allcott, H., & Rogers, T. (2014). The short-run and long-run effects of behavioral interventions: Experimental evidence from energy conservation. *American Economic Review*, 104(10), 3003–3037. <https://doi.org/10.1257/aer.104.10.3003>
- Anderson, L. R., & Holt, C. A. (1997). Information cascades in the laboratory. *The American Economic Review*, 87(5), 847–862.
- Anik, L., & Norton, M. I. (2019). On being the tipping point: Social threshold incentives motivate behavior. *Journal of the Association for Consumer Research*, 5(1), 19–33. <https://doi.org/10.1086/706508>
- Asch, S. E. (1956). Studies of independence and conformity: I. A minority of one against a unanimous majority. *Psychological Monographs: General and Applied*, 70(9), 1–70. <https://doi.org/10.1037/h0093718>
- Asher, M. W., Gold, G., Chen, E., & Carvalho, P. F. (2026). Chatbots are undermining crowdsourced research in the behavioral sciences: Detecting Artificial Intelligence–assisted cheating with a keystroke-based tool. *Advances in Methods and Practices in Psychological Science*, 9(1), Article 25152459261424723. <https://doi.org/10.1177/25152459261424723>
- Asparouhova, E., Hertz, M., & Lemmon, M. (2009). Inference from streaks in random outcomes: Experimental evidence on beliefs in regime shifting and the law of Small numbers. *Management Science*, 55(11), 1766–1782. <https://doi.org/10.1287/mnsc.1090.1059>
- Bicchieri, C., Dimant, E., Gächter, S., & Nosenzo, D. (2022). Social proximity and the erosion of norm compliance. *Games and Economic Behavior*, 132, 59–72. <https://doi.org/10.1016/j.geb.2021.11.012>
- Bonezzi, A., Brendl, C. M., & De Angelis, M. (2011). Stuck in the middle: The psychophysics of goal pursuit. *Psychological Science*, 22(5), 607–612. <https://doi.org/10.1177/0956797611404899>
- Boudreau, K. J. (2021). Promoting platform takeoff and self-fulfilling expectations: Field experimental evidence. *Management Science*. <https://doi.org/10.1287/mnsc.2021.3999>
- Brewer, M. B. (1991). The social self: On being the same and different at the same time. *Personality and Social Psychology Bulletin*, 17(5), 475–482. <https://doi.org/10.1177/0146167291175001>
- Carlson, K. A., & Shu, S. B. (2007). The rule of three: How the third event signals the emergence of a streak. *Organizational Behavior and Human Decision Processes*, 104(1), 113–121. <https://doi.org/10.1016/j.obhdp.2007.03.004>
- Caruso, E. M., Waytz, A., & Epley, N. (2010). The intentional mind and the hot hand: Perceiving intentions makes streaks seem likely to continue. *Cognition*, 116(1), 149–153. <https://doi.org/10.1016/j.cognition.2010.04.006>
- Centola, D., Becker, J., Brackbill, D., & Baronchelli, A. (2018). Experimental evidence for tipping points in social convention. *Science*, 360(6393), 1116–1119. <https://doi.org/10.1126/science.aas8827>
- Chan, C., Berger, J., & Van Boven, L. (2012). Identifiable but not identical: Combining social identity and uniqueness motives in choice. *Journal of Consumer Research*, 39(3), 561–573. <https://doi.org/10.1086/664804>
- Cialdini, R. B., & Goldstein, N. J. (2004). Social influence: Compliance and conformity. *Annual Review of Psychology*, 55(1), 591–621. <https://doi.org/10.1146/annurev.psych.55.090902.142015>
- Cialdini, R. B., & Trost, M. R. (1998). Social influence: Social norms, conformity and compliance. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The Handbook of Social Psychology* (pp. 151–192). McGraw-Hill.
- Converse, B. A., & Austin, M. M. K. (2021). People watching and the environment: Looking for signs of hope while concern outpaces action. *Current Opinion in Psychology*. <https://doi.org/10.1016/j.copsyc.2021.08.001>
- Davenport, D., & Winet, Y. K. (2022). Pivotal voting: The opportunity to tip group decisions skews juries and other voting outcomes. *Proceedings of the National Academy of Sciences*, 119(32), Article e2108208119. <https://doi.org/10.1073/pnas.2108208119>
- Dear, K., Dutton, K., & Fox, E. (2019). Do ‘watching eyes’ influence antisocial behavior? A systematic review & meta-analysis. *Evolution and Human Behavior*, 40(3), 269–280. <https://doi.org/10.1016/j.evolhumbehav.2019.01.006>
- Emanuel, A., Katzir, M., & Liberman, N. (2022). Why do people increase effort near a deadline? An opportunity-cost model of goal gradients. *Journal of Experimental Psychology: General*, 151(11), 2910–2926. <https://doi.org/10.1037/xge0001218>
- Frank, R. H. (2020). *Under the Influence: Putting Peer Pressure to Work*. Princeton University Press.
- Frey, B. S., & Meier, S. (2004). Social comparisons and pro-social behavior: Testing “conditional cooperation” in a field experiment. *American Economic Review*, 94(5), 1717–1722. <https://doi.org/10.1257/0002828043052187>
- Gilovich, T., Vallone, R., & Tversky, A. (1985). The hot hand in basketball: On the misperception of random sequences. *Cognitive Psychology*, 17(3), 295–314. [https://doi.org/10.1016/0010-0285\(85\)90010-6](https://doi.org/10.1016/0010-0285(85)90010-6)
- Goldstein, N. J., Cialdini, R. B., & Griskevicius, V. (2008). A room with a viewpoint: Using social norms to motivate environmental conservation in hotels. *Journal of Consumer Research*, 35(3), 472–482. <https://doi.org/10.1086/586910>
- Goldy, S. P., & Piff, P. K. (2020). Toward a social ecology of prosociality: Why, when, and where nature enhances social connection. *Current Opinion in Psychology*, 32, 27–31. <https://doi.org/10.1016/j.copsyc.2019.06.016>
- Gray, K., Ward, A. F., & Norton, M. I. (2014). Paying it forward: Generalized reciprocity and the limits of generosity. *Journal of Experimental Psychology: General*, 143(1), 247–254. <https://doi.org/10.1037/a0031047>
- Gugushvili, I., Francu, R.-E., & Koporic, N. (2022). I give a dime if you do, too! The influence of descriptive norms on perceived impact, personal involvement, and monetary donation intentions. *Journal of Consumer Behaviour*, 21(2), 167–179. <https://doi.org/10.1002/cb.1980>
- Hahn, U., & Warren, P. A. (2009). Perceptions of randomness: Why three heads are better than four. *Psychological Review*, 116(2), 454–461. <https://doi.org/10.1037/a0015241>
- Henderson, M. D., Huang, S., & Chang, C. A. (2012). When others cross psychological distance to help: Highlighting prosocial actions toward outgroups encourages philanthropy. *Journal of Experimental Social Psychology*, 48(1), 220–225. <https://doi.org/10.1016/j.jesp.2011.07.003>
- Hung, A. A., & Platt, C. R. (2001). Information cascades: Replication and an extension to majority rule and conformity-rewarding institutions. *The American Economic Review*, 91(5), 1508–1520.
- Imhoff, R., & Erb, H.-P. (2009). What motivates nonconformity? Uniqueness seeking blocks majority influence. *Personality and Social Psychology Bulletin*, 35(3), 309–320. <https://doi.org/10.1177/0146167208328166>
- Jacobson, R. P., Mortensen, C. R., & Cialdini, R. B. (2011). Bodies obliged and unbound: Differentiated response tendencies for injunctive and descriptive social norms. *Journal of Personality and Social Psychology*, 100(3), 433–448 (2010-25698-001) <https://doi.org/10.1037/a0021470>
- Jenni, K., & Loewenstein, G. (1997). Explaining the identifiable victim effect. *Journal of Risk and Uncertainty*, 14(3), 235–257. <https://doi.org/10.1023/A:1007740225484>
- Kahneman, D., & Tversky, A. (1972). Subjective probability: A judgment of representativeness. *Cognitive Psychology*, 3(3), 430–454. [https://doi.org/10.1016/0010-0285\(72\)90016-3](https://doi.org/10.1016/0010-0285(72)90016-3)
- Kang, P., Daniels, D. P., & Schweitzer, M. E. (2022). The streak-end rule: How past experiences shape decisions about future behaviors in a large-scale natural field experiment with volunteer crisis counselors. *Proceedings of the National Academy of Sciences*, 119(45), Article e2204460119. <https://doi.org/10.1073/pnas.2204460119>
- Kraft-Todd, G. T., Bollinger, B., Gillingham, K., Lamp, S., & Rand, D. G. (2018). Credibility-enhancing displays promote the provision of non-normative public goods. *Nature*, 563(7730), Article 7730. <https://doi.org/10.1038/s41586-018-0647-4>
- Lazić, A., & Željelić, I. (2025). Should public communication of vaccination rates assume rationality, normativity or reasonableness? Insights from three preregistered experiments. *Psychological Reports*, Article 00332941251340326. <https://doi.org/10.1177/00332941251340326>
- Ledermann, T., Rudaz, M., & Fritz, M. S. (2025). On partial versus full mediation and the importance of effect sizes. *Advances in Methods and Practices in Psychological Science*, 8(3), Article 25152459251355585. <https://doi.org/10.1177/25152459251355585>
- Leimgruber, K. L., Shaw, A., Santos, L. R., & Olson, K. R. (2012). Young children are more generous when others are aware of their actions. *PLoS ONE*, 7(10), Article e48292. <https://doi.org/10.1371/journal.pone.0048292>

- MacKinnon, D. P., Krull, J. L., & Lockwood, C. M. (2000). Equivalence of the mediation, confounding and suppression effect. *Prevention Science*, 1(4), 173–181. <https://doi.org/10.1023/A:1026595011371>
- Mehr, K. S., Silverman, J., Sharif, M. A., Barasch, A., & Milkman, K. L. (2025). The motivating power of streaks: Increasing persistence is as easy as 1, 2, 3. *Organizational Behavior and Human Decision Processes*, 187, Article 104391. <https://doi.org/10.1016/j.obhdp.2025.104391>
- Milgram, S., Bickman, L., & Berkowitz, L. (1969). Note on the drawing power of crowds of different size. *Journal of Personality and Social Psychology*, 13(2), 79–82 (1970-00589-001) <https://doi.org/10.1037/h0028070>.
- Miller, D. T., & Prentice, D. A. (2016). Changing norms to change behavior. *Annual Review of Psychology*, 67(1), 339–361. <https://doi.org/10.1146/annurev-psych-010814-015013>
- Miller, J. B., & Sanjurjo, A. (2018). Surprised by the hot hand fallacy? A truth in the law of Small numbers. *Econometrica*, 86(6), 2019–2047. <https://doi.org/10.3982/ECTA14943>
- Oskarsson, A. T., Van Boven, L., McClelland, G. H., & Hastie, R. (2009). What's next? Judging sequences of binary events. *Psychological Bulletin*, 135(2), 262–285. <https://doi.org/10.1037/a0014821>
- Peer, E., Brandimarte, L., Samat, S., & Acquisti, A. (2017). Beyond the Turk: Alternative platforms for crowdsourcing behavioral research. *Journal of Experimental Social Psychology*, 70, 153–163. <https://doi.org/10.1016/j.jesp.2017.01.006>
- Prentice, D., & Paluck, E. L. (2020). Engineering social change using social norms: Lessons from the study of collective action. *Current Opinion in Psychology*, 35, 138–142. <https://doi.org/10.1016/j.copsyc.2020.06.012>
- R Core Team. (2020). R Core Team, R: A Language and Environment for Statistical Computing. [Computer software]. <http://www.r-project.org/>.
- Rabin, M. (2002). Inference by believers in the law of small numbers. *The Quarterly Journal of Economics*, 117(3), 775–816. <https://doi.org/10.1162/003355302760193896>
- Risen, J. L. (2015). Believing what we do not believe: Acquiescence to superstitious beliefs and other powerful intuitions. *Psychological Review*, 1–27. <https://doi.org/10.1037/rev0000017>
- Rogers, T., Goldstein, N. J., & Fox, C. R. (2018). Social Mobilization. *Annual Review of Psychology*, 69(1), 357–381. <https://doi.org/10.1146/annurev-psych-122414-033718>
- Rosseel, Y. (2012). lavaan: An R Package for structural equation modeling. *Journal of Statistical Software*, 48(2), 1–36. <https://doi.org/10.18637/jss.v048.i02>
- Schultz, P. W., Nolan, J. M., Cialdini, R. B., Goldstein, N. J., & Griskevicius, V. (2007). The constructive, destructive, and reconstructive power of social norms. *Psychological Science*, 18(5), 429–434. <https://doi.org/10.1111/j.1467-9280.2007.01917.x>
- Schwartz, D., Fischhoff, B., Krishnamurti, T., & Sowell, F. (2013). The Hawthorne effect and energy awareness. *Proceedings of the National Academy of Sciences*, 110(38), 15242–15246. <https://doi.org/10.1073/pnas.1301687110>
- Sezer, O. (2022). Impression (mis)management: When what you say is not what they hear. *Current Opinion in Psychology*, 44, 31–37. <https://doi.org/10.1016/j.copsyc.2021.08.025>
- Silver, I., & Small, D. A. (2023). Put your mouth where your money is: A field experiment encouraging donors to share about charity. *Marketing Science*. <https://doi.org/10.1287/mksc.2023.1450>
- Silverman, J., & Barasch, A. (2023). On or off track: How (broken) streaks affect consumer decisions. *Journal of Consumer Research*, 49(6), 1095–1117. <https://doi.org/10.1093/jcr/ucac029>
- Silverman, J., Barasch, A. P., & Small, D. A. (2023). Hot streak! Inferences and predictions about goal adherence. *Organizational Behavior and Human Decision Processes*, 179, Article 104281. <https://doi.org/10.1016/j.obhdp.2023.104281>
- Simonson, I., & Nowlis, S. M. (2000). The role of explanations and need for uniqueness in consumer decision making: Unconventional choices based on reasons. *Journal of Consumer Research*, 27(1), 49–68. <https://doi.org/10.1086/314308>
- Soman, D., & Cheema, A. (2004). When goals are counterproductive: The effects of violation of a behavioral goal on subsequent performance. *Journal of Consumer Research*, 31(1), 52–62. <https://doi.org/10.1086/383423>
- Sparkman, G., & Walton, G. M. (2017). Dynamic norms promote sustainable behavior, even if it is Counternormative. *Psychological Science*, 28(11), 1663–1674. <https://doi.org/10.1177/0956797617719950>
- Sparkman, G., & Walton, G. M. (2019). Witnessing change: Dynamic norms help resolve diverse barriers to personal change. *Journal of Experimental Social Psychology*, 82, 238–252. <https://doi.org/10.1016/j.jesp.2019.01.007>
- Spencer, S. J., Zanna, M. P., & Fong, G. T. (2005). Establishing a causal chain: Why experiments are often more effective than mediational analyses in examining psychological processes. *Journal of Personality and Social Psychology*, 89(6), 845–851. <https://doi.org/10.1037/0022-3514.89.6.845>
- Sun, Y., & Wang, H. (2010). Perception of randomness: On the time of streaks. *Cognitive Psychology*, 61(4), 333–342. <https://doi.org/10.1016/j.cogpsych.2010.07.001>
- Tankard, M. E., & Paluck, E. L. (2016). Norm perception as a vehicle for social change. *Social Issues and Policy Review*, 10(1), 181–211. <https://doi.org/10.1111/sipr.12022>
- Tversky, A., & Kahneman, D. (1971). Belief in the law of small numbers. *Psychological Bulletin*, 76(2), 105–110. <https://doi.org/10.1037/h0031322>
- Wagenaar, W. A. (1970). Subjective randomness and the capacity to generate information. *Acta Psychologica*, 33, 233–242. [https://doi.org/10.1016/0001-6918\(70\)90135-6](https://doi.org/10.1016/0001-6918(70)90135-6)
- Walco, D. K., & Risen, J. L. (2017). The empirical case for acquiescing to intuition. *Psychological Science*, 28(12), 1807–1820. <https://doi.org/10.1177/095679761772337>
- Walker, J., & Gilovich, T. (2021). The streaking star effect: Why people want superior performance by individuals to continue more than identical performance by groups. *Journal of Personality and Social Psychology*, 120(3), 559–575 (2020-59201-001) <https://doi.org/10.1037/pspa0000256>.
- Westwood, S. J. (2025). The potential existential threat of large language models to online survey research. *Proceedings of the National Academy of Sciences*, 122(47), Article e2518075122. <https://doi.org/10.1073/pnas.2518075122>
- Yang, A. X., & Hsee, C. K. (2021). Obligatory publicity increases charitable acts. *Journal of Consumer Research*, Article ucab020. <https://doi.org/10.1093/jcr/ucab020>

SI Appendix

for

Collective streaks motivate prosocial behavior**Table of Contents**

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Appendix A: Measures for Studies 1-4

Measures for Study 1

- Please choose one of the following options:
 - I choose to KEEP my bonus (\$0.15).
 - I choose to DONATE my bonus (\$0.15) to charity.
- [if they decided to donate] Thanks for choosing to make a donation! Please choose the charity you would like to donate to:
 - St. Jude Children's Research Hospital
 - The World Wildlife Fund
 - Doctors Without Borders
 - Wounded Warrior Project
 - The American Red Cross
- Earlier in this survey, you were given the option to donate a portion of your survey compensation to charity. What information did we give you about how other participants who took the survey behaved?
 - That the last (amount) participants donated.
 - That (amount)% of participants donated.
 - None of the above
- Is English your native language?
 - Yes, I only spoke English growing up
 - Yes, I spoke English and these other languages growing up: _____
 - No, English is not my native language. My native language is: _____

- Previous work in behavioral decision-making has shown that people vary in the amount they pay attention to these sorts of surveys. If you're actually reading this question, please answer it by selecting the option "other" and typing in "apple". Thanks for your help, and for taking the time to read all of the questions.
 - Gender, marital status, and education
 - Sexual orientation, relationship satisfaction
 - Hobbies, favorite sports
 - Other: _____
- How old are you?
- Please indicate your gender:
 - Female
 - Male
 - Other: _____
 - Prefer not to answer
- Did you encounter any errors, glitches or other problems taking this survey?

- If you have any other comments about the study you took part in today, please tell us below: _____

Measures for Study 2

- Please choose one of the following options:
 - I choose to KEEP my bonus (\$0.15).
 - I choose to DONATE my bonus (\$0.15) to charity.

- How much **personal impact** do you think your donation decision will have on whether or not future participants donate?
 - (1) No impact
 - (2)
 - (3)
 - (4)
 - (5)
 - (6)
 - (7) A great deal of impact
- Out of all the participants who have taken this survey **so far**, what percent do you think chose to donate? I think this % donated:
 - [101-point scale] 0 (no one donated) -> 100 (everyone donated)
- Out of all the participants who will take this survey **in the future**, what percent do you think will donate? I think this % will donate:
 - [101-point scale] 0 (no one will donate) -> 100 (everyone will donate)
- [if they decided to donate] Thanks for choosing to make a donation! Please choose the charity you would like to donate to:
 - St. Jude Children's Research Hospital
 - The World Wildlife Fund
 - Doctors Without Borders
 - Wounded Warrior Project
 - The American Red Cross

- Earlier in this survey, you were given the option to donate a portion of your survey compensation to charity. What information did we give you about how other participants who took the survey behaved?
 - That the last (amount) participants in a row donated.
 - That (amount) participants recently donated.
 - None/I'm not sure
- Is English your native language?
 - Yes, I only spoke English growing up
 - Yes, I spoke English and these other languages growing up: _____
 - No, English is not my native language. My native language is: _____
- Previous work in behavioral decision-making has shown that people vary in the amount they pay attention to these sorts of surveys. If you're actually reading this question, please answer it by selecting the option "other" and typing in "seahorse". Thanks for your help, and for taking the time to read all of the questions.
 - Gender, marital status, and education
 - Sexual orientation, relationship satisfaction
 - Hobbies, favorite sports
 - Other: _____
- How old are you?
- Please indicate your gender:
 - Female
 - Male
 - Other: _____

- ☐ Prefer not to answer
- Did you encounter any errors, glitches or other problems taking this survey?

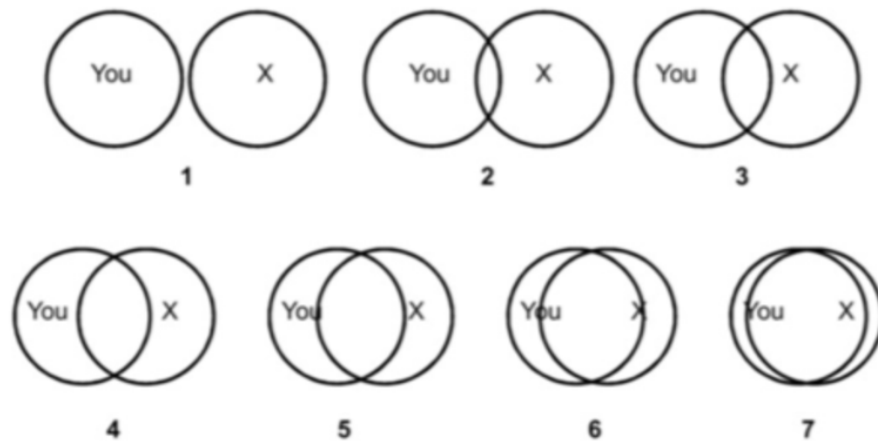
- If you have any other comments about the study you took part in today, please tell us below:

Measures for Study 3

- How **responsible do you feel** towards the previous donors described above?
 - ☐ (1) Not at all responsible
 - ☐ (2)
 - ☐ (3)
 - ☐ (4)
 - ☐ (5)
 - ☐ (6)
 - ☐ (7) Very responsible
- How much **personal impact** will your decision to donate have on whether or not future participants also donate?
 - ☐ (1) No impact
 - ☐ (2)
 - ☐ (3)
 - ☐ (4)
 - ☐ (5)
 - ☐ (6)

- ☐ (7) A great deal of impact
 - How much do you feel that the previous donors described above are **counting on you to donate?**
 - ☐ (1) Not at all
 - ☐ (2)
 - ☐ (3)
 - ☐ (4)
 - ☐ (5)
 - ☐ (6)
 - ☐ (7) A great deal
 - Please choose one of the following options:
 - ☐ I choose to KEEP my bonus (\$0.10).
 - ☐ I choose to DONATE my bonus (\$0.10) to charity.
 - [if they decided to donate] Thanks for choosing to make a donation! Please choose the charity you would like to donate to:
 - ☐ St. Jude Children's Research Hospital
 - ☐ The World Wildlife Fund
 - ☐ Doctors Without Borders
 - ☐ Wounded Warrior Project
 - ☐ The American Red Cross
 - You [donated/kept] your survey bonus to charity. Why did you do this?
-

- Out of all the participants who have taken this survey so far, what percent do you think chose to donate? I think this % chose to donate:
 - [101-point scale] 0 (no one donated) -> 100 (everyone donated)
- Please choose the number below the picture which best describes how close you feel RIGHT NOW to X, where **X is the [previous X% of participants/last X participants] who donated their bonus to charity.**



-
- (1) Not close at all
- (2)
- (3)
- (4)
- (5)
- (6)
- (7) Very close
- You [donated/kept] your survey bonus to charity. How much did each of the following feelings come to mind as you made your decision?
 - Bad luck or karma

- (1) Not at all
 - (2)
 - (3)
 - (4)
 - (5) Very much
- Superstitious feelings
 - (1) Not at all
 - (2)
 - (3)
 - (4)
 - (5) Very much
- Feelings of guilt
 - (1) Not at all
 - (2)
 - (3)
 - (4)
 - (5) Very much
- How important is it to you to make decisions based on rational analysis?
 - Not at all important (1)
 - (2)
 - Important (3)
 - (4)
 - Extremely important (5)

- How important is it to you to trust your intuition?
 - Not at all important (1)
 - (2)
 - Important (3)
 - (4)
 - Extremely important (5)
- If your intuition goes against a rational analysis, how do you respond?
 - Go with intuition (1)
 - (2)
 - Neutral (3)
 - (4)
 - Go with rationality (5)
- How good do you feel about having [donated/kept] your survey bonus?
 - [101-point scale] 0 (Not at all) -> 100 (Extremely)
- Earlier in this survey, you were given the option to donate a portion of your survey compensation to charity. What information did we give you about how other participants who took the survey behaved?
 - That the last (amount) participants in a row donated.
 - That (amount)% of participants donated.
 - None of the above
- Is English your native language?
 - Yes, I only spoke English growing up
 - Yes, I spoke English and these other languages growing up: _____

- No, English is not my native language. My native language is: _____
- Previous work in behavioral decision-making has shown that people vary in the amount they pay attention to these sorts of surveys. If you're actually reading this question, please answer it by selecting the option "other" and typing in "seahorse". Thanks for your help, and for taking the time to read all of the questions.
 - Gender, marital status, and education
 - Sexual orientation, relationship satisfaction
 - Hobbies, favorite sports
 - Other: _____
- How old are you?
- Please indicate your gender:
 - Female
 - Male
 - Other: _____
 - Prefer not to answer
- Did you encounter any errors, glitches or other problems taking this survey?

- What do you think this study was about?

- If you have any other comments about the study you took part in today, please tell us below: _____

Measures for Study 4

- How much **personal impact** will your decision to donate have on whether or not future participants also donate?
 - (1) No impact
 - (2)
 - (3)
 - (4)
 - (5)
 - (6)
 - (7) A great deal of impact
- Out of all the participants who have taken this survey so far, what percent do you think chose to donate? I think this % chose to donate:
 - [101-point scale] 0 (no one donated) -> 100 (everyone donated)
- Please choose one of the following options:
 - I choose to KEEP my bonus (\$0.10).
 - I choose to DONATE my bonus (\$0.10) to charity.
- [if they decided to donate] Thanks for choosing to make a donation! Please choose the charity you would like to donate to:
 - St. Jude Children's Research Hospital
 - The World Wildlife Fund
 - Doctors Without Borders
 - Wounded Warrior Project
 - The American Red Cross
- You [donated/kept] your survey bonus to charity. Why did you do this?

- How good do you feel about having [donated/kept] your survey bonus?
 - [101-point scale] 0 (Not at all) -> 100 (Extremely)
- Earlier in this survey, you were given the option to donate a portion of your survey compensation to charity. What information did we give you about how other participants who took the survey behaved?
 - That the last (amount) participants in a row donated.
 - That (amount)% of participants donated.
 - None of the above
- Is English your native language?
 - Yes, I only spoke English growing up
 - Yes, I spoke English and these other languages growing up: _____
 - No, English is not my native language. My native language is: _____
- Previous work in behavioral decision-making has shown that people vary in the amount they pay attention to these sorts of surveys. If you're actually reading this question, please answer it by selecting the option "other" and typing in "seahorse". Thanks for your help, and for taking the time to read all of the questions.
 - Gender, marital status, and education
 - Sexual orientation, relationship satisfaction
 - Hobbies, favorite sports
 - Other: _____
- How old are you?
- Please indicate your gender:
 - Female

- Male
- Other: _____
- Prefer not to answer
- Did you encounter any errors, glitches or other problems taking this survey?

- What do you think this study was about?

- If you have any other comments about the study you took part in today, please tell us
below: _____

Appendix B: Additional Study S1: Ranking Charities

Overview

We assigned participants to read a message describing either a percentage or streak of past participants who made a charitable donation, or no message. We then asked participants whether they wanted to donate to charity themselves.

Methods

Participants

Participants were 2011 users of Prolific Academic (1007 males, 982 females, 14 other, 8 prefer not to answer, $M_{\text{age}} = 33.58$ years, $SD = 11.69$ years) who were paid \$0.40 USD for their participation. Following our preregistration, we excluded 177 participants who failed a manipulation check, 67 participants who failed an attention check, and 40 participants who failed both, which left 1727 participants in the data set. A sensitivity analysis revealed that the smallest effect size that could be detected in a binomial GLM with this sample at 80% power ($\alpha = 0.05$)

would be $OR = 1.15$. Data, materials, analysis scripts, and preregistration are available in the repository linked in the main text.

Procedure

Participants were shown a list of eight popular charities, including Doctors Without Borders and the Wounded Warrior Project. The full list of charities is available in the SI Appendix (Section J), and was displayed in random order. They were asked to review the list of charities, and then asked to rank them from highest (1) to lowest (8) by how much they would want to donate to each one. After ranking the charities, participants were told that they were eligible for a \$0.10 USD bonus in addition to their base compensation for participating in the survey, which would bring their total compensation to \$0.50 USD. They were told that they could keep the bonus, or donate it to a preselected charity from the list they had ranked before. The preselected charity was always either the one they had ranked second-best (*high rank*) or second-worst (*low rank*).

At this point, participants were randomly assigned to one of two possible conditions that determined what they read next in the survey. Participants in the *high percentage* condition were told that “X% of participants who took this survey have chosen to make a donation to charity,” where X was a number between 77 and 83. Participants in the *short streak* condition were instead told that “[t]he last X participants who took this survey have chosen to make a donation to charity,” where X was a number between 17 and 23. Participants in both conditions saw their assigned message in white text, followed underneath by a message in red text that directly asked them to donate with one of two randomized wordings (“keep the streak going/don’t break the streak” in the streak condition; “keep our numbers up/don’t lower our numbers” in the percentage condition).

At this point, all participants were asked whether they wanted to donate their bonus to charity, or keep it for themselves. All participants were then asked to write a brief explanation of why they decided to donate or keep their bonus, and then answered three questions about their preference for making decisions based on rational analysis or intuition (Walco & Risen, 2017). They were then asked to give their estimate of how many participants before them previously donated (from 0% to 100%), the three seven-point scale items about *personal impact*, *responsibility*, and *pressure* used in Study 4, how close they felt to the past donors described in their streak- or percentage-based norm message (7-point scale with pictures of increasingly overlapping pairs of circles), and how much each of the following three feelings factored into their donation decision: 1) bad luck or karma, 2) superstitious feelings, and 3) feelings of guilt (5-point scales; 1 - Not at all to 5 - Very much). They were also asked what ranking they had assigned the charity they were shown, a manipulation check to see if they remembered the information they were told (if any) about streaks or percentages, their current happiness, an attentional check, basic demographic measures, and free response items to guess what they thought the study was about and report comments or glitches in the survey. Participants also completed an additional attentional check at the beginning of the survey asking them to retype a photo of several handwritten English sentences. The complete text of all questions in the survey is available in the SI Appendix (Section J).

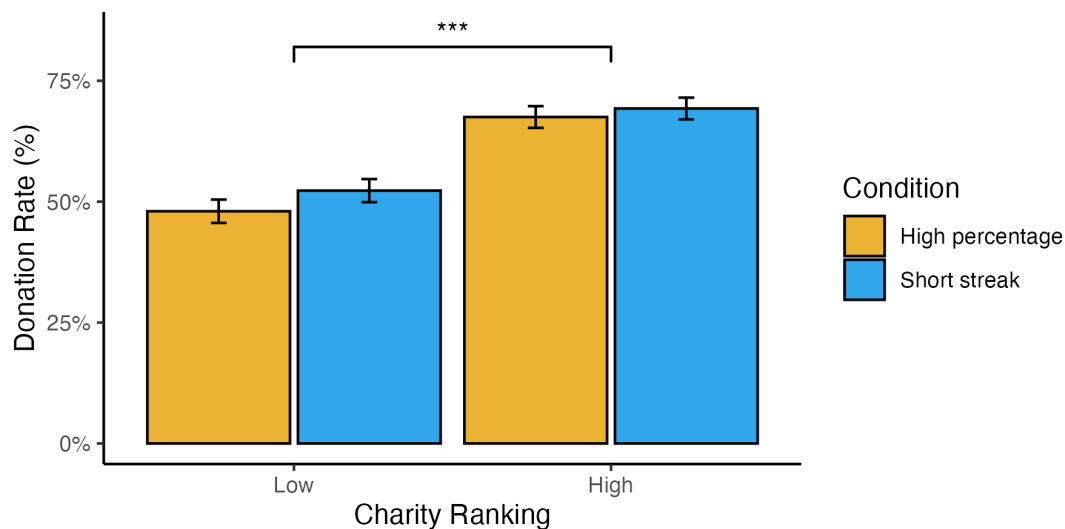
Results

Did the message participants read and their ranking of the charity influence the likelihood that they would donate their bonus to that charity? We analyzed participant donation decisions by fitting a binomial generalized linear model to our data in R. The dependent variable was the participant's decision to keep their bonus or donate it to charity, and the between-subjects fixed

factors were the assigned condition (*high percentage* or *short streak*) and their ranking of the charity (*low* or *high*). As Figure S1 shows, participants donated at a higher rate to charities they had previously ranked highly (68.37%) compared to those they had given a low ranking (50.17%), $b = 0.81$, $SE = 0.14$, $z = 5.76$, $p < 0.001$, 95% CI_b [0.54, 1.09], $OR = 2.25$, 95% CI_{OR} [1.71, 2.97], but there was no main effect of condition, $b = 0.17$, $SE = 0.14$, $z = 1.26$, $p = 0.21$, 95% CI_b [-0.10, 0.44], $OR = 1.19$, 95% CI_{OR} [0.91, 1.55], and no interaction between ranking and condition, $b = -0.09$, $SE = 0.20$, $z = -0.45$, $p = 0.66$, 95% CI_b [-0.48, 0.30], $OR = 0.91$, 95% CI_{OR} [0.62, 1.35]. When participants were asked to rank and compare potential charities, those rankings guided their donation decisions, but the streak or norm information did not.

Figure S1

Participants' Donation Rates in Study S1



Note: The x-axis shows the assigned condition, and the y-axis shows the percent of participants in that condition who chose to donate to charity. Error bars indicate ± 1 SEM. Asterisks indicate significance (***: $p < 0.001$).

Appendix C: Additional Study S2: Choosing Streak or Percentage Information

Overview

We asked participants whether they would want to learn information about past percentages or streaks of donors when deciding whether to donate to charity themselves.

Methods

Participants

Participants were 1010 users of Amazon Mechanical Turk recruited via CloudResearch (Litman et al., 2017) who were paid \$0.10 USD for their participation. Data, materials, analysis scripts, and preregistration are available in the repository linked in the main text. Following our preregistration, we excluded 68 participants who failed an attention check, which left 942 participants in the data set. A sensitivity analysis revealed that the smallest effect size that could be detected in a one-proportion z-test with this sample at 80% power ($\alpha = 0.05$) would be $h = 0.09$.

Procedure

Participants were asked to imagine that they were participating in an online study similar to Study 1, in which they were offered a small cash bonus that they could keep or donate to one of several possible charities. They were then shown the same list of charities used in Study 1. Participants were then asked whether, in this hypothetical situation, they would prefer to learn about the total percentage of past participants (if any) who donated, or the size of the ongoing streak of participants (if any) who donated. All participants then completed an attentional check. The complete text of all questions in the survey is available in the SI Appendix (Section J).

Results

Did more participants report a preference for streak or percentage-based information about past donors? A one-proportion z test revealed that 82.17% of participants preferred to receive the percentage-based norm information, significantly more than those who preferred streaks, $\chi^2(1) = 388.56$, 95% CI [79.54%, 84.53%], $p < 0.001$, $h = 0.70$. When participants were forced to choose what kind of information they would want about past norm compliance, most chose percentages over streaks.

Appendix D: Additional Study S3: Can Very Short Streaks Increase Charitable Donations?

Overview

We assigned participants to read a message describing a very high percentage or very short collective streak of past participants who made a charitable donation, or no message. We then asked them whether they wanted to donate to charity themselves.

Methods

Participants

Participants were 1002 users of Prolific Academic (373 males, 617 females, 9 other, 3 prefer not to answer, $M_{\text{age}} = 44.78$ years, $SD = 13.77$ years) who were paid \$0.50 USD for their participation. Following our preregistration, we excluded 67 participants who failed one or more attention, manipulation, and comprehension checks in the survey, which left 935 participants in the data set. A sensitivity analysis revealed that the smallest effect size that could be detected in a binomial GLM with this sample at 80% power ($\alpha = 0.05$) would be $OR = 1.26$. Data, materials, analysis scripts, and preregistration are available in the repository linked in the main text.

Procedure

Participants were told that they were eligible for a \$0.15 USD bonus in addition to their base compensation for participating in the survey, which would bring their total compensation to \$0.65 USD. They were told that they could keep the bonus, or donate it to a charity of their choice, from the same list used in Study 1.

Participants were randomly assigned to one of three possible conditions that determined what they read next in the survey. Participants in the *very short streak* condition ($n = 285$) were told that “the last 4 participants who took this survey have chosen to make a donation to charity.” Participants in the *very high percentage* condition ($n = 324$) instead saw the message “96% of participants who took this survey have chosen to make a donation to charity”. Participants in the *control* condition ($n = 326$) saw no message.

At this point, as in Study 1, participants decided whether they wanted to donate their bonus to charity, or keep it for themselves. They then answered similar demographic and exploratory measures as those used in Study 1. The complete text of all questions is available in the SI Appendix (Section J).

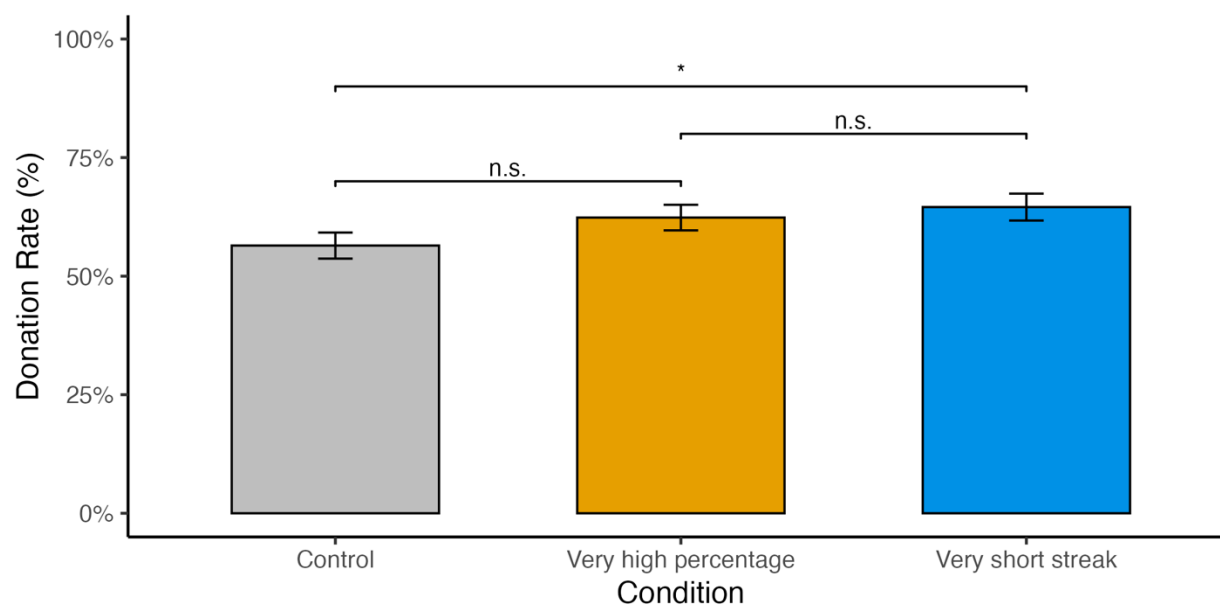
Results

Did the message participants read influence the likelihood that they would donate their bonus to charity? We analyzed participant donation decisions by fitting a binomial generalized linear model to our data in R. The dependent variable was the participant’s decision to keep their bonus or donate it to charity, and the between-subjects fixed factor was the assigned condition (*control*, *very high percentage*, or *very short streak*). As Figure S2 shows, participants in the *very short streak* condition donated at a higher rate (64.56%) than participants in the *control* condition (56.44%), $b = 0.34$, $SE = 0.17$, $z = 2.04$, $p = 0.04$, 95% CI_b [0.01, 0.67], $OR = 1.41$, 95% CI_{OR}

[1.01,1.95], while those in the *very high percentage* condition did not (62.34%), $b = 0.25$, $SE = 0.16$, $z = 1.53$, $p = 0.13$, 95% $CI_b [-0.07, 0.56]$, $OR = 1.28$, 95% $CI_{OR} [0.93, 1.75]$. The very short streak and very high percentage conditions did not significantly differ from one another, $b = 0.10$, $SE = 0.17$, $z = 0.57$, $p = 0.57$, 95% $CI_b [-0.23, 0.43]$, $OR = 1.10$, 95% $CI_{OR} [0.79, 1.53]$.

Figure S2

Participants' Donation Rates in Study S3



Note: The x-axis shows the assigned condition, and the y-axis shows the percentage of participants in that condition who chose to donate to charity. Error bars indicate ± 1 SEM. Asterisks indicate significance (*: $p < 0.05$).

Appendix E: Additional Study S4: Can Streaks Encourage

Antisocial Behavior?

Overview

We assigned participants to read a message describing a short collective streak of past participants who either donated or refused to donate to charity, or no message. We then asked them whether they wanted to donate to charity themselves.

Methods

Participants

Participants were 1139 users of CloudResearch Connect (496 males, 611 females, 19 other, 13 prefer not to answer, $M_{\text{age}} = 41.02$ years, $SD = 13.42$ years) who were paid \$0.50 USD for their participation. Following our preregistration, we excluded 138 participants who failed one or more attention, manipulation, and comprehension checks in the survey, which left 1001 participants in the data set. A sensitivity analysis revealed that the smallest effect size that could be detected in a binomial GLM with this sample at 80% power ($\alpha = 0.05$) would be $OR = 1.25$. Data, materials, analysis scripts, and preregistration are available in the repository linked in the main text.

Procedure

Participants were told that they were eligible for a \$0.15 USD bonus in addition to their base compensation for participating in the survey, which would bring their total compensation to \$0.65 USD. They were told that they could keep the bonus, or donate it to a charity of their choice, from the same list used in Study 1.

Participants were randomly assigned to one of three possible conditions that determined what they read next in the survey. Participants in the *prosocial streak* condition ($n = 330$) were told that “the last 8 participants who took this survey have chosen to make a donation to charity.” Participants in the *antisocial streak* condition ($n = 317$) instead saw the message “the last 8

participants who took this survey have chosen to keep their bonus.” Participants in the *control* condition ($n = 354$) saw no message.

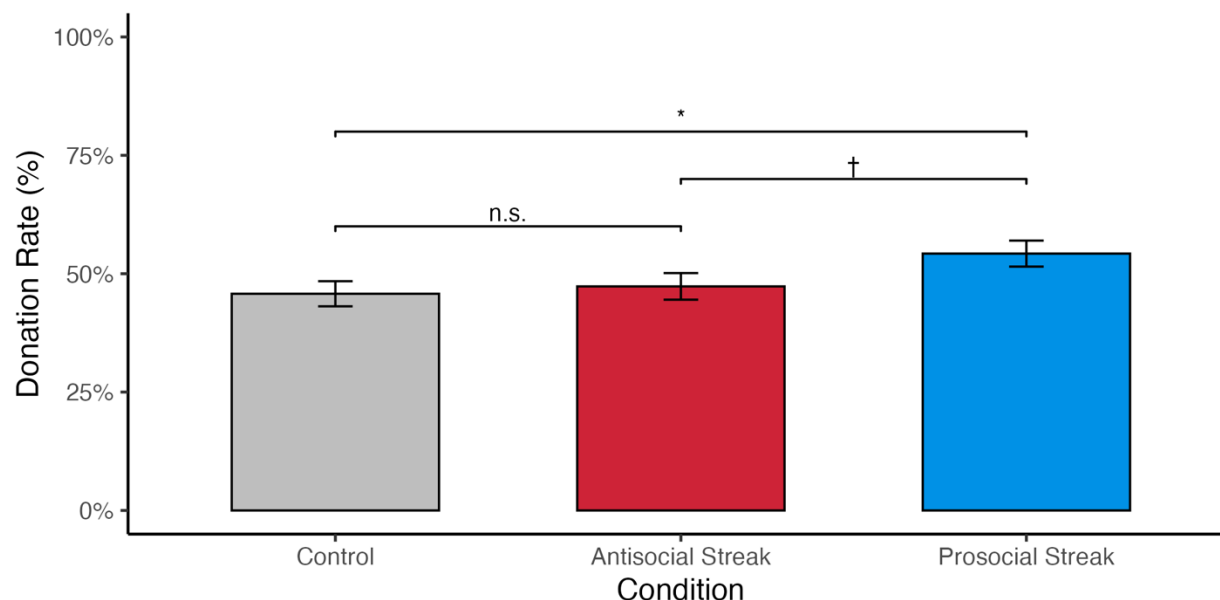
At this point, as in Study 1, participants decided whether they wanted to donate their bonus to charity, or keep it for themselves. They then answered similar demographic and exploratory measures as those used in Study 1. The complete text of all questions is available in the SI Appendix (Section J).

Results

Did the message participants read influence the likelihood that they would donate their bonus to charity? We analyzed participant donation decisions by fitting a binomial generalized linear model to our data in R. The dependent variable was the participant’s decision to keep their bonus or donate it to charity, and the between-subjects fixed factor was the assigned condition (*control*, *prosocial streak*, *antisocial streak*). As Figure S3 shows, participants in the *prosocial streak* condition donated at a significantly higher rate (54.24%) than participants in the control condition (45.76%), $b = 0.34$, $SE = 0.15$, $z = 2.21$, $p = 0.03$, 95% $CI_b [0.04, 0.64]$, $OR = 1.40$, 95% $CI_{OR} [1.04, 1.90]$, and at a marginally higher rate than participants in the *antisocial streak* condition (47.32%), $b = 0.28$, $SE = 0.16$, $z = 1.76$, $p = 0.08$, 95% $CI_b [-0.03, 0.59]$, $OR = 1.32$, 95% $CI_{OR} [0.97, 1.80]$. The antisocial streak and control conditions did not significantly differ from one another, $b = 0.06$, $SE = 0.16$, $z = 0.40$, $p = 0.69$, 95% $CI_b [-0.24, 0.37]$, $OR = 1.06$, 95% $CI_{OR} [0.79, 1.44]$.

Figure S3

Participants’ Donation Rates in Study S4



Note: The x-axis shows the assigned condition, and the y-axis shows the percentage of participants in that condition who chose to donate to charity. Error bars indicate ± 1 SEM.

Asterisks indicate significance ($\dagger$: $p < 0.1$, *: $p < 0.05$).

Appendix F: Additional Study S5: Do Streaks Increase Feelings of Responsibility?

Overview

We assigned participants to read a message describing a high percentage or short collective streak of past participants who made a charitable donation, or no message. We then asked them whether they felt feelings of “not wanting to drop the ball” or responsibility to other stakeholders related to their potential donation.

Methods

Participants

Participants were 675 users of Prolific Academic (298 males, 369 females, 4 other, 4 prefer not to answer, $M_{\text{age}} = 43.92$ years, $SD = 13.67$ years) who were paid \$0.50 USD for their participation. Following our preregistration, we excluded 59 participants who failed one or more attention, manipulation, and comprehension checks in the survey, which left 616 participants in the data set. A sensitivity analysis revealed that the smallest effect size that could be detected in a linear model with this sample at 80% power ($\alpha = 0.05$) would be $d = 0.26$. Data, materials, analysis scripts, and preregistration are available in the repository linked in the main text.

Procedure

Participants were told about being a participant in a hypothetical online survey with a design similar to Study 1. Specifically, they were asked to imagine that they were taking a survey with a compensation of \$0.50 USD and a potential \$0.15 bonus, which they could keep or donate to a charity of their choice, from the same list used in Study 1.

Participants were randomly assigned to one of three possible conditions that determined what they read next in the survey. Participants in the *short streak* condition ($n = 202$) were asked to read a message saying that “the last 8 participants who took this survey have chosen to make a donation to charity.” Participants in the *high percentage* condition ($n = 220$) instead saw the message “80% of participants who took this survey have chosen to make a donation to charity”. Participants in the *control* condition ($n = 194$) saw no message.

At this point, participants were asked to imagine that they had decided to donate their bonus to charity, and asked which charity they would have picked. They were then asked two questions about their feelings in this situation. First, they were asked “to what extent that decision would have been impacted by a feeling of not wanting to ‘drop the ball’.” Second, they were asked whether their donation decision would have been impacted by a “feeling of personal

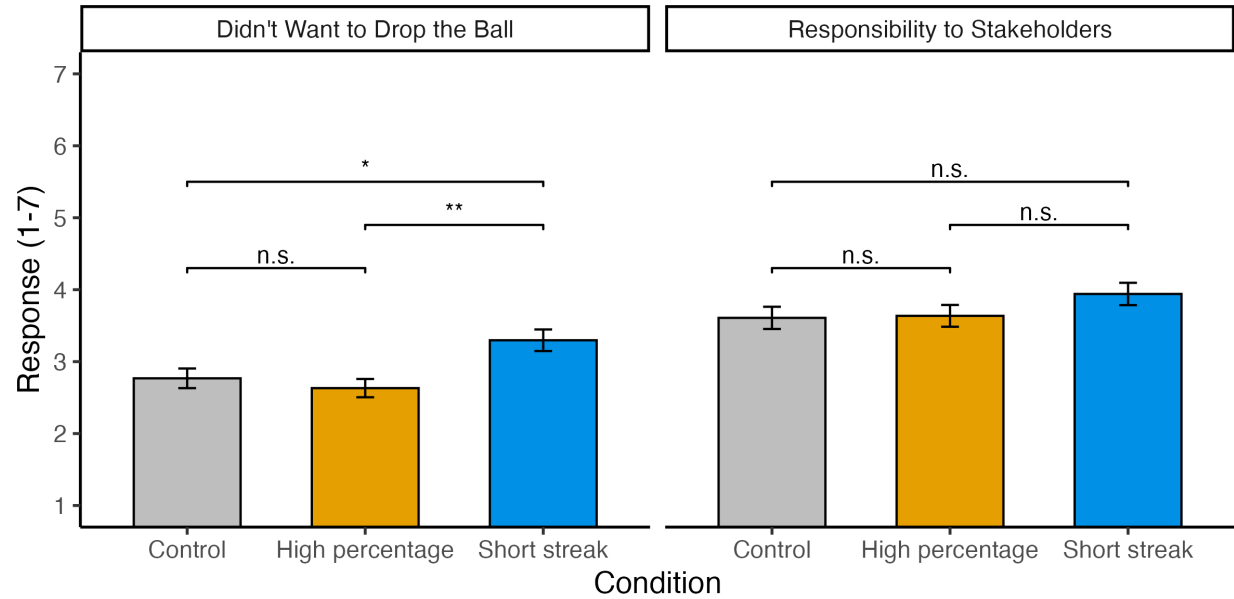
responsibility to the ‘stakeholders’ (such as the charities themselves, and people who benefit from the charities).” Both items were on a 1-7 scale (1: no impact; 7: a great deal of impact). They then answered similar demographic and exploratory measures as those used in Study 1. The complete text of all questions is available in the SI Appendix (Section J).

Results

Did the message participants read influence their feelings of “not wanting to drop the ball” about a potential donation decision? We analyzed participant responses by fitting a series of linear models to our data in R. The dependent variables were the participant’s reported feelings of not wanting to drop the ball and responsibility to stakeholders, respectively. The between-subjects fixed factor was the assigned condition (*control*, *high percentage*, or *short streak*). Participants in the *short streak* condition reported higher feelings of not wanting to drop the ball ($M = 3.30$, $SD = 2.13$) than participants in both the *high percentage* condition ($M = 2.63$, $SD = 1.88$), $b = 0.67$, $SE = 0.19$, $t(613) = 3.46$, $p < 0.001$, 95% CI_b [0.29, 1.04], $d = 0.34$, 95% CI_d [0.14, 0.53], and the *control* condition ($M = 2.77$, $SD = 1.90$), $b = 0.53$, $SE = 0.20$, $t(613) = 2.67$, $p < 0.01$, 95% CI_b [0.14, 0.92], $d = 0.27$, 95% CI_d [0.07, 0.47]. The high percentage and control conditions did not differ from one another, $b = 0.14$, $SE = 0.19$, $t(613) = 0.70$, $p = 0.48$, 95% CI_b [-0.25, 0.52], $d = 0.07$, 95% CI_d [-0.12, 0.26]. Participants did not report significantly different feelings of personal responsibility to stakeholders in the short streak condition ($M = 3.94$, $SD = 2.21$) compared to the *high percentage* condition ($M = 3.63$, $SD = 2.25$), $b = 0.30$, $SE = 0.21$, $t(613) = 1.42$, $p = .16$, 95% CI_b [-0.12, 0.73], $d = 0.14$, 95% CI_d [-0.05, 0.33], or to the control condition ($M = 3.61$, $SD = 2.15$), $b = 0.33$, $SE = 0.22$, $t(613) = 1.50$, $p = .13$, 95% CI_b [-0.10, 0.77], $d = 0.15$, 95% CI_d [-0.05, 0.35], which also did not differ from one another, $b = -0.03$, $SE = 0.22$, $t(613) = -0.13$, $p = .90$, 95% CI_b [-0.45, 0.40], $d = -0.01$, 95% CI_d [-0.21, 0.18]. As Figure

S4 depicts, participants who saw streak information felt higher feelings of not wanting to drop the ball compared to percentage information or no message at all, a pattern which was not observed for feelings of responsibility to external stakeholders.

Figure S4
Participants' Self-Reported Feelings in Study S5



Note: The x-axis shows the assigned condition, and the y-axis shows the response of participants in that condition. Error bars indicate ± 1 SEM. Asterisks indicate significance (*: $p < 0.05$, **: $p < 0.01$).

Appendix G: Additional Study S6: Are Other Patterns as Effective as Ongoing Streaks?

Overview

We assigned participants to read no message, or a message describing one of three patterns of donations by three out of six recent participants: a scattered pattern, a broken streak, or an ongoing streak. We then asked them whether they wanted to donate to charity themselves.

Methods

Participants

Participants were 1840 users of CloudResearch Connect (792 males, 1005 females, 28 other, 15 prefer not to answer, $M_{\text{age}} = 41.24$ years, $SD = 15.91$ years) who were paid \$0.50 USD for their participation. Following our preregistration, we excluded 237 participants who failed one or more attention, manipulation, or comprehension check in the survey, which left 1603 participants in the data set. A sensitivity analysis revealed that the smallest effect size that could be detected in a binomial GLM with this sample at 80% power ($\alpha = 0.05$) would be $OR = 1.22$. Data, materials, analysis scripts, and preregistration are available in the repository linked in the main text.

Procedure

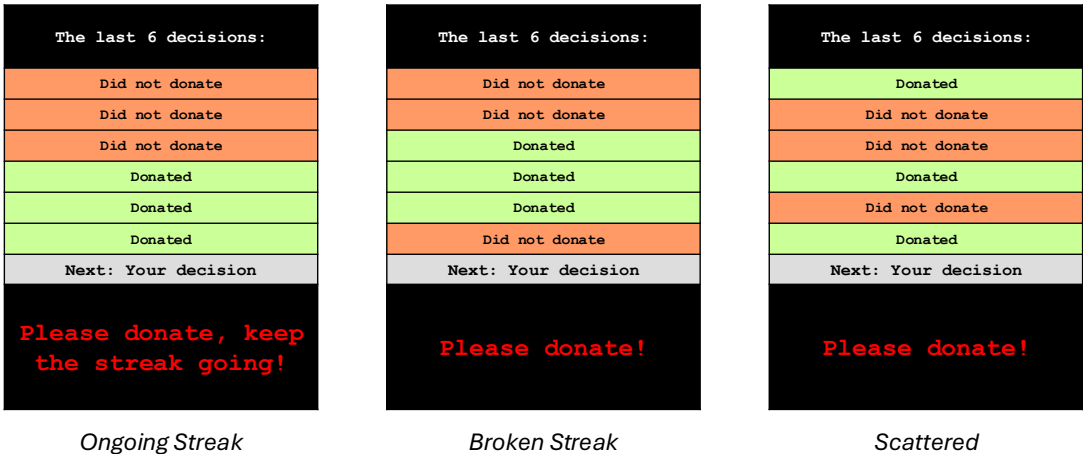
Participants were told that they were eligible for a \$0.15 USD bonus in addition to their base compensation for participating in the survey, which would bring their total compensation to \$0.65 USD. They were told that they could keep the bonus, or donate it to a charity of their choice, from the same list used in Study 1.

Participants were randomly assigned to one of four possible conditions that determined what they saw and read next in the survey, based on the design of Study 1a in Silverman et al. (2023). Participants in the *ongoing streak condition* ($n = 437$) were told that, of the six most recent participants to take the survey, the last three had chosen to make a donation to charity.

Participants in the *broken streak condition* (n = 383) instead were told that a streak of three participants had donated out of the last six, but that the most recent participant had not.

Participants in the *scattered condition* (n = 374) were told that three out of the six most recent participants had donated, but not in a streak (rather the 1st, 4th, and 6th) . Figure S5 shows the images participants were shown to convey these different donation patterns. Participants in the *control* condition (n = 409) saw no message.

Figure S5
Pre-Donation Messages in Study S6



Note: The three images show the messages participants were shown in the non-control conditions of the study, before they were asked whether or not they would donate.

At this point, as in Study 1, participants decided whether they wanted to donate their bonus to charity, or keep it for themselves. They then answered similar demographic and

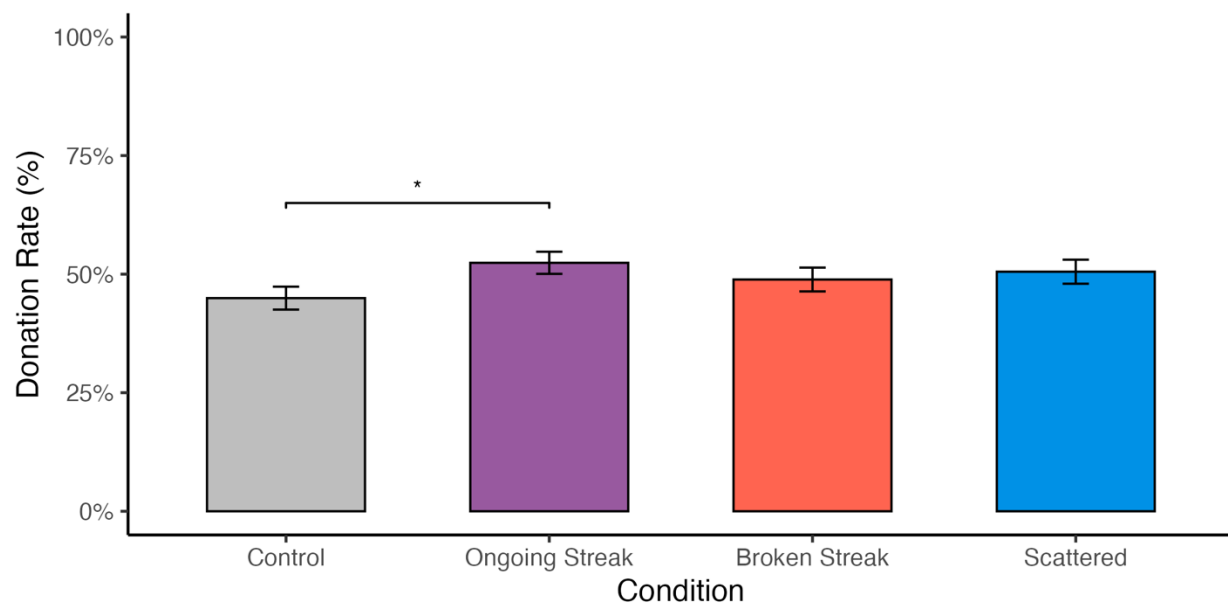
exploratory measures as those used in Study 1. The complete text of all questions is available in the SI Appendix (Section J).

Results

Did the message participants read influence the likelihood that they would donate their bonus to charity? We analyzed participant donation decisions by fitting a binomial generalized linear model to our data in R. The dependent variable was the participant's decision to keep their bonus or donate it to charity, and the between-subjects fixed factor was the assigned condition (*control*, *ongoing streak*, *broken streak*, or *scattered*). As Figure S6 shows, only participants in the *ongoing streak* condition donated at a higher rate (52.63%) than participants in the *control* condition (44.50%), $b = 0.33$, $SE = 0.14$, $z = 2.36$, $p = 0.02$, 95% $CI_b [0.06, 0.60]$, $OR = 1.39$, 95% $CI_{OR} [1.06, 1.82]$. No other differences between groups were significant (all $ps > 0.05$).

Figure S6

Participants' Donation Rates in Study S6



Note: The x-axis shows the assigned condition, and the y-axis shows the percentage of participants in that condition who chose to donate to charity. Error bars indicate ± 1 SEM.

Asterisks indicate significance (*: $p < 0.05$).

Appendix H: Additional Study S7: Can Streaks Promote Other Prosocial Behavior?

Overview

We assigned participants to read about one of two hypothetical scenarios in which they had the option of volunteering to perform a prosocial volunteering behavior in a workplace, and then showed them a message describing a percentage or ongoing collective streak of past employees who agreed to volunteer. We then asked participants whether they would be willing to volunteer themselves.

Methods

Participants

Participants were 801 users of Amazon Mechanical Turk (378 males, 411 females, 6 other, 6 prefer not to answer, $M_{\text{age}} = 38.97$ years, $SD = 12.10$ years) who were paid \$0.35 USD for their participation. Following our preregistration, we excluded 28 participants who failed one or more manipulation or attention checks, which left 773 participants in the data set. A sensitivity analysis revealed that the smallest effect size that could be detected in a binomial GLM with this sample at 80% power ($\alpha = 0.05$) would be $OR = 1.23$.

Procedure

Participants were asked to imagine one of two possible workplace scenarios about volunteering behavior. In one scenario, their manager asked them to volunteer to run a monthly 45-minute orientation for new employees at their workplace. In the second scenario, they were instead asked to help deliver weekly drop-offs for a workplace clothing drive for charity. In both scenarios, participants were told that the volunteer activity was not part of their normal job description, that they would not be paid extra for doing it, and that it would take away time from their own responsibilities at work. However, they were also told that volunteering would help their coworkers and the company as a whole. The complete text of the survey is available in the SI Appendix (Section J).

Participants were randomly assigned to one of two possible conditions that determined what they read next in the survey. Participants in the *high percentage* condition ($n = 371$) were told that “of those recently asked, 80% of employees have agreed to volunteer.” Participants in the *short streak* condition ($n = 402$) were instead told that “of those recently asked, the last 8 employees in a row have agreed to volunteer.” Both messages were followed underneath by a message from the manager (“keep our numbers up” in the high percentage condition, “keep the streak going” in the short streak condition).

At this point, participants decided whether they would be willing to volunteer as described, or not. Participants were then asked what percentage of participants in the survey they think agreed to volunteer, asked to write a brief explanation of why they decided to volunteer or not, given a manipulation check to see if they remembered the information they were told (if any) about the scenario, an attentional check, whether they had ever worked in an office or with a team of people, whether they had ever supervised or managed other people as part of a job, basic demographic measures, and free response items to guess what they thought the study was

about and report comments or glitches in the survey. The complete text of all questions is available in the SI Appendix (Section J).

Results

Did the message participants read influence the likelihood that they would agree to volunteer? We analyzed participant decisions by fitting a binomial generalized linear mixed model to our data in R (R Core Team, 2020) using the *lme4* package (Bates et al., 2015). The dependent variable was the participant's decision to volunteer or not, and the between-subjects fixed factor was the assigned condition (*high percentage* or *short streak*). The analysis revealed that participants in the *short streak* condition were willing to volunteer at higher rates (79.35%) than participants in the *high percentage* condition (73.05%), $b = 0.35$, $SE = 0.17$, $z = 2.04$, $p = 0.04$, 95% CI_b [0.01, 0.68], $OR = 1.42$, 95% CI_{OR} [1.01, 1.98]. Being told about a short ongoing streak of past volunteers made participants more likely to decide to volunteer compared to being told about a high percentage of volunteers. This result persisted when controlling for participant age, gender, past work experience, and which scenario was described, $b = 0.37$, $SE = 0.18$, $z = 2.11$, $p = 0.04$, 95% CI [0.03, 0.72].

Appendix I: Robustness Analysis

In this section we report a re-analysis of each reported model result across all 11 studies to assess the degree to which our preregistered exclusion criteria impacted our conclusions (Silberzahn et al., 2018). To do this, we refit each model on the corresponding study's full sample, without any exclusions applied. For each coefficient of interest in each model, we determined whether our original conclusion was preserved by comparing full sample and post-exclusion model fits, focusing on reversals in the sign of the estimated coefficient and whether

statistical significance ($\alpha = .05$) changed. Because the post-exclusion samples are not independent from the full samples, but instead a subset of them, we estimated the sampling distribution of each coefficient difference via a bootstrap procedure in R which preserved the nesting between the post-exclusion and full-sample fits across 5,000 iterations, with 95% percentile confidence intervals computed around the difference Δ between the full-sample and post-exclusion model coefficients (Efron & Tibshirani, 1985).

Across 11 experiments, for 91 focal coefficients tested, the sign (positive or negative) was preserved in all 91 cases. Eighty coefficients (87.9%) had both sign and significance preserved, with the bootstrap 95% CI on $\Delta = \beta_{\text{full}} - \beta_{\text{post-exclusion}}$ containing zero. Eight out of 91 coefficients had bootstrap CIs that excluded zero, indicating a detectable magnitude shift; of these, seven nonetheless preserved both sign and significance.¹ The remaining four coefficients are listed in Table S1. Three of those coefficients showed a change in significance without a bootstrap-detectable magnitude shift, which would be consistent with a small loss in power or a coefficient sitting near the $\alpha = .05$ threshold (Cumming, 2008). Only one model coefficient displayed both a change in significance and a bootstrap-detectable magnitude shift, suggesting that our preregistered exclusions likely impacted the results: the interaction term in a Study 3 model testing whether feelings of closeness were predicted by condition and donation decisions. This was a secondary analysis not directly related to our primary hypotheses or findings.

¹ The bootstrap confidence interval on Δ is computed per coefficient, so the aggregate rejection count summarizes per-coefficient evidence rather than a single global test.

Table S1*Potential robustness violations when preregistered exclusions are ignored*

Study and DV	Coefficient	Δ	Δ (95% BCI)	Change d sign?	Changed significance?	BCI excluded 0?	p-value (bootstrap)	Interpretation
Study 1, Donation	Streak - Percentage	-0.04	[-0.11,0.03]	No	No	No	0.26	Near-threshold significance flip; no detectable change in underlying estimate. Impact of exclusions unlikely.
Study 2, Donation	Streak - Percentage	-0.01	[-0.06,0.04]	No	No	No	0.75	Near-threshold significance flip; no detectable change in underlying estimate. Impact of exclusions unlikely.
Study 3, Closeness	Streak * Donation	-0.25	[-0.44,-0.07]	No	Yes	Yes	0.01	Clear robustness violation. Significance flipped and underlying estimate shifted. Impact of exclusions likely.
Study S4, Donation	Prosocial - Antisocial	0.03	[-0.08,0.14]	No	No	No	0.65	Near-threshold significance flip; no detectable change in underlying estimate. Impact of exclusions unlikely.

To test whether the observed inferential change rate exceeded what random chance with the same exclusion rate would produce, we constructed an empirical null distribution by permuting which participants were excluded within each sample, and recomputing the coefficient flip count on each of 500 random relabelings. The observed value of 4 coefficient flips fell within the central [4, 13] range of this null distribution ($M = 7.81$, $SD = 2.24$; empirical $p = 0.98$), suggesting that the preregistered exclusion criteria introduced less instability than would be expected from random chance with this number of exclusions and model coefficients.

Together, these analyses indicate that the substantive conclusions reported across the 11 studies were robust to the preregistered exclusion criteria, with only one model coefficient out of

91 showing both an inferential change and a significant magnitude shift, and the overall rate of inferential change was indistinguishable from deviations predicted by chance.

Appendix J: Measures for Supplemental Studies S1-S7

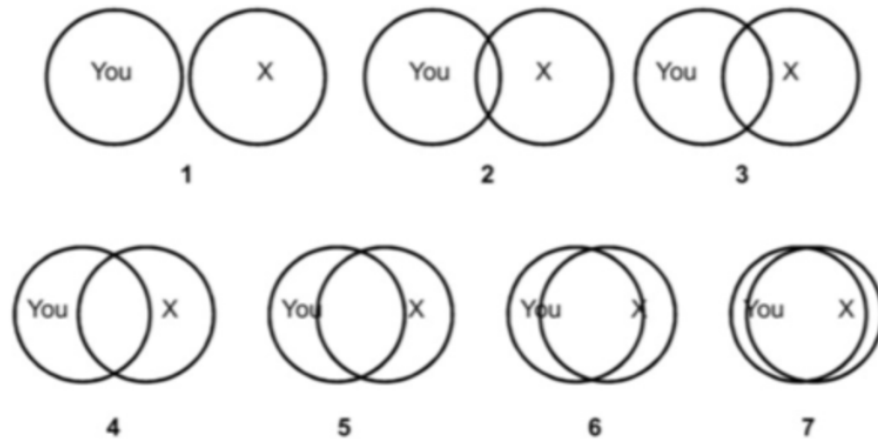
Measures for Study S1

- Now, please drag and drop to rank the list charities you just saw. The **highest option (1)** should be the charity you would want to donate to the **most**. The **lowest option (8)** should be the charity you would want to donate to the **least**.
 - The World Wildlife Fund
 - The American Red Cross
 - Doctors Without Borders
 - Wounded Warrior Project
 - St. Jude Children’s Research Hospital
 - The Centers for Disease Control (CDC) Foundation
 - No Kid Hungry
 - Center for Disaster Philanthropy Covid-19 Response
- Please choose one of the following options:
 - I choose to KEEP my bonus (\$0.10).
 - I choose to DONATE my bonus (\$0.10) to charity.
- You [donated/kept] your survey bonus to charity. Why did you do this?
- How important is it to you to make decisions based on rational analysis?
 - Not at all important (1)
 - (2)

- Important (3)
- (4)
- Extremely important (5)
- How important is it to you to trust your intuition?
 - Not at all important (1)
 - (2)
 - Important (3)
 - (4)
 - Extremely important (5)
- If your intuition goes against a rational analysis, how do you respond?
 - Go with intuition (1)
 - (2)
 - Neutral (3)
 - (4)
 - Go with rationality (5)
- Out of all the participants who have taken this survey so far, what percent do you think chose to donate? I think this % chose to donate:
 - [101-point scale] 0% (no one volunteered) -> 100% (everyone volunteered)
- How **responsible do you feel towards the survey participants** who have already donated?
 - (1) Not at all responsible
 - (2)
 - (3)

- ☐ (4)
 - ☐ (5)
 - ☐ (6)
 - ☐ (7) Very responsible
- How much do you feel that past participants who donated were **counting on you to donate?**
 - ☐ (1) Not at all
 - ☐ (2)
 - ☐ (3)
 - ☐ (4)
 - ☐ (5)
 - ☐ (6)
 - ☐ (7) A great deal
- How much personal impact would your decision to donate have on **whether or not future participants also donate?**
 - ☐ (1) No impact
 - ☐ (2)
 - ☐ (3)
 - ☐ (4)
 - ☐ (5)
 - ☐ (6)
 - ☐ (7) A great deal of impact

- Please choose the number below the picture which best describes how close you feel RIGHT NOW to X, where **X is the previous participants who [donated/kept] their bonus.**



- ☐
 - (1) Not close at all
 - (2)
 - (3)
 - (4)
 - (5)
 - (6)
 - (7) Very close
- You [donated/kept] your survey bonus to charity. How much did each of the following feelings come to mind as you made your decision?
 - ☐ Bad luck or karma
 - (1) Not at all
 - (2)
 - (3)

- (4)
 - (5) Very much
- Superstitious feelings
 - (1) Not at all
 - (2)
 - (3)
 - (4)
 - (5) Very much
- Feelings of guilt
 - (1) Not at all
 - (2)
 - (3)
 - (4)
 - (5) Very much
- Earlier in this survey, you were given the option to donate a portion of your survey compensation to charity. What information did we give you about how other participants who took the survey behaved?
 - That the last (amount) participants donated.
 - That (amount)% of participants donated.
 - None of the above
- Earlier in this survey, you were given the option to donate a portion of your survey compensation to charity. The charity that we selected was (insert selected charity). Do you remember what rank you gave this charity, out of 8 choices?

- I had it ranked #1 (the best)
- I had it ranked #2
- I had it ranked #3
- I had it ranked #4
- I had it ranked #5
- I had it ranked #6
- I had it ranked #7
- I had it ranked #8 (the worst)
- How happy are you right now?
 - [101-point scale] 0 (Not at all) -> 100 (Extremely)
- Is English your native language?
 - Yes, I only spoke English growing up
 - Yes, I spoke English and these other languages growing up: _____
 - No, English is not my native language. My native language is: _____
- Previous work in behavioral decision-making has shown that people vary in the amount they pay attention to these sorts of surveys. If you're actually reading this question, please answer it by selecting the option "other" and typing in "bingo". Thanks for your help, and for taking the time to read all of the questions.
 - Gender, marital status, and education
 - Sexual orientation, relationship satisfaction
 - Hobbies, favorite sports
 - Other: _____
- How old are you?

- Please indicate your gender:
 - Female
 - Male
 - Other: _____
 - Prefer not to answer
- Did you encounter any errors, glitches or other problems taking this survey?
- What do you think this study was about?

- If you have any other comments about the study you took part in today, please tell us below: _____

Measures for Study S2

- Imagine that you were participating in an online survey for \$0.40 USD. In this hypothetical survey, we would offer you a \$0.10 USD bonus, but give you the option to donate it to your choice of one of the charities shown below, or keep it for yourself.
 - The World Wildlife Fund
 - The American Red Cross
 - Doctors Without Borders
 - Wounded Warrior Project
 - St. Jude Children's Research Hospital
- In the situation described above, before deciding whether to donate to charity yourself, which of the following things would you rather be told?
 - What total **percentage** of previous participants in the study, if any, chose to donate their bonus

- What ongoing **streak** of previous participants (how many in a row before you), if any, chose to donate their bonus
- Previous work in behavioral decision-making has shown that people vary in the amount they pay attention to these sorts of surveys. If you're actually reading this question, please answer it by selecting the option "other" and typing in "cannon". Thanks for your help, and for taking the time to read all of the questions.
 - Gender, marital status, and education
 - Sexual orientation, relationship satisfaction
 - Hobbies, favorite sports
 - Other: _____

Measures for Study S3

- Please choose one of the following options:
 - I choose to KEEP my bonus (\$0.15).
 - I choose to DONATE my bonus (\$0.15) to charity.
- [if they decided to donate] Thanks for choosing to make a donation! Please choose the charity you would like to donate to:
 - St. Jude Children's Research Hospital
 - The World Wildlife Fund
 - Doctors Without Borders
 - Wounded Warrior Project
 - The American Red Cross
- You [donated/did not donate] your survey bonus to charity. Why did you make this decision? _____

- Earlier in this survey, you were given the option to donate a portion of your survey compensation to charity. What information did we give you about **how other participants who took the survey behaved?**
 - That the last (amount) participants donated.
 - That (amount)% of participants donated.
 - None of the above
- Is English your native language?
 - Yes, I only spoke English growing up
 - Yes, I spoke English and these other languages growing up: _____
 - No, English is not my native language. My native language is: _____
- Previous work in behavioral decision-making has shown that people vary in the amount they pay attention to these sorts of surveys. If you're actually reading this question, please answer it by selecting the option "other" and typing in "apple". Thanks for your help, and for taking the time to read all of the questions.
 - Gender, marital status, and education
 - Sexual orientation, relationship satisfaction
 - Hobbies, favorite sports
 - Other: _____
- How old are you?
- Please indicate your gender:
 - Female
 - Male
 - Other: _____

- Prefer not to answer
- In 1 or 2 sentences, please describe the main thing you were asked to do in this survey today. _____
- Did you encounter any errors, glitches or other problems taking this survey?
- If you have any other comments about the study you took part in today, please tell us below: _____

Measures for Study S4

- Please choose one of the following options:
 - I choose to KEEP my bonus (\$0.15).
 - I choose to DONATE my bonus (\$0.15) to charity.
- [if they decided to donate] Thanks for choosing to make a donation! Please choose the charity you would like to donate to:
 - St. Jude Children's Research Hospital
 - The World Wildlife Fund
 - Doctors Without Borders
 - Wounded Warrior Project
 - The American Red Cross
- You [donated/did not donate] your survey bonus to charity. Why did you make this decision? _____
- Earlier in this survey, you were given the option to donate a portion of your survey compensation to charity. Before you decided, did we give you any information about **how other participants who took the survey behaved?**
 - Yes, we told you about how many participants recently donated.

- Yes, we told you about how many participants recently kept their bonus.
- No, we didn't tell you either of those things.
- Is English your native language?
 - Yes, I only spoke English growing up
 - Yes, I spoke English and these other languages growing up: _____
 - No, English is not my native language. My native language is: _____
- Previous work in behavioral decision-making has shown that people vary in the amount they pay attention to these sorts of surveys. If you're actually reading this question, please answer it by selecting the option "other" and typing in "orange". Thanks for your help, and for taking the time to read all of the questions.
 - Gender, marital status, and education
 - Sexual orientation, relationship satisfaction
 - Hobbies, favorite sports
 - Other: _____
- How old are you?
- Please indicate your gender:
 - Female
 - Male
 - Other: _____
 - Prefer not to answer
- In 1 or 2 sentences, please describe the main thing you were asked to do in this survey today. _____

- Have you recently taken this same survey (or an extremely similar one) on any other study platforms (e.g. Prolific, mTurk)? Note: your answer will not affect your payment!
 - No, I haven't taken this survey already on another platform
 - Yes, I have taken this survey already on another platform
 - I'm not sure
 - Did you encounter any errors, glitches or other problems taking this survey?
-
- If you have any other comments about the study you took part in today, please tell us below: _____

Measures for Study S5

- Now imagine that you decided to **donate** to charity. Which charity would you have picked?
 - St. Jude Children's Research Hospital
 - The World Wildlife Fund
 - Doctors Without Borders
 - Wounded Warrior Project
 - The American Red Cross
- If you donated, to what extent would that decision have been impacted by a feeling of **not wanting to "drop the ball"**?
 - 1 – No impact
 - 2
 - 3

- 4
- 5
- 6
- 7 – A great deal of impact
- If you donated, to what extent would your donation decision have been impacted by a feeling of **personal responsibility to the "stakeholders"** (such as the charities themselves, and people who benefit from the charities)?
 - 1 – No impact
 - 2
 - 3
 - 4
 - 5
 - 6
 - 7 – A great deal of impact
- Earlier in this survey, you were told about a hypothetical survey where you could donate a bonus to charity or keep it. Did we show you a message about **how other participants who previously took the survey behaved?**
 - Yes, that the last 8 participants donated
 - Yes, that 80% of participants donated
 - No, neither of these things
- Is English your native language?
 - Yes, I only spoke English growing up
 - Yes, I spoke English and these other languages growing up: _____

- ☐ No, English is not my native language. My native language is: _____
- Previous work in behavioral decision-making has shown that people vary in the amount they pay attention to these sorts of surveys. If you're actually reading this question, please answer it by selecting the option "other" and typing in "banana". Thanks for your help, and for taking the time to read all of the questions.
 - ☐ Gender, marital status, and education
 - ☐ Sexual orientation, relationship satisfaction
 - ☐ Hobbies, favorite sports
 - ☐ Other: _____
- How old are you?
- Please indicate your gender:
 - ☐ Female
 - ☐ Male
 - ☐ Other: _____
 - ☐ Prefer not to answer
- In 1 or 2 sentences, please describe the main thing you were asked to do in this survey today. _____
- Have you recently taken this same survey (or an extremely similar one) on any other study platforms (e.g. mTurk)? Note: your answer will not affect your payment!
 - ☐ No, I haven't taken this survey already on another platform
 - ☐ Yes, I have taken this survey already on another platform
 - ☐ I'm not sure

- Did you encounter any errors, glitches or other problems taking this survey?

- If you have any other comments about the study you took part in today, please tell us below: _____

Measures for Study S6

- Please choose one of the following options:
 - I choose to KEEP my bonus (\$0.15).
 - I choose to DONATE my bonus (\$0.15) to charity.
- [if they decided to donate] Thanks for choosing to make a donation! Please choose the charity you would like to donate to:
 - St. Jude Children's Research Hospital
 - The World Wildlife Fund
 - Doctors Without Borders
 - Wounded Warrior Project
 - The American Red Cross
- You [donated/did not donate] your survey bonus to charity. Why did you make this decision? _____
- Earlier in this survey, you were given the option to donate a portion of your survey compensation to charity. Right before you made your decision, which of these images did we show you?

☐

The last 6 decisions:
Did not donate
Did not donate
Donated
Donated
Donated
Did not donate
Next: Your decision

☐

The last 6 decisions:
Donated
Did not donate
Did not donate
Donated
Did not donate
Donated
Next: Your decision

☐

The last 6 decisions:
Did not donate
Did not donate
Did not donate
Donated
Donated
Donated
Next: Your decision

- When you made your donation decision, how much did you trust the information that you read about the most recent 6 participants?
 - ☐ 1 – I didn't trust it at all
 - ☐ 2
 - ☐ 3
 - ☐ 4
 - ☐ 5
 - ☐ 6
 - ☐ 7 – I completely trusted it
- Is English your native language?

- Yes, I only spoke English growing up
 - Yes, I spoke English and these other languages growing up: _____
 - No, English is not my native language. My native language is: _____
- Previous work in behavioral decision-making has shown that people vary in the amount they pay attention to these sorts of surveys. If you're actually reading this question, please answer it by selecting the option "other" and typing in "banana". Thanks for your help, and for taking the time to read all of the questions.
 - Gender, marital status, and education
 - Sexual orientation, relationship satisfaction
 - Hobbies, favorite sports
 - Other: _____
- How old are you?
- Please indicate your gender:
 - Female
 - Male
 - Other: _____
 - Prefer not to answer
- In 1 or 2 sentences, please describe the main thing you were asked to do in this survey today. _____
- Have you recently taken this same survey on any other study platforms (e.g. Prolific, mTurk)? Note: your answer will not affect your payment!
 - No, I haven't taken this survey already on another platform
 - Yes, I have taken this survey already on another platform

- I'm not sure
- Did you encounter any errors, glitches or other problems taking this survey?

- If you have any other comments about the study you took part in today, please tell us below: _____

Measures for Study S7

- Would you agree to volunteer to [help with an orientation/help with the clothing drive]?
 - No, I would not volunteer
 - Yes, I would volunteer
- Out of all the participants who have taken this survey so far, what percent do you think agreed to volunteer? I think this % chose to volunteer:
 - [101-point scale] 0% (no one volunteered) -> 100% (everyone volunteered)
- You said you would [not agree to volunteer/agree to volunteer]. Why?

- Is English your native language?
 - Yes, I only spoke English growing up
 - Yes, I spoke English and these other languages growing up: _____
 - No, English is not my native language. My native language is: _____
- Previous work in behavioral decision-making has shown that people vary in the amount they pay attention to these sorts of surveys. If you're actually reading this question, please answer it by selecting the option "other" and typing in "apple". Thanks for your help, and for taking the time to read all of the questions.
 - Gender, marital status, and education

- ☐ Sexual orientation, relationship satisfaction
 - ☐ Hobbies, favorite sports
 - ☐ Other: _____
 - How old are you?
 - Please indicate your gender:
 - ☐ Female
 - ☐ Male
 - ☐ Other: _____
 - ☐ Prefer not to answer
 - Have you ever had a job where you had to work in an office or with a team of people?
 - ☐ Yes
 - ☐ No
 - Have you ever had a job where you had to supervise or manage other people?
 - ☐ Yes
 - ☐ No
 - Earlier in this survey, you were asked to imagine a situation. What was the situation about?
 - ☐ Cleaning a kitchen
 - ☐ Planning office parties
 - ☐ Orientations for new employees
 - ☐ A clothing drive for charity
 - Did you encounter any errors, glitches or other problems taking this survey?
-

- What do you think this study was about?

- If you have any other comments about the study you took part in today, please tell us below:

References for Supplemental Appendix

- Cumming, G. (2008). Replication and p Intervals: P Values Predict the Future Only Vaguely, but Confidence Intervals Do Much Better. *Perspectives on Psychological Science*, 3(4), 286–300. <https://doi.org/10.1111/j.1745-6924.2008.00079.x>
- Efron, B., & Tibshirani, R. (1985). The Bootstrap Method for Assessing Statistical Accuracy. *Behaviormetrika*, 12(17), 1–35. https://doi.org/10.2333/bhmk.12.17_1
- Litman, L., Robinson, J., & Abberbock, T. (2017). TurkPrime.com: A versatile crowdsourcing data acquisition platform for the behavioral sciences. *Behavior Research Methods*, 49(2), 433–442. <https://doi.org/10.3758/s13428-016-0727-z>
- Silberzahn, R., Uhlmann, E. L., Martin, D. P., Anselmi, P., Aust, F., Awtrey, E., Bahník, Š., Bai, F., Bannard, C., Bonnier, E., Carlsson, R., Cheung, F., Christensen, G., Clay, R., Craig, M. A., Dalla Rosa, A., Dam, L., Evans, M. H., Flores Cervantes, I., ... Nosek, B. A. (2018). Many Analysts, One Data Set: Making Transparent How Variations in Analytic Choices Affect Results. *Advances in Methods and Practices in Psychological Science*, 1(3), 337–356. <https://doi.org/10.1177/2515245917747646>

Silverman, J., Barasch, A. P., & Small, D. A. (2023). Hot streak! Inferences and predictions about goal adherence. *Organizational Behavior and Human Decision Processes*, 179, 104281. <https://doi.org/10.1016/j.obhdp.2023.104281>

Walco, D. K., & Risen, J. L. (2017). The Empirical Case for Acquiescing to Intuition. *Psychological Science*, 28(12), 1807–1820. <https://doi.org/10.1177/0956797617723377>