

# Supporting Information

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## SI Methods

Participants who provided only partial data or inappropriate responses (e.g., by providing responses for trials from the Imagine Helping and No Helping: Story conditions to a question explicitly restricted to trials only from the Remember Helping condition) or who neglected to provide brief descriptions of what they generated for each task were not considered for data analysis. Two participants were excluded from data analysis in experiment 3: one participant responded at ceiling for willingness to help across conditions, and another participant indicated feeling no emotional reactions at all. However, including these participants did not significantly affect the primary findings: (i) Willingness to help was greater for the Imagine Helping condition compared with the No Helping: Story condition [ $t(31) = 4.64, P < 0.001$ ], (ii) willingness to help was greater for the Remember Helping condition compared with the No Helping: Story [ $t(31) = 3.29, P = 0.003$ ], and (iii) willingness to help did not significantly differ between Imagine Helping and Remember Helping conditions [ $t(31) = 0.12, P = 0.909$ ].

## SI Materials

**Vividness of Constructed Episodes.** To evaluate the extent that vividness of episodes predicted prosocial intentions to help, we included measures of episodic detail and coherence using the following scales:

1. Detail: The imagined/remembered scene in your mind was? (1 = simple, 4 = moderately, 7 = detailed).
2. Coherence: The imagined/remembered scene in your mind was? (1 = vague, 4 = moderately, 7 = coherent and clear).

Similarly, for the Estimate Helping condition, participants were asked:

1. Detail: The imagined media website in your mind was? (1 = simple, 4 = moderately, 7 = detailed).
2. Coherence: The imagined media website in your mind was? (1 = vague, 4 = moderately, 7 = coherent and clear).

In the second experiment, we included an additional measure of episodic vividness, event pre-/reliving:

1. Pre-/reliving: How strongly did you experience the imagined/remembered event in your mind? (1 = not at all, 4 = moderately, 7 = vividly, as if you were there).

Further supporting the detail and coherence findings, analyses revealed that the strength of preliving predicted willingness to help after imagining helping a person in need across participants [ $r(28) = 0.54, P = 0.002$ ], and reliving predicted willingness to help after remembering a past experience related to the circumstances of the present person in need across participants [ $r(28) = 0.48, P = 0.008$ ].

**Perspective Taking.** To evaluate the extent to which participants considered the mental perspective of the person in need when completing the different experimental tasks, we included the following measure of perspective taking:

1. Perspective Taking: When you identified, imagined, or estimated/remembered did you consider the person's thoughts and feelings? (1 = not at all, 4 = moderately, 7 = strongly considered).

**Emotional Concern.** To assess the role of emotional reactions in supporting prosocial intentions, participants rated the degree to which they experienced 12 different emotions (intrigued, soft-hearted, troubled, warm, distressed, sympathetic, intent, compassionate, disturbed, tender, moved, and worried) for each story of need following the experimental task session. Selected from a subset of emotions measured in past studies, this constellation of emotions was used so as to include a measure of emotional concern within a larger array of emotions, thereby minimizing participants' awareness of this construct (1, 2). We did not observe evidence of a consistent relationship between willingness to help and emotional reactions across participants. However, there was some tentative evidence suggesting that the emotion of sympathy may contribute to willingness to help in the current paradigm.

In experiment 2, there was a trending effect of sympathy for the person in need to predict willingness to help when considering the journalistic style and source of story depicting people in need [ $r(28) = 0.33, P = 0.075$ ]. However, sympathy did not show a trending effect for willingness to help when estimating ways the person could be helped [ $r(28) = 0.21, P = 0.278$ ] or imagining an episode of helping [ $r(28) = 0.181, P = 0.338$ ]. Contrasts for sympathy across conditions revealed significant differences between considering the journalistic style and source of stories and estimating ways the person could be helped [ $t(29) = 2.54, P = 0.017$ ] as well as imagining an episode of helping [ $t(29) = 2.49, P = 0.019$ ]. However, no significant difference was shown between estimating ways the person could be helped and imagining an episode of helping [ $t(29) = 0.22, P = 0.832$ ].

In addition to examining differences across participants, we also ran a linear mixed-effects model, for each measure of emotional concern (e.g., sympathy, compassion, moved) and condition, that treated emotional concern as nested within participants. Emotional concern was treated as a fixed-effect predictor variable and the interaction between emotional concern and participants as a random effect. Willingness to help was treated as the outcome variable. These analyses allowed us to examine whether emotional concern predicted willingness to help on a trial-by-trial basis independent of effects at the between-participants level. Table S1 shows that, at the trial level, many of the measures of emotional concern predicted willingness to help, observing a similar pattern across helping conditions. Indeed, when we ran a mixed model, for each measure of emotional concern that included condition as a fixed-effect predictor variable, no interaction was observed, suggesting that emotional concern was associated with willingness to help similarly across experimental conditions.

In experiment 3, the relationship between emotion and willingness to help was selective to that of sympathy at the participant level, as this was the only emotion to significantly predict willingness to help across participants. Sympathy ratings significantly predicted willingness to help when considering the journalistic style and source of stories [ $r(28) = 0.62, P < 0.001$ ]. There was also a significant effect of sympathy on willingness to help for memory [ $r(28) = 0.52, P = 0.003$ ] and, to a lesser extent, when subjects imagined scenarios of helping [ $r(28) = 0.38, P = 0.039$ ]. Contrasts for sympathy across conditions revealed no significant difference between considering the journalistic style and source of stories and remembering [ $t(29) = 1.48, P = 0.149$ ] or imagining a helping episode [ $t(29) = 0.78, P = 0.443$ ]. However, there was a significant difference between imagining and remembering helping scenarios [ $t(29) = 2.66, P = 0.013$ ]. Next, we ran a linear mixed-effects model, for each measure of emotional concern, to examine the association between emotional concern and

willingness to help on a trial-by-trial basis in experiment 3. The results are reported in Table S2. Consistent with the mixed-effects analyses from experiment 2, many of the emotional-concern ratings predicted willingness to help across conditions. No emotion-by-condition interactions were observed when condition was included in the models as a fixed-effect predictor variable, suggesting that the effect of emotional concern on willingness to help did not differ across conditions.

#### Task Instructions: Experiment 1.

1. Impact of Media Study—Instructions: This study looks at peoples' reactions to different stories from the media and how they affect different forms of reasoning. You will read stories taken from online media (e.g., Twitter, blogs, or newspapers) of situations where someone is in need of help (all names from the stories have been removed to maintain the anonymity of those involved). After reading each story, you will either complete math problems or imagine how the person could possibly be helped.
2. Math Problems: For the Math task, complete as many math problems as you can—without sacrificing accuracy—until the end of the trial. It's okay to guess, but try your best to provide a correct answer before moving on to the next problem. At the end of each trial, mark the last problem you were working on with an X. During the next Math trial, move on to the next problem even if you did not complete the last problem you were working on during a previous trial. Feel free to use the blank spaces between questions as scrap paper.
3. Imagine Helping: For the Imagine task, imagine a positive interaction of you helping out the person in need. Imagine a plausible way that **you** could actually help the person in the story. When creating your imagined event, make sure to generate as much detail as possible, visualize yourself positively interacting with and helping the person, creating a vivid and elaborate event where you strongly see the event in your mind's eye. The events you imagine should be **specific in time and place**; in other words, imagine when (e.g., next Friday) and where (e.g., classroom) you would help this person. You should imagine an event lasting a few minutes but no longer than a day. You want to imagine, for instance, what the person looks like, what the scene looks like, and any emotions or thoughts you may have.
4. You will have ~10 seconds to read each story and 60 seconds to complete math problems or imagine helping. The experimental trials will take about 30 mins. to complete.
5. It is important that you closely follow the instructions in the task, as afterward, you will be asked to answer questions regarding your responses to the stories.
6. Do you have any questions?

Participants were also provided with concrete examples for each condition and were provided extensive feedback during practice trials to enhance task comprehension.

#### Task Instructions: Experiment 2.

1. Impact of Media Study—Instructions: This study looks at peoples' reactions to different stories from the media. You will read stories taken from news media (e.g., blogs, newspapers, or social media) of situations where someone may or may not be in need of help (all names from the stories have been removed to maintain the anonymity of those involved). After reading each story, you will either imagine or identify ways the person could possibly be helped, or identify journalistic techniques used in the story that made it more emotional and personal.
2. Imagine: For the Imagine task, you will imagine a specific event of you successfully helping the person in the story. Feel free to be creative, but remember that this should be a plausible

way that **you** could actually help the person. When creating your imagined event, make sure to generate as much detail as possible, envision yourself helping the person, creating a vivid and elaborate event. The events you imagine should be **specific in time and place**; you should imagine an event lasting a few minutes but no longer than a day.

3. Estimate: For the Estimate task, you will estimate comments of how this person in the story can be helped. Feel free to be creative, but remember that these should be plausible ways that the person can actually be helped. For this task, you do not imagine a situation where you help the person, but rather merely think of comments suggesting how the person can be helped. Visualize the text.
4. Identify Journalistic Techniques: For the Identify task, come up with the journalistic techniques that make the story more or less professional and the type of media it likely comes from (e.g., Twitter, blogs, or newspapers). These may be formal journalistic or writing techniques if you are familiar with them, but can also be general features of the writing that you believe impact its level of professionalism.
5. You will have ~10 seconds to read each story and 60 seconds to imagine, estimate, or identify. The experimental trials will take about 45 mins. to complete.
6. It is important that you closely follow the instructions in the task, as afterward you will be asked to answer a series of questions regarding your responses to the stories.
7. Do you have any questions?

As in experiment 1, participants were also provided with concrete examples for each condition and were provided extensive feedback during practice trials to enhance task comprehension in experiment 2.

#### Task Instructions: Experiment 3.

1. Impact of Media Study—Instructions: This study looks at peoples' reactions to different stories from the media. You will read stories taken from media (e.g., twitter, blogs, or newspapers) of situations where someone is in need of help (all names from the stories have been removed to maintain the anonymity of those involved). After reading each story, you will either imagine how the person could possibly be helped, remember a time you helped someone in a similar circumstance, or identify journalistic techniques that make the story more or less professional and the type of media it likely comes from (e.g., Twitter, blogs, or newspapers).
2. Imagine Helping: For the Imagine task, imagine a positive interaction of you helping out the person in need. Imagine a plausible way that **you** could actually help the person in the story. When creating your imagined event, make sure to generate as much detail as possible, visualize yourself positively interacting with and helping the person, creating a vivid and elaborate event where you strongly see the event in your mind's eye. The events you imagine should be **specific in time and place**; in other words, imagine when (e.g., next Friday) and where (e.g., classroom) you would help this person. You should imagine an event lasting a few minutes but no longer than a day. You want to imagine, for instance, what the person looks like, what the scene looks like, and any emotions or thoughts you may have.
3. Remember Past Event: For the Remember task, remember a time you helped someone under similar circumstance to the person in the story. Memories should be specific in time (e.g., last Saturday) and place (e.g., park), lasting a few minutes but not exceeding a day. Try to remember as much detail as possible, including perceptual details, thoughts, and feelings. For this task, **do not imagine** interacting with the person in the story; instead **remember a person from your past**.

4. Identify Journalistic Techniques: For the Identify task, come up with the journalistic techniques that make the story more or less professional and the type of media it likely comes from (e.g., Twitter, blogs, or newspapers). These may be formal journalistic or writing techniques if you are familiar with them, but can also be general features of the writing that you believe impact its level of professionalism.
5. You will have ~10 seconds to read each story and 60 seconds to imagine, remember, or identify. The experimental trials will take about 50 mins. to complete.
6. It is important that you closely follow the instructions in the task, as afterward you will be asked to answer a series of questions regarding your responses to the stories.
7. Do you have any questions?

Following the procedures of experiments 1 and 2, participants were also provided with concrete examples for each condition and were provided extensive feedback during practice trials to enhance task comprehension in experiment 3.

**Example Stories.** We provide below a few stories used to depict people in need. Scenarios depicted a variety of situations, and the person in need was presented anonymously so as to minimize possible sex or group-membership effects.

1. “This person’s dog has not returned home in the last 24 hours.”
2. “This person is locked out of their house.”
3. “While riding the train, this person is harassed by other passengers.”
4. “This person is suffering from dementia and is lost in a mall.”
5. “This person was stung by a bee; their hand hurts and is swelling up.”

All of the stories are available from the authors upon request.

**Example Task Descriptions.** Here, we provide a selection of participants’ brief descriptions of what they mentally generated for each task.

**No Helping: Story.**

1. “Good grammar & content—seems like a short article one would see in a newspaper.”
2. “The grammar is good, they used their commas properly, the choice to use the term ‘flower delivery person’ was interesting, and the subject matter was flashy.”
3. “The use of ‘has not returned’ makes me think it’s a newspaper article or blog article. Also, the use of ‘24’ hours rather than the word ‘day’ makes it seem more technical.”
4. “It seems personal with the use of the word “they’re” and the detail about the grandfather, making me think this is a Facebook post.”

**Estimate Helping.**

1. “I estimated comments to be under a school blog. A website with a white body and scarlet highlights, font was Arial 11pt black. Comments offered to sit with the student, or to organize an event to address isolation on-campus.”
2. “Pictured a generic Facebook post again, users offered suggestions for immediate treatment, to contact an ambulance, and suggested long-term professionals.”
3. “I saw this as a blog or a website where people could send in clothes or donate money. Comments included offering health

services, money, and construction that would better withstand the next earthquake.”

4. “People recommend getting a metal detector, not bringing valuables to the beach, calling the lost and found at the beach patrol, and sympathize over heirlooms they have lost themselves. Lots of slanty faces and exclamation points used.”

**Imagine Helping.**

1. “I run to get a hose in case there’s a fire and I tell the person to make sure that nothing flammable is in danger of being ignited.”
2. “I imagined someone on the street noticing her bike was stolen and I helped them calm down and brought them to the police to report it.”
3. “I imagined creating a lost dog post on the computer. Writing in large red font and offering a \$100 dollar reward. The dog was a beagle.”
4. “I imagined a young woman, kind of unattractive who was getting harassed by college boys so I sat down across from her and talked to her so they wouldn’t bother her anymore.”

**Remember Helping.**

1. “I helped get rid of a fruit fly infestation by setting traps and constantly battling with insect sprays.”
2. “A friend left his glasses on the beach, so we went back afterward and scoured the whole area until we found them.”
3. “One time at a bus stop some guy came up to the group of people (mostly girls) and starting making very stupid, sexist comments. Many of us, myself included told him to leave us alone and go away.”
4. “I remembered a time when my younger brother was misbehaving and to punish him my dad took one of his toys and threw it out. My brother was distraught and crying. I remember consoling him in my room and letting him watch TV with me until he calmed down.”

**Moral Reinforcement vs. Moral Licensing.** As previously mentioned in the *Discussion*, remembering good deeds has been shown to selectively increase charitable donations (3). That study is part of a broader literature on moral reinforcement that finds that thinking about being helpful leads people to subsequently act helpful (3). Conversely, other studies on moral licensing find that, when people are reminded of past prosocial acts, they are more likely to behave antisocially because, the explanation goes, they feel that they have the credentials to justify behaving badly (4, 5). The more confident people are that their background establishes them as nonracist, for example, the less worried people are that a given action could be construed as racist. The discrepancy between moral-reinforcement and moral-licensing findings has been suggested to arise from the difference in focusing on oneself as a prosocial person, which leads to moral reinforcement, versus focusing on how other people see one as good or bad (3). A full review of these findings is beyond the scope of this article. However, these findings, along with our current results, suggest two possibilities: (i) Future work should examine the role of self-concept in mediating the effect of episodic representations on prosociality, and (ii) the way in which people remember their past has important implications for how they will behave in the future, for better or worse.

1. Batson CD (2011) *Altruism in Humans* (Oxford Univ Press, New York).  
 2. Batson CD, Early S, Salvarani G (1997) Perspective taking: Imagining how another feels versus imagining how you would feel. *Pers Soc Psychol Bull* 23(7):751–758.  
 3. Young L, Chakroff A, Tom J (2012) Doing good leads to more good: The reinforcing power of a moral self-concept. *Rev Philos Psychol* 3(9):325–334.

4. Efron DA, Miller B, Monin DT (2013) The unhealthy road not taken: Licensing indulgence by exaggerating counterfactual sins. *J Exp Soc Psychol* 49(3):573–578.  
 5. Monin B, Miller DT (2001) Moral credentials and the expression of prejudice. *J Pers Soc Psychol* 81(1):33–43.

**Table S1. Bivariate associations between measures of emotional concern and willingness to help by condition for experiment 2**

Emotion	No Helping: Story		Estimate Helping		Imagine Helping	
	Coefficient	<i>P</i> value	Coefficient	<i>P</i> value	Coefficient	<i>P</i> value
Sympathy	0.39	<0.001	0.42	<0.001	0.36	<0.001
Softhearted	0.43	<0.001	0.34	<0.001	0.33	<0.001
Warm	0.41	0.001	0.30	0.009	0.23	0.003
Compassion	0.46	<0.001	0.31	<0.001	0.29	<0.001
Tender	0.39	<0.001	0.30	0.002	0.25	<0.001
Moved	0.39	<0.001	0.28	0.002	0.26	<0.001

**Table S2. Bivariate associations between measures of emotional concern and willingness to help by condition for experiment 3**

Emotion	No Helping: Story		Remember Helping		Imagine Helping	
	Coefficient	<i>P</i> value	Coefficient	<i>P</i> value	Coefficient	<i>P</i> value
Sympathy	0.43	<0.001	0.35	<0.001	0.33	<0.001
Softhearted	0.31	<0.001	0.20	0.002	0.32	<0.001
Warm	0.15	0.100	0.13	0.169	0.14	0.081
Compassion	0.28	<0.001	0.20	0.002	0.23	<0.001
Tender	0.25	<0.001	0.21	0.004	0.21	0.007
Moved	0.21	0.008	0.09	0.248	0.19	0.014