

1 **Which moral exemplars inspire prosociality?**  
2

3 Hyemin Han<sup>1\*†</sup>, Clifford I. Workman<sup>2\*</sup>, Joshua May<sup>3\*</sup>,

4 Payton Scholtens<sup>4</sup>, Kelsie J. Dawson<sup>1</sup>, Andrea L. Glenn<sup>5</sup>, & Peter Meindl<sup>4,6</sup>  
5

6 <sup>1</sup>Educational Psychology Program, University of Alabama, Alabama, AL 35487

7 <sup>2</sup>Penn Center for Neuroaesthetics, University of Pennsylvania, Philadelphia, PA 19104

8 <sup>3</sup>Philosophy Department, University of Alabama at Birmingham, Birmingham, AL 35294

9 <sup>4</sup>Department of Psychology, Calvin University, Grand Rapids, MI 49546

10 <sup>5</sup>Department of Psychology, University of Alabama, Alabama, AL 35487

11 <sup>6</sup>Simon Center, United States Military Academy at West Point, West Point, NY 10996

12 \*These authors contributed equally to this work  
13

14 **Author ORCIDs**

15 Hyemin Han  0000-0001-7181-2565

16 Clifford I. Workman  0000-0002-2206-0325

17 Joshua May  0000-0001-8604-479X

18 Kelsie J. Dawson  0000-0002-7958-3004

19 Peter Meindl  0000-0002-2686-3723  
20

21 †**Corresponding author:** Hyemin Han, College of Education, University of Alabama, Box

22 870231, Tuscaloosa AL 35487, Email: [hyemin.han@ua.edu](mailto:hyemin.han@ua.edu)  
23

1 **Declarations**

2 **Funding:** Research reported in this publication was supported by the University of Alabama  
3 Research Grant Committee (RG14785), by the National Institute of Dental & Craniofacial  
4 Research of the National Institutes of Health (F32DE029407), and by the John Templeton  
5 Foundation (61581, 48365, and 61514). The content is solely the responsibility of the authors  
6 and does not necessarily represent the official views of the John Templeton Foundation,  
7 University of Alabama, or National Institutes of Health.

8 **Conflicts of interest/Competing interests:** The authors declare no competing financial interests.

9 **Data availability statement:** All data supporting the findings reported herein, along with the  
10 study materials and code for the statistical analyses, are available from the Open Science  
11 Framework repository: <https://osf.io/v5nk7/>

12 **Code availability:** All source codes for data analyses are available from the Open Science  
13 Framework repository: <https://osf.io/v5nk7/>

14 **Authors' contributions:** Conceptualization: Hyemin Han, Clifford I. Workman, Joshua May,  
15 Payton Scholtens, and Peter Meindl; Methodology: Hyemin Han, Clifford I. Workman, Joshua  
16 May, Payton Scholtens, Kelsie J. Dawson, and Peter Meindl; Investigation: Hyemin Han, Payton  
17 Scholtens, Kelsie J. Dawson, Andrea L. Glenn, and Peter Meindl; Writing–Original Draft  
18 Preparation: Hyemin Han, Clifford I. Workman, and Joshua May; Writing–Review and Editing:  
19 Hyemin Han, Clifford I. Workman, Joshua May, Payton Scholtens, Kelsie J. Dawson, Andrea L.  
20 Glenn, and Peter Meindl; Funding Acquisition: Hyemin Han, Clifford I. Workman, Joshua May,  
21 and Peter Meindl; Supervision: Hyemin Han, Joshua May, and Peter Meindl

22 **Word count:** 9,306 words

# 1 Which Moral Exemplars Inspire Prosociality?

2

3

## Abstract

4 Some stories of moral exemplars motivate us to emulate their admirable attitudes and behaviors,  
5 but why do some exemplars motivate us more than others? We systematically studied how  
6 motivation to emulate is influenced by the similarity between a reader and an exemplar in social  
7 or cultural background (*Relatability*) and how personally costly or demanding the exemplar's  
8 actions are (*Attainability*). Study 1 found that university students reported more inspiration and  
9 related feelings after reading true stories about the good deeds of a recent fellow alum, compared  
10 to a famous moral exemplar from decades past. Study 2A developed a battery of short moral  
11 exemplar stories that more systematically varied Relatability and Attainability, along with a set  
12 of non-moral exemplar stories for comparison. Studies 2B and 2C examined the path from the  
13 story type to relatively low stakes altruism (donating to charity and intentions to volunteer)  
14 through perceived attainability and relatability, as well as elevation and pleasantness. Together,  
15 our studies suggest that it is primarily the relatability of the moral exemplars, not the attainability  
16 of their actions, that inspires more prosocial motivation, at least regarding acts that help others at  
17 a relatively low cost to oneself.

18 **Keywords:** inspiration; altruism; prosociality; moral education; elevation; cultural learning

19

20

## 1. Introduction

21 Stories about exemplars are often used as sources for moral education and inspiration, but the  
22 features of stories that motivate emulation are poorly understood. Helping others often comes at  
23 a personal cost, so people sometimes require increased motivation to engage in prosocial

1 behavior, such as donating money to charity or volunteering at a homeless shelter. Navigating  
2 the conflict between morality and self-interest is especially important in moral development, as  
3 adolescents acquire habits and expectations regarding what levels of personal sacrifice are the  
4 social norm or characteristic of virtuous people (Batson, 2016; Bicchieri, 2017; Tankard &  
5 Paluck, 2016).

6         Stories about the virtuous actions of moral exemplars are widely used for moral  
7 inspiration, education, and conflict resolution, with some stories being particularly effective at  
8 inspiring the emulation of exemplary moral behavior (Bandura, 1969; Kristjánsson, 2006;  
9 Sanderse, 2012; Čehajić-Clancy & Bilewicz, 2021). Several psychological mechanisms may  
10 explain why and how the presentation of moral stories facilitates the emulation of exemplary  
11 behavior. Candidates include vicarious social learning (Bandura, 1969; Chudek & Henrich,  
12 2011; Tomasello et al., 1993), moral elevation (Haidt, 2000; Pohling & Diessner, 2016), and  
13 upward social comparison (Blanton et al., 1999). These theories might predict that any virtuous  
14 act is inspiring, regardless of who performs it, and that extraordinary acts are more inspiring than  
15 mundane deeds.

16         As philosophers have noted, however, unrealistically high moral standards can be  
17 problematic and even backfire (Carbonell, 2012; Wolf, 1982). Psychological studies support this  
18 worry, since people seem to be more moved by exemplars similar to themselves and whose good  
19 deeds are not out of the ordinary (Cialdini, 1980; Han et al., 2017; Lockwood & Kunda, 1997).  
20 Stories tend to induce more negative responses the more participants think the exemplar is not  
21 relatable to their own lives and engages in superhuman deeds that involve great personal  
22 sacrifice (Monin, 2007; Monin et al., 2008). For instance, the average resident in Japan might not  
23 feel particularly inspired by the story of Zell Kravinsky, who donated a kidney to a stranger and

1 gave away nearly all of his \$45 million real-estate fortune to support public health initiatives in  
2 America. Although stories of moral exemplars often depict moral saints who engage in heroic  
3 deeds that risk their lives or livelihoods, inspirational stories can describe acts of altruism that are  
4 less demanding while nevertheless serving as examples of morally admirable behavior.

5

### 6 **1.1. Current Study**

7 These aspects of moral exemplar stories—relatability and attainability—can influence emulation.  
8 *Attainability* in this context refers to how difficult it is to emulate exemplary moral behavior  
9 given the amount of sacrifice it requires. (“Costly” or “demandingness” would be more precise  
10 but neither easily takes on both noun and adjective forms, so we will use “attainability” despite  
11 considering it a quasi-technical term.) *Relatability* refers to the degree to which the exemplar  
12 shares similar socio-economic and cultural backgrounds with participants. (Previous research has  
13 used the term *relevance*; see Han et al., 2017.) More relatable exemplars, such as peers, have  
14 been shown to promote volunteering more effectively than unrelatable exemplars who make or  
15 have made extraordinary sacrifices, such as historical figures like Martin Luther King Jr.  
16 (Cialdini, 1980; Lockwood & Kunda, 1997). However, especially demanding good deeds, such  
17 as donating large sums of money to charity, can elicit moral elevation and increase charitable  
18 donations among participants (Pohling & Diessner, 2016; Thomson & Siegel, 2013). So, it is  
19 unclear whether attainability always enhances emulation of moral exemplars.

20 It also remains unclear whether attainability and relatability are independently effective  
21 in the context of psychological interventions. A recent study suggested that the combination of  
22 these factors in moral exemplar stories, *accessibility*, increased voluntary service activity (Han et  
23 al., 2017). Peer exemplars presented to primary and secondary students in Korea better promoted

1 prosocial behavior over a 6-week follow up period than did inaccessible historical figures.  
2 However, these studies did not distinguish between relatability and attainability, so it remains to  
3 be determined whether effects on emulation are driven by one or both factors. Such research can  
4 help us understand the motivation to be moral and how to enhance it, which has important  
5 implications for designing interventions and educational programs targeting moral development  
6 and/or improvement.

7         In two large studies conducted across 4 independent samples, our research examined how  
8 and why people are motivated by the actions of some moral exemplars but not others. We aimed  
9 to 1) develop sets of improved moral exemplar stories in English, 2) extend previous findings to  
10 some other forms of prosociality and to adults and university students, and 3) distinguish the  
11 effects of attainability and relatability on altruistic motivation. We examined factors that  
12 determine the effectiveness of moral exemplar interventions in making participants feel inspired  
13 (Study 1) and increasing prosociality (i.e., intention to donate, donation behavior, and prosocial  
14 emotions; Study 2). We developed and normed two sets of moral exemplar stories—one  
15 comprised of 4 stories that maximize differences in accessibility, and another comprised of 130  
16 vignettes that systematically vary relatability and attainability. These stimuli were then used to  
17 establish which features of exemplar stories increase emulation.

18

## 19 **1.2. Hypotheses and Predictions**

20 Theories of vicarious social learning and moral elevation seem to suggest that observing any  
21 socially desirable behavior will increase the emulation of such behavior. Recent findings (Han et  
22 al., 2017), however, suggest that the inspiration of prosociality depends on characteristics of the  
23 moral exemplars and of their actions. In line with the theories of social learning and social

1 comparison, we hypothesized that more relatable and attainable exemplar stories are more  
2 effective at inspiring prosociality than relatively unrelatable exemplars who model demanding  
3 acts of altruism.

4 We thus predicted that more relatable and attainable exemplar stories would increase  
5 prosocial emotions and behavior. In Studies 1 and 2, we predicted that more relatable and  
6 attainable heroes would be more inspirational than less relatable and less attainable ones. Self-  
7 reported perceived relatability and attainability were further predicted to partly mediate the effect  
8 of condition on inspiration. The main objective of Study 2 was to establish more firmly the  
9 effects of attainability and relatability on prosociality, or whether they share sufficient variance  
10 to warrant their collapse into a single factor (*accessibility*).

11

12

## 2. Study 1

### 13 2.1. Background

14 Study 1 tested the hypothesis that university students find exemplars more inspiring when the  
15 exemplars are more relatable and their actions less demanding. Participants read about either  
16 similar but everyday exemplars (specifically, recent alumnae of their school) or extraordinary but  
17 unrelatable historical exemplars. We hypothesized that a shared alma mater and gender would  
18 make exemplars especially relatable and that their deeds of helping others in their communities  
19 would be seen as not especially demanding. The extraordinary deeds of historical figures, on the  
20 other hand, are less likely to be seen as relatable and attainable, even if they are objectively more  
21 admirable (Frimer et al., 2012).

22

### 23 2.2. Method

### 1 2.2.1. Participants

2 One hundred and one (57 female) Calvin University undergraduates aged 18 or older participated  
3 in Study 1. Of these participants, twenty-six participated on a strictly voluntary basis and 75  
4 earned credit for an introductory psychology course. Participation took around 5 minutes and  
5 included a question about gender to inform the assignment of participants to the appropriate  
6 experimental conditions. No participants failed the attention check (“If you are reading this,  
7 choose the ‘2’ option below.”), but data were excluded from one participant who circled multiple  
8 answers in response to several survey items.<sup>1</sup>

9 The original recruitment target as described in the pre-registration (<https://osf.io/5ck7m/>)  
10 was to enroll 200 participants during the first two weeks of November 2019, or as many  
11 participants as possible in that time window.<sup>2</sup> Because we were only able to collect data from  
12 100 participants, we conducted a sensitivity power analysis that indicated a sample of this size  
13 (N = 50 per group) would provide power to detect medium-sized effects ( $d = 0.50$ , or around 6%  
14 of the variance; Faul et al., 2009). Of note, this effect size is comparable to the medium-sized  
15 effect reported in related studies (e.g. Han et al., 2017;  $f = 0.22$ , approaching 6% of the variance).

### 16 2.2.2. Procedure

17 The hypothesis, predictions, and materials for Study 1 were pre-registered: <https://osf.io/5ck7m/>.  
18 Participants received printed copies of packets that included a consent form, one moral exemplar  
19 story, and a questionnaire to assess their feelings after reading the story. Participants were  
20 randomly assigned to one of two conditions: an accessible moral exemplar story (Calvin alum  
21 Alivia Hibbler or Tyler Smies) or an inaccessible exemplar story (Rosa Parks or Nelson

---

<sup>1</sup> This study was approved by the Institutional Review Board at Calvin University and was conducted in a manner consistent with the American Psychological Association's Ethical Principles in the Conduct of Research with Human Participants. Before participating, all volunteers gave informed consent.

<sup>2</sup> This time constraint existed because the study was conducted as part of a course project.

1 Mandela). The stories of Mandela and Parks described their well-known sacrifices for social  
2 justice. The stories of the Calvin graduates described how each pursued careers that would help  
3 others but yield smaller salaries—namely, starting a non-profit organization and taking a job in  
4 poorer school district (see Supplementary Materials for story texts). To further manipulate  
5 perceived similarity, each participant read about someone of the same or different gender. In the  
6 accessible condition, women read about Alivia and men read about Tyler. In the inaccessible  
7 condition, participants were assigned to read about opposite-gendered exemplars (i.e., women  
8 read about Nelson Mandela and men read about Rosa Parks).

9       After each story, participants rated their feelings along the following dimensions:  
10 “moved”, “uplifted”, “optimistic about humanity,” “warm feeling in chest,” “want to help  
11 others,” and “want to become a better person” (9-point Likert scale; 1 = “Didn’t feel anything”, 9  
12 = “Felt very strongly”). Individuals’ ratings were summed and, as in previous studies, the  
13 resulting scores were interpreted as measuring *inspiration* (e.g. Schnall et al., 2010). On another  
14 9-point scale, participants indicated their perceptions of attainability (“How attainable for you is  
15 [exemplar name]’s goodness?”) and relatability (“How similar do you think you and [exemplar  
16 name] are?”). Two additional questions, not examined here, assessed participants’ agreement  
17 with statements about having a sense of purpose and of having a sense of meaning in one’s life.

18

### 19 **2.3. Results and Discussion**

20 We tested for an effect of condition by using an independent-samples t-test (one-tailed, since the  
21 hypothesis that accessible exemplars are more inspiring than inaccessible exemplars was  
22 directional and pre-registered). We also conducted a mediational analysis according to published  
23 recommendations (Preacher & Hayes, 2008; 1-tailed). Specifically, we simultaneously tested

1 whether relatability and attainability together mediate the effect of condition (accessible vs.  
2 inaccessible).

3 Consistent with our pre-registered hypothesis, Calvin University undergraduate students  
4 who read stories about the exemplary actions of Calvin alum reported higher levels of inspiration  
5 ( $5.88 \pm 1.52$ ) than students who read about Rosa Parks or Nelson Mandela ( $5.20 \pm 1.70$ ; Table  
6 1),  $t(98) = 2.10, p = 0.019, d = 0.42$ . The effect of condition on inspiration was mediated by the  
7 perceived relatability (95% CI = [0.23, 1.08]) and attainability (95% CI = [.11, 0.79]) of each  
8 exemplar, with a regression analysis suggesting these variables fully mediated the relationship.  
9 When inspiration scores were simultaneously regressed on condition, attainability, and  
10 relatability, there was no relationship between inspiration and condition ( $\beta(97) = -0.09, p =$   
11  $0.351$ ).

12 [Table 1 here]

13

### 14 3. Study 2A

#### 15 3.1. Background

16 The previous study did not systematically vary the relatability and attainability of the exemplar  
17 stories, and it measured prosocial emotions but not behavior. The aim of Study 2A was to  
18 generate a large, standardized battery of moral exemplar vignettes in which each vignette's  
19 features were carefully modified to manipulate their relatability (e.g., fellow American adults)  
20 and attainability (e.g., donating a modest amount of money to charity vs. a large amount). These  
21 stimuli could then be used in our subsequent studies to measure their effects on prosocial  
22 behavior among adults online (Study 2B) and university students (Study 2C). We also tested

1 whether two story features—attainability and relatability—could be collapsed into one factor  
2 (“accessibility”).

3

## 4 **3.2. Method**

### 5 *3.2.1. Participants*

6 A total of 401 participants were enrolled into Study 2A in November 2017 (214 male, 186  
7 female, 1 sex unknown;  $35.81 \pm 9.76$  years of age). An *a priori* power analysis indicated that a  
8 sample size of around  $N = 400$  participants would enable at least 80% power to detect effects of  
9 magnitudes similar to those reported previously ( $f = .22$ ; Han et al., 2017). Participants were  
10 recruited through Amazon’s Mechanical Turk (MTurk) to complete an online survey  
11 administered with the Qualtrics platform. They were compensated at a rate of \$7.25 for about 1  
12 hour of their time in accordance with federal minimum wage. Only people aged 19 or older  
13 could enroll, which is considered the age of majority in the state of Alabama, where the study  
14 was conducted. None of the participants’ data were excluded.<sup>3</sup>

### 15 *3.2.2. Procedure*

16 We adapted our stimuli from a well-characterized set of ecologically valid true moral stories  
17 described by participants in an independent study (Knutson et al., 2010). We selected a subset of  
18 26 vignettes that described individuals who made personal sacrifices to do something good for  
19 themselves or others. It was important to use scenarios that describe familiar situations since  
20 recent evidence suggests moral judgments elicited by extreme sacrificial moral scenarios are  
21 poor predictors of real-world behavior (Bostyn et al., 2018; FeldmanHall et al., 2012). These

---

<sup>3</sup> The study was approved by the Institutional Review Board at the University of Alabama (IRB # 18-OR-009) and was conducted in a manner consistent with the American Psychological Association's Ethical Principles in the Conduct of Research with Human Participants. Before starting the study procedures, all participants provided informed consent.

1 vignettes were modified to vary independently along dimensions of attainability and relatability.  
2 Since attainability involves the perceived difficulty of emulating an exemplary behavior, we  
3 manipulated the level of sacrifice made by each moral exemplar (e.g., volunteering under 3 hours  
4 per week vs. over 9; giving a homeless person \$5 USD vs. \$1,000 USD; comforting a survivor of  
5 a car crash vs. entering the blazing wreckage to save her). Since relatability refers to the  
6 perceived correspondence of characteristics between oneself and a moral exemplar, we  
7 manipulated background information used to characterize each exemplar (e.g., German vs.  
8 American nationality; modern day vs. historical setting).

9 A total of 130 brief vignettes were constructed, each of which belonged to one of five  
10 subgroups (26 stories per subgroup: relatable and attainable, relatable and unattainable,  
11 unrelatable and attainable, and unrelatable and unattainable). We also constructed 26 novel  
12 vignettes about *non-moral* exemplars, which described individuals who carried out exemplary  
13 actions that primarily benefited themselves (e.g., winning a skill-based contest after months of  
14 arduous training). All the vignettes were similar in length and structure (Table S1). The complete  
15 set of vignettes is provided in the Supplementary Materials, and a thorough characterization of  
16 each vignette's features can be downloaded from the OSF archive corresponding to this research  
17 (<https://osf.io/v5nk7/>).

18 In Study 2A, participants rated a subset of the 130 moral exemplar vignettes (104 moral  
19 stories, 26 non-moral; see Table 2 for examples). Participants each read and rated 52 stories (26  
20 randomly selected moral stories and all 26 non-moral stories). In addition to attainability and  
21 relatability, participants rated the stories in terms of elevation, praiseworthiness, emotional  
22 intensity, pleasantness, moral relatability, benefit to others, and benefit to self. At the end of the  
23 survey, participants also completed a demographic questionnaire (see Supplementary Materials).

1 [Table 2 here]

2 *3.2.3. Statistical Analysis*

3 We examined the following: first, whether stories in the attainable and relatable conditions were  
4 seen as more attainable and relatable (respectively) than those in the unattainable and unrelatable  
5 conditions; second, whether moral vignettes evoked stronger emotional responses than non-  
6 moral vignettes. We calculated mean attainability and relatability scores for each exemplary  
7 story from Study 2A. If detected, the final moral exemplar intervention used in Studies 2B and  
8 2C would exclude vignettes that received attainability and relatability ratings in unexpected  
9 directions.

10 We next performed a mixed-effects analysis to examine the effect of the moral exemplar  
11 stories (attainable/relatable | attainable/unrelatable | unattainable/relatable |  
12 unattainable/unrelatable) on participants' responses (using *lmer* in *lmerTest*). For dependent  
13 variables, eight dimensions were assessed: perceived attainability (two items), perceived  
14 relatability (two items), elevation, praiseworthiness, emotional intensity, and pleasantness. The  
15 story condition was entered into the model as a fixed effect and participant ID was entered as a  
16 random effect. To further inform our inferences, we performed a Bayesian mixed-effects analysis  
17 to examine whether the data supported the presence of a non-zero main effect (using *anovaBF* in  
18 *BayesFactor*). For Bayesian inference, we employed  $2\log(\text{Bayes Factor (BF)}) \geq 2$  as a threshold  
19 (Han et al., 2018; Wagenmakers et al., 2018). The effect size representing the main effect was  
20 estimated in  $\Omega_0^2$ , which was introduced by Xu (2003) as an indicator for effect sizes in mixed-  
21 effects analyses. Additionally, we performed a Bonferroni-corrected *post hoc* test (using *glht* in  
22 *multcomp*).

1           We also examined whether two story features—attainability and relatability—could be  
2 collapsed into one feature—accessibility—with the collected dataset. We used multinomial  
3 logistic regressions to address this question. We compared two multinomial logistic regression  
4 models: one predicted the story type with attainability and relatability as two separate features,  
5 and the other predicted story type with accessibility, which was calculated by averaging  
6 attainability and relatability scores. In this comparison, we examined which model better  
7 predicted the story type. We compared the models' Akaike information criterion (AIC) and  
8 Bayesian information criterion (BIC) values and interpreted lower AIC and BIC values as  
9 indicating the better model.

10

### 11 **3.3. Results and Discussion**

12 Table 3 presents descriptive statistics and the results of a mixed-effects analysis. Both frequentist  
13 and Bayesian mixed-effects analyses detected a significant main effect of condition ( $p < .001$  and  
14  $2\log(\text{BF}) > 10$ ), the magnitude of which was large in all cases. We found that our stimuli have  
15 the intended features—that is, they appropriately manipulated attainability and relatability in the  
16 expected directions. With respect to relatability, however, the results were mixed. For the first  
17 relatability item (“How similar do you think your cultural and social background is to the person  
18 described in the story?”), relatability scores were significantly higher for stories categorized as  
19 relatable compared with stories categorized as unrelatable. For the second relatability item (“I  
20 know people who have done similar things in the past to the person described in the story.”), the  
21 pattern of responses was similar to that observed for attainability. Furthermore, as predicted,  
22 participants had stronger emotional responses to moral compared to non-moral exemplar stories.



1 The aim of Study 2B was to investigate whether moral exemplars inspire emulation of  
2 prosociality because they are more relatable, more attainable, or both. Specifically, we examined  
3 whether acute *changes* in prosociality following exposure to moral exemplars is more strongly  
4 associated with the relatability of the exemplars, with the attainability of their actions, or  
5 alternatively with a single factor representing both (accessibility).

6

## 7 **4.2. Method**

### 8 *4.2.1. Participants*

9 401 participants recruited through MTurk that were aged 19 or older were enrolled into Study 2B  
10 (222 male, 179 female;  $34.99 \pm 10.18$  years of age). As in Study 2A, a sample of  $N = 400$   
11 participants was expected to provide at least 80% power to detect the effects of interest.

12 Participants completed an online survey on Qualtrics and were compensated \$7.25 for around an  
13 hour of their time. After enrollment, participants were randomly assigned to one of five exemplar  
14 intervention conditions, which involved reading 26 stories of only one type: relatable and  
15 attainable ( $n = 97$ ), relatable and unattainable ( $n = 71$ ), unrelatable and attainable ( $n = 78$ ),  
16 unrelatable and unattainable ( $n = 78$ ), or non-moral ( $n = 77$ ).<sup>4</sup>

### 17 *4.2.2. Procedure*

18 The same exemplary stories used in Study 2A comprised the moral exemplar intervention in  
19 Study 2B. While reading the 26 stories, participants rated each one along four dimensions:  
20 perceived attainability, perceived relatability, elevation, and pleasantness. Specifically,  
21 participants answered the following questions: “How difficult do you think it would be to do the

---

<sup>4</sup> The study was approved by the Institutional Review Board at the University of Alabama (IRB # 17-07-356) and was conducted in a manner consistent with the American Psychological Association's Ethical Principles in the Conduct of Research with Human Participants. All participants provided informed consent before starting the study.

1 same things as the person described in the story?” (1 = “Not difficult at all”, 7 = “Extremely  
2 difficult”), “How similar do you think your cultural and social background is to the person  
3 described in the story?” (1 = “Not at all similar”, 7 = “Extremely similar”), “The story made me  
4 feel morally elevated” (warm, uplifted – like when seeing unexpected acts of human goodness,  
5 kindness, or compassion)” (1 = “Strongly disagree”, 7 = “Strongly agree”), and “How pleasant  
6 do you find the actions of the person described in the story?” (1 = “Extremely unpleasant”, 7 =  
7 “Extremely pleasant”). After reading all 26 stories, participants completed the Narrative  
8 Transportation Scale to assess how absorbed into the stories they felt (data not examined here;  
9 Green & Brock, 2000).

10 Our previous work suggests the moral exemplar intervention may selectively increase  
11 some but not all aspects of prosociality (Han et al., 2017), although the nature of this relationship  
12 has not been systematically investigated. To accurately assess the efficacy of the moral exemplar  
13 intervention used in Study 2B, then, it was necessary to include several complementary measures  
14 to capture multiple aspects of prosociality. (See Supplementary Materials for the exact text  
15 presented to participants.) First, before reading any stories, participants indicated how many  
16 hours they planned to spend volunteering in the following month. Second, before reading the  
17 stories, participants were informed they would receive a \$2 bonus they could either keep for  
18 themselves or donate to one of 6 charities, and that they could further decide not only whether  
19 but how much of their bonus to donate.

20 After the intervention, participants were again presented with opportunities to indicate  
21 how many hours they intended to volunteer over the next month and how much of their \$2 bonus  
22 they wished to donate to charity. Next, participants were informed the donation could not be  
23 made on their behalf and that they would instead receive both \$5.25 for participating and the

1 entire \$2 bonus (\$7.25 in total). Demographic information (e.g., age, sex, ethnicity, and  
2 socioeconomic status) was also recorded (see the Supplementary Materials).

### 3 4.2.3. *Statistical Analysis*

4 We examined the descriptive statistics characterizing participants' responses as well as  
5 correlations between variables of interest (perceived attainability, perceived relatability,  
6 elevation, pleasantness, change in donation, and change in intention to volunteer). We performed  
7 both frequentist and Bayesian correlation analyses, with the latter examining if the data  
8 positively supported the presence of non-zero correlations based on the resultant Bayes Factor  
9 ( $2\log(\text{BF}) \geq 2$ ). We also conducted both frequentist and Bayesian ANOVAs to test for a main  
10 effect of story type on the variables of interest. Where appropriate, we performed Bonferroni  
11 corrected *post hoc* testing to characterize differences between the categories of exemplar stories.

12 We performed a path analysis to characterize the influence of the attainability and  
13 relatability of the moral exemplars on prosociality. Specifically, we examined paths from the  
14 story type to behavioral responses: “story type (attainable, relatability) → perceived attainability  
15 and relatability → emotional responses → behavioral responses.” We set the final path model  
16 based on the full path model including all possible paths (see Figure 1). The final model was  
17 selected using Bayesian Model Averaging (BMA), which identifies the best regression model  
18 from the possible candidate regressions comprising each path analysis (Hoeting et al., 1999).  
19 Instead of excluding predictors that failed to achieve significance—which is likely to inflate false  
20 positives or estimated coefficients and does not properly address the issue of multicollinearity—  
21 BMA selects the most probable regression model from possible candidates by examining the  
22 posterior probability of each candidate with Bayesian inference (Han & Dawson, 2021). For  
23 instance, when BMA was applied to identify the best regression model for predicting changes in

1 donation behavior, we entered all candidate predictors (story type, perceived attainability,  
2 perceived relatability, elevation, pleasantness) and examined which model yielded the highest  
3 posterior probability. Once optimal regression models were identified for all paths, the path  
4 model was estimated with *sem* in *lavaan*. We also performed Bayesian path analysis with *bsem*  
5 in *blavaan* to examine whether the 95% Bayesian credible interval (CI) of each estimated  
6 coefficient included zero. Since the non-moral stories did not vary categorically in terms of  
7 attainability and relatability, data collected from participants assigned to read the non-moral  
8 stories was excluded from the path analysis.

9 [Figure 1 here]

10

### 11 **4.3. Results and Discussion**

12 The descriptive statistics characterizing the variables of interest are given in Table 4. The results  
13 of the correlational analyses are shown in Figure 2. Both frequentist and Bayesian ANOVAs  
14 detected a significant main effect of story type on perceived attainability and relatability when  
15 elevation and pleasantness were included in the model. The main effect was not significant,  
16 however, for either of the behavioral variables. As shown in Table 4, perceived attainability was  
17 higher among participants assigned to attainable story groups. Although relatable stories were  
18 perceived to be more relatable in general, there was no significant difference in the perceived  
19 relatability of stories in the relatable & attainable and unrelatable & attainable conditions. Both  
20 elevation and pleasantness were significantly increased for the four kinds of moral stories  
21 compared to the non-moral stories. The results of the correlation analyses indicate that perceived  
22 relatability was significantly associated with perceived attainability and emotional responses. Of  
23 the two behavioral variables, only change in intentions to volunteer was positively associated

1 with perceived relatability and emotional responses to the exemplar stories according to the  
2 frequentist correlation analysis; using Bayesian correlation analysis, however, only the relation  
3 between change in intention to volunteer and elevation survived.

4 [Figure 2 and Table 4 here]

5 Figure 3 shows the best path model (BMA) as well as the estimated coefficients (using  
6 *sem*). The identified model fit the data well given the reported model fit indicators, RMSEA =  
7 .06 ( $< .08$ ), SRMR = .05 ( $< .08$ ), CFI = .98 ( $\geq .90$ ), TLI = .96 ( $\geq .95$ ), posterior predictive *p*-  
8 value = .15 ( $\geq .05$ ). All examined coefficients were significantly different from zero ( $p < .05$ ; did  
9 not include zero in the 95% Bayesian CI). The results of the path analysis suggest that  
10 participants' volunteering intentions were significantly predicted by a path via perceived  
11 relatability and elevation. Interestingly, perceived attainability did not play a significant role in  
12 modulating the effects of moral exemplar stories on prosociality. In fact, stories describing  
13 attainable exemplary actions were *negatively* associated with elevation.

14 [Figure 3 here]

15 These results extend the finding from Study 1 that perceived attainability and relatability  
16 mediated the relationship between the story type and emotional response by disentangling the  
17 respective contributions of attainability and relatability. Although story type did not have a  
18 significant effect on the prosocial behavior of participants, relatability and attainability are  
19 relative notions, so it was imperative to examine the behavioral effects of perceived attainability  
20 and relatability. The path analysis accordingly uncovered a significant change in intentions to  
21 volunteer, mediated in particular by perceived relatability. These results suggest that the  
22 relatability of stories, as opposed to attainability, more strongly influences emotional and  
23 motivational responses to reading moral exemplar stories, even if not prosocial behavior. One

1 reason similar effects were not detected for donation behavior may be that, for many MTurk  
2 workers, their compensation is a source of already meager income, so the prospect of donating a  
3 part of their income to charities may seem less feasible. This underscores the need for additional  
4 research to clarify the behavioral consequences of moral exemplar interventions, especially in  
5 the kinds of educational settings where such interventions might eventually be used.

6

7

## 5. Study 2C

### 8 5.1. Background

9 The aim of Study 2C was to replicate the findings from Studies 2A and 2B in a population of  
10 students recruited from an undergraduate educational setting, the University of Alabama. We  
11 reasoned that the average university student would be more likely to volunteer and donate to  
12 charities than the average worker on MTurk.

13

### 14 5.2. Method

#### 15 5.2.1. Participants

16 A total of 218 participants were enrolled in Study 2B (190 female;  $21.49 \pm 6.67$  years of age).  
17 Participants were undergraduate students from the University of Alabama aged 18 years or older  
18 who were recruited through one of two undergraduate psychology volunteering pools. Once  
19 enrolled, student volunteers came for an in-person visit to our computer lab where they  
20 completed the study procedures, starting with providing written informed consent. Participants  
21 received course credit for participating in the study, which lasted around an hour. There were no

1 exclusions of data. A sample of  $N = 200$  participants or greater was expected to provide at least  
2 80% power to detect the effects of interest.<sup>5</sup>

### 3 *5.2.2. Procedure*

4 The procedure was identical to Study 2B, except for the compensation. Study 2C was originally  
5 designed to span two sessions, with participants receiving an additional \$2.50 if they completed a  
6 second session several weeks later. During the first session, participants reported their intentions  
7 to donate a portion of the \$2.50 (from \$0.00 to \$2.50) after completing the second session.  
8 Participants were asked this question before and after the first session to characterize changes in  
9 intentions to donate. Ultimately, owing to administrative constraints outside the control of the  
10 research team, it was not possible to invite participants back for a second session.

11

## 12 **5.3. Results and Discussion**

13 The descriptive statistics characterizing the variables of interest are given in Table 5. The results  
14 of the correlational analyses are shown in Figure 4. The overall findings from the correlational  
15 analysis and ANOVAs were similar to those from Study 2B, including the lack of a significant  
16 effect of story type on changes in intentions to donate or volunteer. However, we found  
17 additional significant frequentist associations between the change in donating intent, perceived  
18 relatability, elevation, and pleasantness. In addition, a Bayesian correlational analysis revealed  
19 one additional significant correlation between change in volunteering intention and pleasantness.

20

[Figure 4 and Table 5 here]

---

<sup>5</sup> The study was approved by the Institutional Review Board at the University of Alabama (IRB # 19-OR-098) and was conducted in a manner consistent with the American Psychological Association's Ethical Principles in the Conduct of Research with Human Participants. All participants gave informed consent prior to taking part.

1 Figure 5 shows the result from the path analysis (using *sem*). Similar to Study 2B, the identified  
2 model fit the data well given the reported model fit indicators, RMSEA = .03 (< .08), SRMR =  
3 .05 (< .08), CFI = .99 ( $\geq$  .90), TLI = .99 ( $\geq$  .95), posterior predictive *p*-value = .39 ( $\geq$  .05). All  
4 examined coefficients were significantly different from zero ( $p < .05$ ; did not include zero in the  
5 95% Bayesian CI). We found two significant paths: the relatability of the presented story  $\rightarrow$   
6 perceived relatability  $\rightarrow$  elevation  $\rightarrow$  change in donating intention, and  $\rightarrow$  change in  
7 volunteering intention.

8 [Figure 5 here]

9 The overall findings from Study 2C were similar to those from Study 2B. Again, while *a*  
10 *priori* categorical differences in story type did not significantly increase prosocial behavior  
11 among students, path analysis may nevertheless reveal behavioral consequences linked to  
12 *perceived* attainability and *perceived* relatability. Similar to the previous study, the present path  
13 analysis suggests that relatability, not attainability, significantly increased prosocial emotions  
14 and behavior. However, we found several interesting differences between Studies 2B and 2C.  
15 First, only relatability was significant in the current path analysis. Second, in contrast to Study  
16 2B, we found that the change in donating intent was significantly predicted by relatability and  
17 elevation in the current study. These differences might originate from the selection of a  
18 participant pool comprised of students rather than workers. Unlike MTurk workers who might  
19 consider the provided compensation as a source of income, college students in Study 2C might  
20 see the compensation as a luxury that would be inessential for sustaining their lives, and thus  
21 consider donation more favorably.

22 Attainability may also require further scrutiny. In both Studies 2B and 2C, the  
23 attainability condition as well as perceived attainability did not demonstrate the hypothesized

1 effects on the motivational and behavioral measures. Perhaps our “unattainable” stories didn’t  
2 involve acts that were sufficiently costly or demanding. Most of the stories described moderate  
3 demands (e.g., donating \$1,000 USD), not life-threatening risks (Čehajić-Clancy & Bilewicz,  
4 2021). Unfortunately, our story set did not include stories of exemplars taking such great risks,  
5 partly because it used true stories collected in previous research. Further studies might include  
6 more diverse exemplar stories to understand the potential effect of attainability better.

7

8

## 6. General Discussion

9 Stories can describe moral exemplars who are more or less similar to the reader (relatability) and  
10 who engage in acts that are more or less difficult to emulate (attainability). The overarching aim  
11 of this research was to address whether prosocial motivation is increased by greater attainability,  
12 relatability, or both. Overall, as predicted, more relatable and attainable exemplar stories  
13 generate greater inspiration (Study 1) and emulation of prosociality on some measures (Study 2),  
14 with perceived relatability being most influential. We developed a battery of ecologically valid  
15 exemplar stories that systematically varied attainability and relatability. Although differences in  
16 our story types did not produce detectable changes in prosocial behavior, perceived attainability  
17 and relatability are highly relative to the individual and thus difficult to systematically  
18 manipulate for all or even most participants. For instance, the average American might relate  
19 little to a Russian retiree, while others in our studies might do so easily (e.g., if their parents grew  
20 up in the Soviet Union). Similarly, donating \$50 USD to charity is a major sacrifice for some  
21 Americans but not others. So, it was important for us to directly examine the effects of *perceived*  
22 attainability and relatability on prosociality.

1           The path analyses conducted in Studies 2B and 2C suggest in particular that the perceived  
2   relatability—not attainability—of a moral exemplar tends to increase emulation among readers.  
3   The more attainable stories and perceived attainability did not positively predict emotional and  
4   behavioral outcomes, but the more relatable stories and perceived relatability did. This suggests  
5   that the relatability of exemplars is more fundamental in motivating people compared with the  
6   attainability of their acts. Another possibility is that highly attainable moral actions require little  
7   personal sacrifice, such as donating \$1 to a charity, which is not particularly inspiring and in  
8   some cases is perhaps even seen as insulting (compare Thomson and Siegel 2013). Further  
9   research could explore these possibilities.

10           Our studies have several limitations. One concerns generalizability since we did not  
11   measure all forms of prosocial attitudes and behaviors. With few exceptions, our stories focused  
12   on relatively familiar acts of altruism, not potentially life-threatening risks. Moreover, we  
13   primarily measured relatively low stakes prosociality among our participants, such as feelings of  
14   inspiration, donating small amounts of money to charity, and reporting *intentions* to volunteer.  
15   Can relatable moral exemplars motivate even greater sacrifices than these? Moreover, morality  
16   involves much more than helping others. What about stories of moral exemplars who bring loved  
17   ones to justice or who refuse to cheat when others are doing so with abandon? Further studies  
18   could explore whether relatable moral exemplars are especially likely to effect change in other  
19   moral domains as well.

20           Another limitation of our studies is that they do not uncover *why* the relatability of moral  
21   exemplars increases prosocial motivation. Nevertheless, psychological mechanisms posited by  
22   existing theories might explain our results. Reading about morally admirable behavior can  
23   motivate emulation by inducing warm and uplifting feelings that increase one's desire to

1 “affiliate and help others” (Haidt, 2000; Pohling & Diessner, 2016). This theory of *moral*  
2 *elevation*, however, might not easily explain the greater influence of relatable moral exemplars.  
3 Alternatively, moral exemplar stories might harness *social or cultural learning* by signaling to  
4 readers that such exemplary actions conform to expected norms, particularly when exemplars  
5 belong to one’s social group (Bandura, 1969; Chudek & Henrich, 2011; Tomasello et al., 1993).  
6 More specifically, exemplar stories might instigate a form of *social comparison* that makes  
7 salient disparities in perceived moral excellence between oneself and a member of one’s in-  
8 group, and readers believe that emulation will help close the gaps (Blanton et al., 1999).  
9 Although more research is needed to adjudicate among these and other theories, the importance  
10 of relatability in our studies does suggest that the mechanism involves a fundamentally social  
11 element that can explain why readers would be more inspired by a moral exemplar from their  
12 own social group.

13         Despite present limitations, these and future studies have the potential to generate both  
14 theoretical and practical implications for many fields, particularly applied ethics, moral  
15 psychology, moral development, and moral education. Consider first some theoretical models of  
16 moral psychology and development. Experimental evidence increasingly suggests that moral  
17 judgment is largely automatic and driven by unconscious processes that nevertheless involve  
18 complex computations (May, 2018; Mikhail, 2011; Railton, 2014). Models of cultural  
19 transmission and learning suggest that humans naturally learn by imitating others in their social  
20 group, particularly those perceived to have skill, success, confidence, experience, and prestige  
21 (Chudek & Henrich, 2011; Tomasello et al., 1993). Behavior that appears morally optional can  
22 turn morally necessary the more that members of one’s community engage in it (Bicchieri, 2017;  
23 Tankard & Paluck, 2016). Research on moral exemplars potentially connects such models of

1 cultural norms with theories in moral psychology that aim to uncover the tacit processes driving  
2 moral cognition and learning. Given that our participants were more inclined to emulate  
3 personally relatable exemplars, relatability might be a tacit consideration that drives moral  
4 cognition, such that moral learning is not special but rather like other forms of cultural learning.

5         Understanding the effects of moral exemplars on prosociality might have practical  
6 implications as well. Findings like ours can aid in the development of educational interventions  
7 that are fine-tuned to promote character in students. Parents and educators know the importance  
8 of role models in transmitting moral beliefs and knowledge, and our studies suggest that role  
9 models will be more effective, and less likely to backfire, when relatable (and perhaps when their  
10 good deeds are not especially demanding). Our research might also support psychological  
11 interventions targeting the general public. Čehajić-Clancy and Bilewicz (2021) demonstrated that  
12 stories of moral exemplars can promote reconciliation among antagonistic groups living in  
13 societies recovering from violent conflicts, such as war and genocide.

14         The present study also has implications for moral philosophy. In applied ethics, there is a  
15 lively debate about whether we ought to enhance our moral capacities to increase ethical action  
16 beyond normal levels. Some even believe that such enhancement is necessary to prevent evil  
17 people from using powerful biotechnologies to devastate human societies (e.g. Persson &  
18 Savulescu, 2012). Other ethicists worry that enhancing moral behavior is unethical because it is  
19 manipulative, inauthentic, or paternalistic (e.g., Fukuyama, 2002; Sandel, 2004). Whether such  
20 enhancement is morally problematic, though, depends on how it is best carried out, which is an  
21 empirical question. Bioethicists have recently focused on new-fangled technologies that directly  
22 manipulate the brain, such as transcranial direct current stimulation and pharmaceutical drugs.  
23 Our studies might provide a useful corrective by emphasizing the power of traditional

1 interventions, such as role models, in promoting morally desirable characteristics. Our studies  
2 indicate that more traditional forms of moral enhancement may be effective and at the same time  
3 less morally problematic than other strategies.

4

5

## 7. Conclusion

6 What types of moral exemplar narratives are most effective at promoting prosocial attitudes and  
7 behaviors? This research examined whether the psychological effects of moral exemplars are  
8 attributable to the costliness of helping, the relatability of the exemplars, or some combination of  
9 both factors. Study 1 found that college students felt more inspired by fellow alumni than  
10 historical figures known for their extraordinary moral actions. Study 2 found that stories seen as  
11 more relatable elicited more motivation to volunteer or donate to charity. Our research begins to  
12 provide both researchers and moral educators with insights about the types of moral exemplars  
13 that can effectively promote prosociality.

**References**

- 1  
2 Bandura, A. (1969). Social learning of moral judgments. *Journal of Personality and Social*  
3 *Psychology, 11*(3), 275–279.
- 4 Batson, C. D. (2016). *What's Wrong with Morality? A Social-Psychological Perspective*. Oxford  
5 University Press.
- 6 Bicchieri, C. (2017). Norms in the Wild: How to Diagnose, Measure, and Change Social Norms.  
7 *In Norms in the Wild*. Oxford University Press.  
8 <https://doi.org/10.1093/acprof:oso/9780190622046.001.0001>
- 9 Blanton, H., Buunk, B. P., Gibbons, F. X., & Kuyper, H. (1999). When better-than-others  
10 compare upward: Choice of comparison and comparative evaluation as independent  
11 predictors of academic performance. *Journal of Personality and Social Psychology, 76*(3),  
12 420–430. <https://doi.org/10.1037/0022-3514.76.3.420>
- 13 Bostyn, D. H., Sevenhant, S., & Roets, A. (2018). Of Mice, Men, and Trolleys: Hypothetical  
14 Judgment Versus Real-Life Behavior in Trolley-Style Moral Dilemmas. *Psychological*  
15 *Science, 29*(7), 1084–1093. <https://doi.org/10.1177/0956797617752640>
- 16 Carbonell, V. (2012). The Ratcheting-Up Effect. *Pacific Philosophical Quarterly, 93*(2), 228–  
17 254. <https://doi.org/10.1111/j.1468-0114.2012.01425.x>
- 18 Čehajić-Clancy, S., & Bilewicz, M. (2021). Moral-exemplar intervention: A new paradigm for  
19 conflict resolution and intergroup reconciliation. *Current Directions in Psychological*  
20 *Science, 30*(4), 335-342.
- 21 Chudek, M., & Henrich, J. (2011). Culture–gene coevolution, norm-psychology and the  
22 emergence of human prosociality. *Trends in Cognitive Sciences, 15*(5), 218–226.  
23 <https://doi.org/10.1016/j.tics.2011.03.003>

- 1 Cialdini, R. B. (1980). Full-cycle social psychology. *Applied Social Psychology Annual*, 1, 21–  
2 47.
- 3 Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using  
4 G\*Power 3.1: tests for correlation and regression analyses. *Behavior Research Methods*,  
5 41(4), 1149–1160. <https://doi.org/10.3758/BRM.41.4.1149>
- 6 FeldmanHall, O., Mobbs, D., Evans, D., Hiscox, L., Navrady, L., & Dalgleish, T. (2012). What  
7 we say and what we do: The relationship between real and hypothetical moral choices.  
8 *Cognition*, 123(3), 434–441. <https://doi.org/10.1016/j.cognition.2012.02.001>
- 9 Frimer, J. A., Walker, L. J., Lee, B. H., Riches, A., & Dunlop, W. L. (2012). Hierarchical  
10 Integration of Agency and Communion: A Study of Influential Moral Figures. *Journal of*  
11 *Personality*, 80(4), 1117–1145. <https://doi.org/10.1111/j.1467-6494.2012.00764.x>
- 12 Fukuyama, F. (2002). *Our Posthuman Future: Consequences of the Biotechnology Revolution*.  
13 Farrar, Straus and Giroux.
- 14 Green, M. C., & Brock, T. C. (2000). The role of transportation in the persuasiveness of public  
15 narratives. *Journal of Personality and Social Psychology*, 79(5), 701–721.  
16 <https://doi.org/10.1037//0022-3514.79.5.701>
- 17 Haidt, J. (2000). The Positive emotion of elevation. *Prevention & Treatment*, 3(1).  
18 <https://doi.org/10.1037/1522-3736.3.1.33c>
- 19 Han, H., & Dawson, K. J. (2021). Improved model exploration for the relationship between  
20 moral foundations and moral judgment development using Bayesian Model Averaging.  
21 *Journal of Moral Education*. <https://doi.org/10.1080/03057240.2020.1863774>
- 22 Han, H., Kim, J., Jeong, C., & Cohen, G. L. (2017). Attainable and Relevant Moral Exemplars  
23 Are More Effective than Extraordinary Exemplars in Promoting Voluntary Service

- 1 Engagement. *Frontiers in Psychology*, 8, 283. <https://doi.org/10.3389/fpsyg.2017.00283>
- 2 Han, H., Park, J., & Thoma, S. J. (2018). Why do we need to employ Bayesian statistics and how  
3 can we employ it in studies of moral education?: With practical guidelines to use JASP for  
4 educators and researchers. *Journal of Moral Education*, 47(4), 519–537.  
5 <https://doi.org/10.1080/03057240.2018.1463204>
- 6 Hoeting, J. A., Madigan, D., Raftery, A. E., & Volinsky, C. T. (1999). Bayesian Model  
7 Averaging: A Tutorial. *Statistical Science*, 14(4), 382–401.  
8 <https://doi.org/10.1214/ss/1009212519>
- 9 Knutson, K. M., Krueger, F., Koenigs, M., Hawley, A., Escobedo, J. R., Vasudeva, V., Adolphs,  
10 R., & Grafman, J. (2010). Behavioral norms for condensed moral vignettes. *Social  
11 Cognitive and Affective Neuroscience*, 5(4), 378–384. <https://doi.org/10.1093/scan/nsq005>
- 12 Kristjánsson, K. (2006). Emulation and the use of role models in moral education. *Journal of  
13 Moral Education*, 35(1), 37–49.
- 14 Lockwood, P., & Kunda, Z. (1997). Superstars and me: Predicting the impact of role models on  
15 the self. *Journal of Personality and Social Psychology*, 73, 91–103.  
16 <https://doi.org/10.1037/0022-3514.73.1.91>
- 17 May, J. (2018). *Regard for Reason in the Moral Mind*. Oxford University Press.
- 18 Mikhail, J. (2011). *Elements of Moral Cognition*. Cambridge University Press.
- 19 Monin, B. (2007). Holier than me? Threatening social comparison in the moral domain. *Revue  
20 Internationale de Psychologie Sociale*, 20(1), 53–68.
- 21 Monin, B., Sawyer, P. J., & Marquez, M. J. (2008). The rejection of moral rebels: resenting those  
22 who do the right thing. *Journal of Personality and Social Psychology*, 95, 76–93.  
23 <https://doi.org/10.1037/0022-3514.95.1.76>

- 1 Persson, I., & Savulescu, J. (2012). Unfit for the Future. In *Unfit for the Future: The Need for*  
2 *Moral Enhancement*. Oxford University Press.  
3 <https://doi.org/10.1093/acprof:oso/9780199653645.001.0001>
- 4 Pohling, R., & Diessner, R. (2016). Moral Elevation and Moral Beauty: A Review of the  
5 Empirical Literature. *Review of General Psychology, 20*(4), 412–425.  
6 <https://doi.org/10.1037/gpr0000089>
- 7 Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and  
8 comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40*(3),  
9 879–891. <https://doi.org/10.3758/BRM.40.3.879>
- 10 Railton, P. (2014). The Affective Dog and Its Rational Tale: Intuition and Attunement. *Ethics,*  
11 *124*(4), 813–859. <https://doi.org/10.1086/675876>
- 12 Sandel, M. (2004, April). The Case Against Perfection. *The Atlantic*.
- 13 Sanderse, W. (2012). The meaning of role modelling in moral and character education. In  
14 *Journal of Moral Education* (pp. 1–15). <https://doi.org/10.1080/03057240.2012.690727>
- 15 Schnall, S., Roper, J., & Fessler, D. M. T. (2010). Elevation leads to altruistic behavior.  
16 *Psychological Science, 21*, 315–320. <https://doi.org/10.1177/0956797609359882>
- 17 Tankard, M. E., & Paluck, E. L. (2016). Norm Perception as a Vehicle for Social Change. *Social*  
18 *Issues and Policy Review, 10*(1), 181–211. <https://doi.org/10.1111/sipr.12022>
- 19 Thomson, A. L., & Siegel, J. T. (2013). A moral act, elevation, and prosocial behavior:  
20 Moderators of morality. *The Journal of Positive Psychology, 8*(1), 50–64.  
21 <https://doi.org/10.1080/17439760.2012.754926>
- 22 Tomasello, M., Kruger, A. C., & Ratner, H. H. (1993). Cultural learning. *Behavioral and Brain*  
23 *Sciences, 16*(3), 495–511. <https://doi.org/10.1017/S0140525X0003123X>

- 1 Wagenmakers, E.-J., Love, J., Marsman, M., Jamil, T., Ly, A., Verhagen, J., Selker, R., Gronau,  
2 Q. F., Dropmann, D., Boutin, B., Meerhoff, F., Knight, P., Raj, A., van Kesteren, E.-J., van  
3 Doorn, J., Šmíra, M., Epskamp, S., Etz, A., Matzke, D., ... Morey, R. D. (2018). Bayesian  
4 inference for psychology. Part II: Example applications with JASP. *Psychonomic Bulletin &*  
5 *Review*, 25(1), 58–76. <https://doi.org/10.3758/s13423-017-1323-7>
- 6 Wolf, S. (1982). Moral Saints. *The Journal of Philosophy*, 79(8), 419.  
7 <https://doi.org/10.2307/2026228>
- 8 Xu, R. (2003). Measuring explained variation in linear mixed effects models. *Statistics in*  
9 *Medicine*, 22(22), 3527–3541. <https://doi.org/10.1002/sim.1572>
- 10  
11

1 **Figure Legends**

2 **Figure 1** | The hypothetical full path model.

3

4 **Figure 2** | Correlations from Study 2B. Elements below the diagonal represent correlations  
5 significant at  $p < .05$ . Elements above the diagonal represent correlations significant at  $2\log BF \geq$

6 3. Attn: perceived attainability. Rel: perceived relatability. Elev: elevation. Pleas: pleasantness.

7 Donate: change in donation. Volunteer: change in volunteering intention.

8

9 **Figure 3** | The resultant path model from Study 2B. Standardized path coefficients are presented.

10 All paths were significant at  $p < .05$  and did not include zero in their 95% Bayesian CI.

11

12 **Figure 4** | Correlations from Study 2C. Elements below the diagonal represent correlations

13 significant at  $p < .05$ . Elements above the diagonal represent correlations significant at  $2\log BF \geq$

14 3. Rel: perceived relatability. Elev: elevation. Pleas: pleasantness. Donate: change in donating

15 intention. Volunteer: change in volunteering intention.

16

17 **Figure 5** | The resultant path model from Study 2C. Standardized path coefficients are presented.

18 All paths were significant at  $p < .05$  and did not include zero in their 95% Bayesian CI.

1

**Tables**2 **Table 1** | Mean ratings for inspiration, attainability, and relevance for each moral exemplar story

3 from Study 1.

<b>Exemplar Story</b>	<b>N</b>	<b>Inspiration</b>	<b>Perceived Attainability</b>	<b>Perceived Relatability</b>
Rosa Parks	19	5.22 ± 1.98	6.26 ± 1.73	4.32 ± 1.60
Nelson Mandela	31	5.19 ± 1.54	4.97 ± 1.74	3.65 ± 1.85
<b>Unreliable &amp; Unattainable</b>	50	5.20 ± 1.70	5.46 ± 1.83	3.90 ± 1.78
Alivia Hibbler	25	6.03 ± 1.44	6.88 ± 1.59	5.48 ± 1.56
Tyler Smies	25	5.73 ± 1.60	6.84 ± 1.40	6.08 ± 1.93
<b>Reliable &amp; Attainable</b>	50	5.88 ± 1.52	6.86 ± 1.48	5.78 ± 1.76

4

- 1 **Table 2** | Example vignettes from Study 2 corresponding to each stimulus category (relatable or
- 2 unrelatable, attainable or unattainable, and non-moral).

	<b>Relatable</b>	<b>Unrelatable</b>
<b>Attainable</b>	Albert is a 21-year old recent US college graduate who had been looking for work unsuccessfully for a few weeks. Albert started working in a restaurant and had been there only 2 weeks when a fellow co-worker’s brother died. Albert's co-worker couldn’t come into work the day her brother died and none of her fellow co-workers would cover the shift. So, Albert worked a double shift that day and covered for his co-worker.	Anya is 65 and retired a few years back from her job at a bottling plant in Russia but was recently looking for work to stay active. Anya started working in a restaurant and had been there only 2 weeks when a fellow co-worker’s brother died. Anya's co-worker couldn’t come into work the day her brother died and none of her fellow co-workers would cover the shift. So, Anya worked a double shift that day and covered for her co-worker.
<b>Unattainable</b>	Albert is a 21-year old recent US college graduate who had been looking for work unsuccessfully for a few weeks. Albert started working in a restaurant and had been there only 2 weeks when a fellow co-worker’s brother died. Albert's co-worker couldn’t come into work the day her brother died and none of her fellow co-workers would cover the shift. So, Albert worked a double shift that day and covered the rest of his shifts for the following 2 weeks.	Anya is 65 and retired a few years back from her job at a bottling plant in Russia but was recently looking for work to stay active. Anya started working in a restaurant and had been there only 2 weeks when a fellow co-worker’s brother died. Anya's co-worker couldn’t come into work the day her brother died and none of her fellow co-workers would cover the shift. So, Anya worked a double shift that day and covered her shifts for the following 2 weeks.
<b>Non-moral exemplar</b>		
Michael is a 32-year old head chef at a restaurant in Tulsa, Oklahoma. While Michael enjoys the praise his restaurant is getting, his primary concern is making good food. Michael was recently profiled by a local newspaper because of his success in the culinary industry despite his young age. Several prominent critics in the area have eaten at Michael’s restaurant and said his was some of the best food they’d eaten in years.		
<b>Original story from Knutson et al., 2010</b>		
I started working in a restaurant and had been there only 2 weeks when a fellow co-worker’s brother died. She couldn’t come into work the day he died and none of her fellow co-workers would cover her shift. So, I worked a double shift that day and covered for her.		

1 **Table 3** | Descriptive statistics and results from the mixed-effects analysis in Study 2A.

Variable	Mixed-effects analysis					Descriptive statistics <i>M (SD)</i>				
	<i>F</i>	<i>df</i>	<i>p</i>	$\Omega^2$	<i>logBF</i>	Relatable, Attainable	Relatable, Unattainable	Unrelatable, Attainable	Unrelatable, Unattainable	Non-moral
Attainability 1	853.30	(4, 20484.63)	< .001	.32	1556.20	4.61 (1.90) <sup>a</sup>	3.46 (1.87) <sup>b</sup>	4.58 (1.89) <sup>a</sup>	3.52 (1.88) <sup>b</sup>	3.04 (1.67) <sup>c</sup>
Attainability 2	386.99	(4, 20476.20)	< .001	.32	735.10	3.92 (2.10) <sup>a</sup>	3.06 (1.97) <sup>b</sup>	3.85 (2.10) <sup>a</sup>	3.10 (2.00) <sup>b</sup>	2.76 (1.88) <sup>c</sup>
Relatability 1	281.91	(4, 20464.47)	< .001	.41	533.79	4.32 (1.52) <sup>a</sup>	4.15 (1.55) <sup>b</sup>	3.52 (1.75) <sup>c</sup>	3.31 (1.76) <sup>d</sup>	3.77 (1.62) <sup>c</sup>
Relatability 2	197.11	(4, 20476.79)	< .001	.29	372.41	4.76 (1.96) <sup>a</sup>	3.90 (2.06) <sup>b</sup>	4.61 (1.98) <sup>a</sup>	3.92 (2.08) <sup>b</sup>	3.85 (2.07) <sup>b</sup>
Elevation	1016.07	(4, 20467.49)	< .001	.43	1844.57	5.31 (1.53) <sup>a</sup>	5.68 (1.43) <sup>b</sup>	5.39 (1.47) <sup>a</sup>	5.72 (1.38) <sup>b</sup>	4.39 (1.78) <sup>c</sup>
Praiseworthy	830.14	(4, 20465.40)	< .001	.44	1525.38	5.58 (1.45) <sup>a</sup>	5.94 (1.36) <sup>b</sup>	5.66 (1.37) <sup>a</sup>	5.96 (1.33) <sup>b</sup>	4.84 (1.69) <sup>c</sup>
Intensity	981.08	(4, 20464.99)	< .001	.45	1772.24	4.00 (1.84) <sup>a</sup>	4.24 (1.81) <sup>b</sup>	4.02 (1.77) <sup>a</sup>	4.29 (1.80) <sup>b</sup>	2.90 (1.86) <sup>c</sup>
Pleasantness	606.75	(4, 20466.02)	< .001	.42	1130.03	5.50 (1.47) <sup>a</sup>	5.73 (1.40) <sup>b</sup>	5.53 (1.38) <sup>a</sup>	5.74 (1.40) <sup>b</sup>	4.88 (1.38) <sup>c</sup>

2 *Note.* *logBF*: log(Bayes Factor). <sup>a-d</sup>: averages in a row without a common superscript letter differ

3 at *p* < .05 (Bonferroni corrected).

4

1 **Table 4** | Descriptive statistics and results from the mixed-effects analysis in Study 2B.

Variable	Mixed-effects analysis					Descriptive statistics $M$ ( $SD$ )				
	$F$	$df$	$p$	$\Omega^2$	$\log BF$	Relatable, Attainable	Relatable, Unattainable	Unreliable, Attainable	Unreliable, Unattainable	Non-moral
Attainability	71.79	(4, 324)	< .001	.47	92.36	4.69 (.92) <sup>a</sup>	3.37 (.89) <sup>b</sup>	4.98 (.93) <sup>a</sup>	3.36 (.86) <sup>b</sup>	2.84 (.87) <sup>c</sup>
Relatability	11.75	(4, 324)	< .001	.13	14.52	4.50 (1.11) <sup>a</sup>	4.11 (1.02) <sup>ab</sup>	3.51 (1.46) <sup>bc</sup>	3.23 (1.40) <sup>c</sup>	3.83 (1.03) <sup>bc</sup>
Elevation	14.95	(4, 324)	< .001	.13	19.33	5.37 (.94) <sup>a</sup>	5.58 (.89) <sup>a</sup>	5.06 (1.11) <sup>a</sup>	5.57 (1.14) <sup>a</sup>	4.32 (1.15) <sup>b</sup>
Pleasantness	9.85	(4, 324)	< .001	.11	11.17	5.69 (.83) <sup>ab</sup>	5.91 (.73) <sup>a</sup>	5.43 (0.80) <sup>b</sup>	5.82 (.88) <sup>ab</sup>	5.09 (.82) <sup>c</sup>
Change in donation	1.52	(4, 324)	.20	.02	-2.51	.07 (.28) <sup>a</sup>	.11 (.46) <sup>a</sup>	.05 (.24) <sup>a</sup>	.09 (.33) <sup>a</sup>	-.02 (.23) <sup>a</sup>
Change in volunteering	2.33	(4, 324)	.06	.03	-1.17	.47 (1.22) <sup>a</sup>	.27 (.65) <sup>a</sup>	.51 (1.85) <sup>a</sup>	.88 (1.60) <sup>a</sup>	.17 (1.30) <sup>a</sup>

2 *Note.*  $\log BF$ :  $\log(\text{Bayes Factor})$ . <sup>a-c</sup>: averages in a row without a common superscript letter differ

3 at  $p < .05$  (Bonferroni corrected).

4

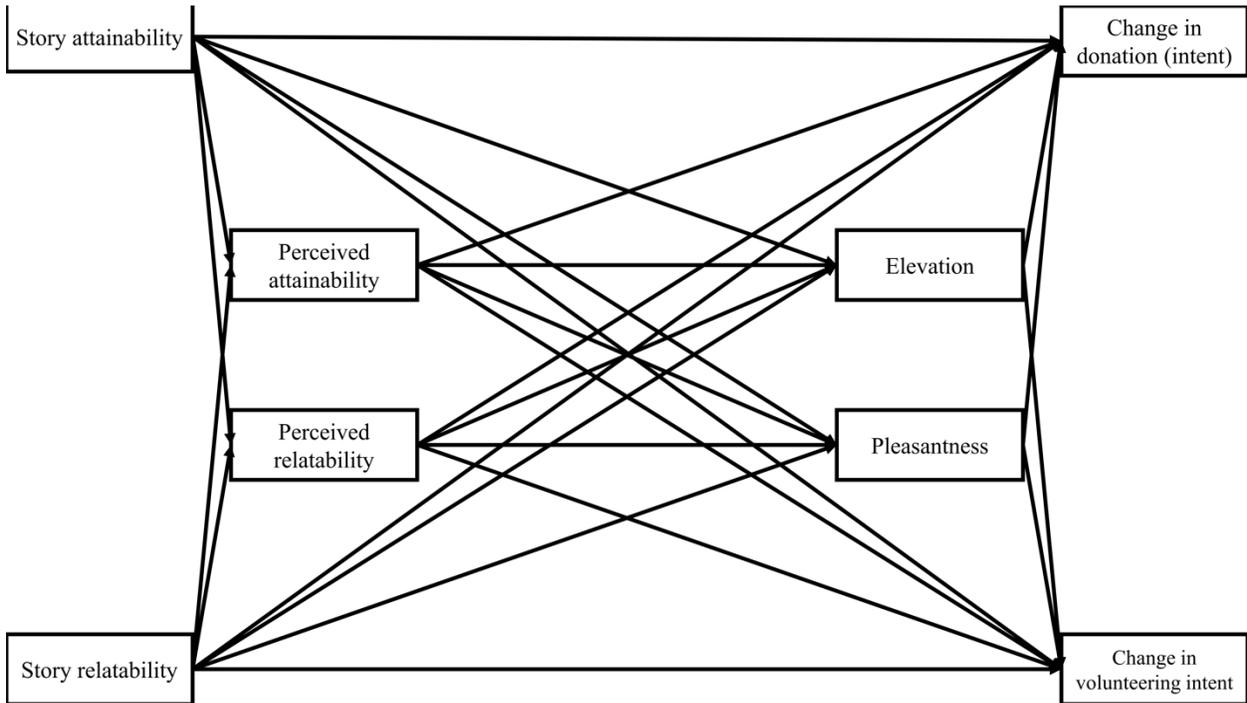
1 **Table 5** | Descriptive statistics and results from the mixed-effects analysis in Study 2C.

Variable	Mixed-effects analysis					Descriptive statistics $M$ ( $SD$ )				
	$F$	$df$	$p$	$\Omega^2$	$\log BF$	Relatable, Attainable	Relatable, Unattainable	Unrelatable, Attainable	Unrelatable, Unattainable	Non-moral
Attainability	43.62	(4, 213)	<.001	.45	54.18	4.93 (.94) <sup>a</sup>	3.85 (.93) <sup>b</sup>	5.24 (.84) <sup>a</sup>	3.87 (.93) <sup>b</sup>	3.06 (.76) <sup>c</sup>
Relatability	8.51	(4, 213)	<.001	.14	8.97	4.33 (1.21) <sup>a</sup>	4.16 (1.09) <sup>ab</sup>	3.54 (1.41) <sup>bc</sup>	3.19 (1.04) <sup>c</sup>	3.38 (.96) <sup>c</sup>
Elevation	4.74	(4, 213)	<.001	.14	3.10	5.59 (1.13) <sup>a</sup>	5.36 (1.10) <sup>a</sup>	5.24 (1.15) <sup>ab</sup>	5.45 (1.26) <sup>a</sup>	4.66 (.83) <sup>b</sup>
Pleasantness	4.63	(4, 213)	<.001	.08	2.93	5.76 (1.09) <sup>a</sup>	5.50 (1.05) <sup>ab</sup>	5.46 (1.06) <sup>ab</sup>	5.62 (1.11) <sup>a</sup>	4.89 (.85) <sup>b</sup>
Change in donation intent	2.21	(4, 213)	.07	.04	-.90	.05 (.22) <sup>a</sup>	.05 (.21) <sup>a</sup>	.06 (.23) <sup>a</sup>	-.07 (.33) <sup>a</sup>	-.01 (.25) <sup>a</sup>
Change in volunteering	1.22	(4, 213)	.30	.02	-2.44	.40 (1.96) <sup>a</sup>	.73 (1.63) <sup>a</sup>	.40 (2.05) <sup>a</sup>	1.00 (2.76) <sup>a</sup>	.09 (1.95) <sup>a</sup>

2 *Note.*  $\log BF$ :  $\log(\text{Bayes Factor})$ . <sup>a-c</sup>: averages in a row without a common superscript letter differ

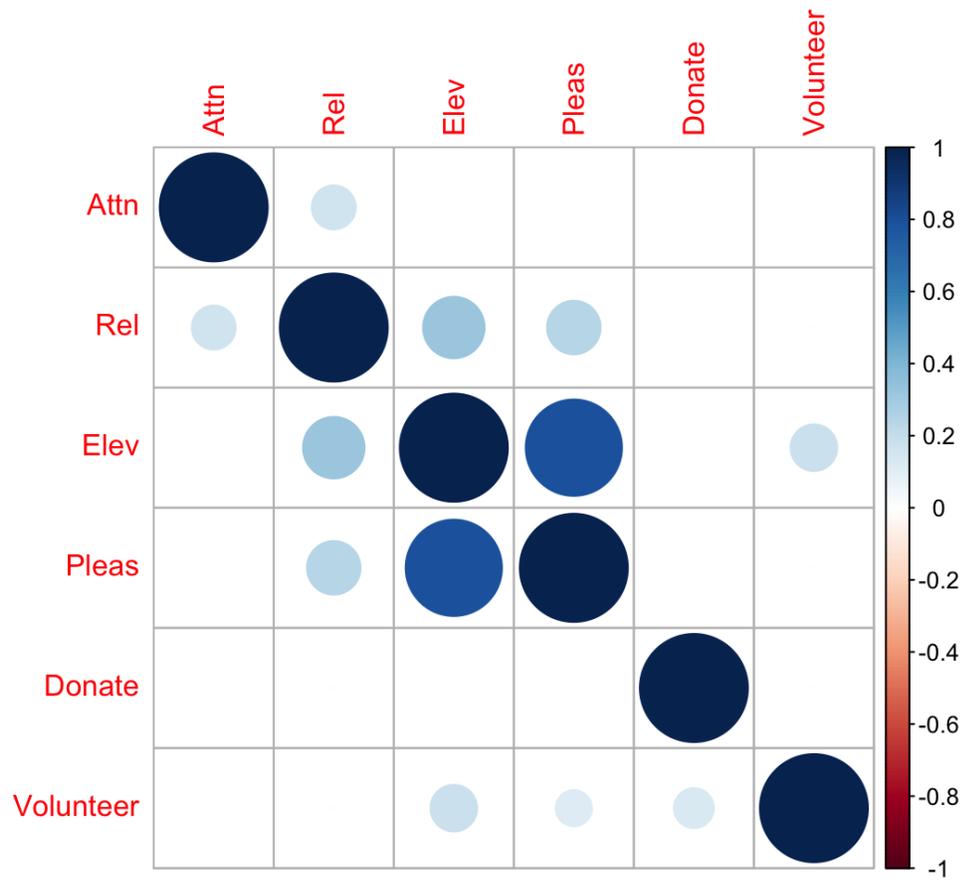
3 at  $p < .05$  (Bonferroni corrected).

1 **Figure 1**



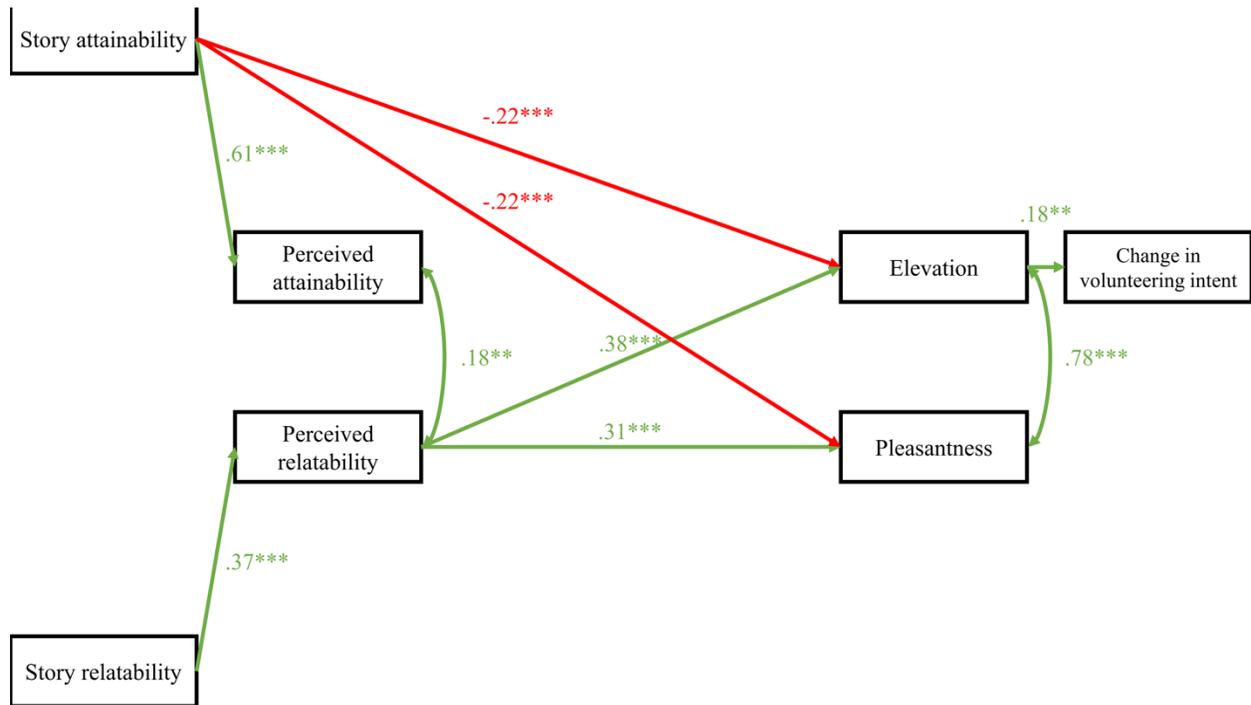
2

1 **Figure 2**

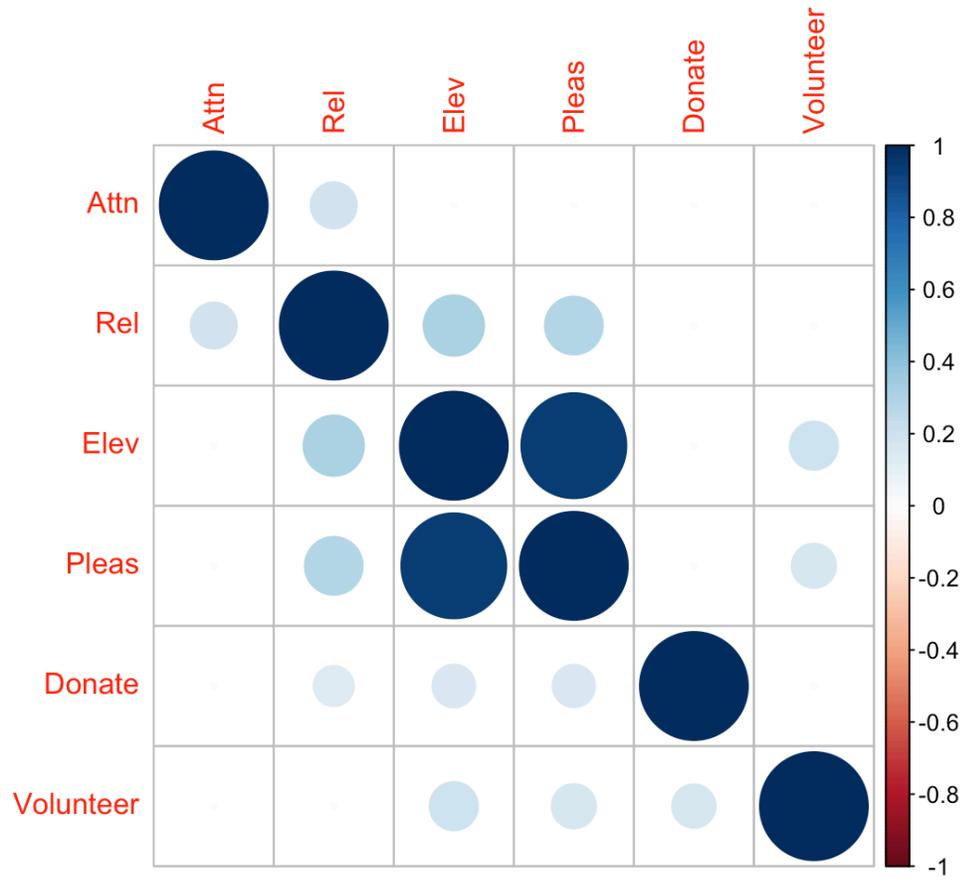


2

1 **Figure 3**



1 **Figure 4**



2

1 **Figure 5**

