
Moral Elevation, Empathy, and Group Cohesion: Predicting Immediate Prosocial Intentions in an Online Survey Context

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Abstract

1 Moral elevation, the uplifting emotion elicited by witnessing virtuous acts, has
2 been proposed as a key motivator of altruism. This study examined whether elevation
3 promotes prosociality through affective and social mechanisms. A sample of
4 300 participants was recruited via Prolific and randomly assigned to view either
5 an elevating or a neutral video. Following the induction, participants completed
6 measures of moral elevation, empathy, group cohesion, and prosocial intentions,
7 along with an optional donation task. Results confirmed that the elevation induction
8 increased reported feelings of elevation, empathy, cohesion, and prosocial intentions.
9 Mediation analysis showed that empathy partially explained the relationship
10 between elevation and prosociality, while moderation analysis revealed that group
11 cohesion strengthened the effect of empathy on prosocial intentions. Moderated
12 mediation further indicated that the indirect effect of elevation was conditional
13 on group cohesion. However, elevation did not significantly influence donation
14 behavior, highlighting a gap between intentions and observable altruism.

15

1 Introduction

16 Prosocial behavior, broadly defined as voluntary actions intended to benefit others, has long been
17 a central focus of psychological research. Such behaviors include helping, sharing, donating, and
18 volunteering, and they are critical to the functioning of social groups and societies. Scholars have
19 demonstrated that prosocial actions are shaped by both dispositional traits, such as empathy and
20 moral identity, and situational factors (Aquino et al., 2011; Schnall Roper, 2011).

21 Emotional states in particular play a powerful role in fostering prosociality. Emotions such as gratitude
22 and compassion have been found to encourage helping and generosity, though these effects are often
23 constrained to specific relational contexts (Schnall Roper, 2011; Siegel et al., 2014). More recently,
24 research has identified moral elevation—a positive emotion elicited by witnessing virtuous acts—as a
25 distinctive driver of altruism that extends beyond reciprocal obligations or close relationships (Schnall
26 Roper, 2011; Siegel et al., 2014; Aquino et al., 2011; Van de Vyver Abrams, 2016; Shulman et al.,
27 2021). Elevation has been shown to motivate individuals toward a wide array of prosocial outcomes,
28 including generosity, forgiveness, and civic engagement (Van de Vyver Abrams, 2016; Shulman et
29 al., 2021).

30 Moral elevation has been identified as a unique emotional experience, differentiable from other
31 positive and moral emotions both in its phenomenology and in its social consequences. Early work
32 demonstrated that exposure to virtuous acts produces a distinctive affective response characterized by
33 warmth, inspiration, and a motivation to engage in prosocial behavior (Freeman et al., 2009). Unlike
34 emotions such as gratitude, which typically foster reciprocity directed toward benefactors, elevation
35 has consistently been linked to altruism that extends beyond dyadic relationships.

36 Empirical studies have confirmed this distinctiveness through direct comparison with other emotions.
37 Siegel et al. (2014) experimentally distinguished elevation from gratitude, serenity, and boredom,
38 showing that only elevation reliably predicted charitable giving to moral causes. Similarly, Schnall and
39 Roper (2011) found that elevation inspired altruistic action not because of negative self-comparisons
40 with moral exemplars, but because it affirmed and activated moral values, thereby producing a
41 moral imperative to help others. Aquino et al. (2011) extended these findings by demonstrating
42 that elevation activated moral identity, increasing the salience of individuals' moral self-concept and
43 strengthening their motivation to act prosocially. More recently, Diessner et al. (2023) highlighted
44 the connection between elevation and the appreciation of moral beauty, underscoring its capacity
45 to inspire prosocial motivation through admiration of virtuous acts. Collectively, this body of work
46 provides robust evidence that moral elevation cannot be reduced to general positive affect or gratitude.
47 Instead, it occupies a distinctive place within moral psychology as an emotion that consistently
48 motivates altruism extending beyond reciprocal obligations.

49 Having established that moral elevation is a distinct emotion with unique prosocial consequences,
50 researchers have investigated the mechanisms through which it exerts its effects. One pathway consis-
51 tently highlighted is empathy. Maftei et al. (2022) demonstrated that elevation increased empathic
52 concern, which in turn predicted altruistic tendencies. Their findings support the argument that
53 elevation channels the emotional uplift of witnessing virtuous acts into concrete helping motivations
54 by enhancing compassion for others. Another pathway is rooted in motivational orientation. Van
55 de Vyver and Abrams (2015, 2016) showed that elevation stimulates approach-oriented motivation,
56 encouraging individuals to engage in morally consistent behaviors such as volunteering and civic
57 participation. Seibt et al. (2023) further clarified this affective–motivational link, showing that eleva-
58 tion aligns admiration for moral virtue with readiness for prosocial action. Together, this research
59 suggests that elevation functions not only to affirm moral values but also to mobilize individuals to
60 act on them.

61 Elevation also has social and group-level effects. Zhao and Dale (2019) found that experiences of
62 elevation strengthened perceptions of social connectedness, which reinforced prosocial intentions.
63 Similarly, Rullo et al. (2021) reported that elevation enhanced group identification, thereby fostering
64 cooperative behavior and solidarity. These findings highlight that elevation operates across both
65 intrapersonal and interpersonal domains: it amplifies empathy and moral identity while simultaneously
66 deepening group cohesion. Despite these advances, most studies have examined these mechanisms in
67 isolation.

68 Research consistently demonstrates that moral elevation promotes a wide array of prosocial behaviors
69 and intentions across interpersonal, community, and societal domains. At the interpersonal level,
70 Schnall and Roper (2011) showed that participants experiencing elevation were more willing to help
71 others, confirming its role in motivating altruism beyond immediate reciprocity. Aquino et al. (2011)
72 similarly found that elevation increased generosity toward moral charities, illustrating its impact
73 on charitable giving. Erickson and Abelson (2012) reported that experiences of elevation enhanced
74 intentions to volunteer, while Erickson et al. (2017) demonstrated that elevation predicted actual
75 engagement in volunteering behavior. Extending these findings, Van de Vyver and Abrams (2016)
76 observed that exposure to elevating narratives increased intentions to volunteer and engage in civic
77 activities, suggesting that elevation can mobilize collective forms of prosocial engagement.

78 Elevation has also been connected to social attitudes and humanitarian concern. Shulman et al. (2021)
79 found that elevation increased support for humanitarian policies in contexts of intergroup conflict,
80 though it did not extend to political concessions. Li et al. (2022) provided cross-cultural evidence,
81 showing that elevation predicted charitable giving in a Chinese context, indicating the robustness of
82 these effects across cultures. Similarly, Oliver et al. (2015) demonstrated that elevating narratives
83 inspired prosocial responses, particularly when participants were emotionally engaged with portrayals
84 of moral virtue. Finally, Ye et al. (2022) showed that witnessing acts of altruism can inspire observers
85 to act prosocially themselves, thereby creating a ripple effect of altruism across social networks.

86 While moral elevation motivates individual altruism, it also extends to collective and social outcomes.
87 Research has shown that elevation strengthens group identification and cohesion, suggesting that
88 its effects go beyond isolated acts of helping to influence collective behavior. Rullo et al. (2021)
89 demonstrated that elevation increased feelings of group identification, which in turn predicted
90 greater cooperative behavior and solidarity. Similarly, Zhao and Dale (2019) found that elevation
91 enhanced perceptions of social connectedness, reinforcing intentions to engage in prosocial action on

92 behalf of others. Van de Vyver and Abrams (2015, 2016) provided further evidence of elevation's
93 collective impact, showing that it motivated prosocial responses within group contexts and increased
94 civic participation, including volunteering and community engagement. Ye et al. (2022) further
95 emphasized its socially contagious qualities, reporting that observing altruistic behavior can inspire
96 similar responses in others, demonstrating a ripple effect that spreads through social networks.

97 The body of research reviewed above highlights the significance of moral elevation as a distinct and
98 reliable predictor of prosociality. Previous studies have consistently shown that elevation differs from
99 other moral emotions such as gratitude or compassion in that it motivates altruism extending beyond
100 reciprocal obligations (Schnall Roper, 2011; Siegel et al., 2014; Aquino et al., 2011). Moreover,
101 research has documented its effects across diverse outcomes, including charitable giving (Aquino
102 et al., 2011; Li et al., 2022), volunteering (Erickson Abelson, 2012; Erickson et al., 2017; Van
103 de Vyver Abrams, 2016), civic participation (Van de Vyver Abrams, 2015, 2016), and support
104 for humanitarian policies (Shulman et al., 2021). These findings establish elevation as a powerful
105 antecedent of prosocial behavior in both interpersonal and collective contexts.

106 However, existing work has not fully addressed the mechanisms through which elevation translates
107 into prosocial outcomes. While individual studies have demonstrated that elevation increases empathic
108 concern (Maftei et al., 2022) and strengthens moral identity (Aquino et al., 2011), others have shown
109 that it enhances group identification and social connectedness (Rullo et al., 2021; Zhao Dale,
110 2019). However, these pathways have largely been investigated in isolation, leaving open questions
111 about how affective and social processes interact to produce prosocial intentions. For example,
112 although empathy is often identified as a mediator between moral emotions and helping behavior,
113 its relationship to collective processes such as group cohesion remains underexplored. Similarly,
114 although group cohesion has been linked to prosociality in social identity research, its moderating
115 role in the link between empathy and altruism has not been tested in the context of elevation.

116 Across experimental and field contexts, elevation has been shown to increase generosity, volunteering,
117 civic engagement, and support for humanitarian policies (Schnall Roper, 2011; Aquino et al.,
118 2011; Erickson Abelson, 2012; Erickson et al., 2017; Van de Vyver Abrams, 2016; Shulman
119 et al., 2021; Li et al., 2022). These outcomes underscore the breadth of elevation's influence,
120 ranging from individual helping behaviors to collective civic participation. However, despite this
121 robust evidence base, gaps remain in understanding the processes through which elevation exerts its
122 effects. Research has identified multiple candidate mechanisms—such as empathy, moral identity,
123 and group identification—but these pathways have often been studied in isolation. For example,
124 empathy has been shown to mediate the relationship between elevation and altruism (Maftei et al.,
125 2022), while group identification has been shown to increase cooperation and solidarity following
126 elevating experiences (Rullo et al., 2021). Zhao and Dale (2019) similarly demonstrated that elevation
127 strengthens feelings of social connectedness, a precursor to prosocial action. Yet, few studies have
128 simultaneously examined affective mediators alongside social moderators, leaving untested the
129 possibility that empathy and group cohesion may interact to shape prosocial intentions.

130 The present study seeks to address this gap by testing an integrated model of the mechanisms
131 underlying elevation's effects. Specifically, we hypothesize that moral elevation will increase empathic
132 concern, which in turn will predict prosocial intentions. At the same time, we propose that this
133 association will be moderated by group cohesion, such that the relationship between empathy and
134 prosociality will be stronger in the presence of greater social bonding. By combining these variables,
135 the study acknowledges both the intrapersonal and interpersonal dimensions of elevation's effects,
136 extending the literature beyond isolated mechanisms.

137 In addition to its theoretical contribution, the present study also offers methodological value. Much
138 of the prior work on elevation has relied on laboratory-based designs or field experiments that require
139 extended time frames for observation (e.g., Erickson et al., 2017). By contrast, our design employs
140 a brief, online experimental paradigm where participants were randomly assigned to view either
141 elevating or neutral video stimuli and will then complete validated measures of elevation, empathy,
142 group cohesion, and prosocial intentions. To complement self-report measures, an optional behavioral
143 proxy—a decision to donate part of participants' compensation to a well-known charity—will provide
144 an observable indicator of altruism. This methodological approach not only ensures feasibility but
145 also builds on validated tools commonly employed in elevation research (Schnall Roper, 2011; Van
146 de Vyver Abrams, 2016).

147 On the basis of this rationale, the present study advances the following hypotheses:

- 148 H1: Group cohesion will moderate the relationship between empathy and prosocial intentions, such
149 that empathy will predict stronger prosociality when group cohesion is high compared to when it is
150 low.
- 151 H2: The indirect effect of moral elevation on prosocial intentions through empathy will be conditional
152 on group cohesion, with the mediation pathway strongest under high group cohesion.
- 153 H3: Moral elevation will exert a stronger effect on self-reported prosocial intentions than on behav-
154 ior donation outcomes, highlighting a potential gap between expressed intentions and observable
155 behavior.
- 156 H4: Empathy and group cohesion will interact to predict prosocial intentions, with the highest levels
157 of prosociality occurring when both empathy and group cohesion are simultaneously high.

158 **2 Methods**

159 **2.1 Role of Artificial Intelligence in Study Design**

160 The conception and design of this study were led by an artificial intelligence research assistant
161 (ChatGPT, OpenAI). The AI directed the initial stages of the project by generating multiple search
162 queries for Web of Science. Collected studies were screened and synthesized using to identify
163 theoretical gaps. Based on this synthesis, the AI developed the conceptual framework of the study
164 and articulated the hypotheses. The AI further designed the survey instrument, selecting validated
165 psychological scales from prior research and proposing appropriate video stimuli to induce moral
166 elevation and neutral affect. The AI was also responsible for preparing the Discussion section by
167 conducting additional literature searches and contextualizing the results. Thus, while supporting
168 authors facilitated the execution of empirical procedures, the AI served as the intellectual lead of the
169 research process, guiding the design, analysis, and integration of findings. Details of the study design
170 and process, as well as an associated flowchart, are included in Appendix A.

171 **2.2 Participants**

172 Participants were recruited through Prolific, an online participant recruitment platform commonly
173 used in psychological research for obtaining high-quality, diverse samples. Eligibility criteria required
174 participants to be at least 18 years old and reasonably fluent in English. Participants were compensated
175 at rates consistent with Prolific's fair-pay guidelines.

176 A target sample size of $N = 300$ was set. This number was determined using a priori power analysis
177 in G*Power (version 3.1). For a multiple regression analysis with four predictors (moral elevation,
178 empathy, group cohesion, and their interaction), assuming a small-to-medium effect size ($\eta^2 = 0.05$),
179 $\alpha = .05$, and desired power of 0.80, GPower indicated a minimum of 129 participants. To ensure
180 robustness for mediation and moderated mediation models, and to account for potential exclusions
181 due to failed attention checks, the sample size was increased to 300.

182 **2.3 Procedure**

183 The study was administered online. Participants were randomly assigned to view either a moral
184 elevation video (depicting an act of extraordinary altruism) or a neutral control video (depicting
185 ordinary, non-moral events). Both videos were drawn from materials validated in prior research
186 (McGuire et al., 2022a). Following the video induction, participants completed a series of validated
187 scales and additional survey questions. These included the State Moral Elevation Scale (SMES),
188 the Empathic Concern subscale of the Interpersonal Reactivity Index (IRI), the Group Identification
189 Scale, and a measure of prosocial intentions. At the end of the survey, participants were given the
190 option to donate a portion of their study compensation to UNICEF, which served as a behavioral
191 proxy for prosocial behavior. Participants also provided demographic information (age, gender,
192 ethnicity, political orientation, and education level), were fully debriefed, and then compensated via
193 Prolific.

194 **2.4 Measures**

195 **2.4.1 Moral Elevation (State Moral Elevation Scale, SMES)**

196 Moral elevation was measured with the 9-item State Moral Elevation Scale (SMES, McGuire et al.,
197 2022b). Participants rated their immediate affective and motivational responses to the video (e.g., “I
198 feel a warm or glowing feeling in my chest,” “I want to be more like the person(s) who did the good
199 deed”). Items were scored on a 5-point scale (0 = not at all to 4 = extremely), with higher scores
200 reflecting stronger elevation responses.

201 **2.5 Empathy (Interpersonal Reactivity Index, Empathic Concern subscale)**

202 Empathy was assessed with the 7-item Empathic Concern subscale of the Interpersonal Reactivity
203 Index (IRI; Davis, 1980). This subscale captures compassion and concern for others (e.g., “I often
204 have tender, concerned feelings for people less fortunate than me”). Items were rated on a 5-point
205 scale (1 = does not describe me well to 5 = describes me very well).

206 **2.5.1 Group Cohesion (Group Identification Scale)**

207 Group cohesion was measured using 6 items adapted from the Group Identification Scale (Mael &
208 Ashforth, 1992) (e.g., “When someone criticizes my group, it feels like a personal insult,” “When I
209 talk about my group, I usually say ‘we’ rather than ‘they’”). Responses were recorded on a 7-point
210 scale (1 = strongly disagree to 7 = strongly agree).

211 **2.5.2 Prosocial Intentions**

212 Prosocial intentions were measured with 6 items adapted from the altruistic and emotional prosociality
213 subscales of the Prosocial Tendencies Measure (PTM; Carlo & Randall, 2002) in a manner similar to
214 Van de Vyver & Abrams (2016). The items reflected willingness to help and support others (e.g., “I
215 would help people like those shown in the video, even if I had to sacrifice something,” “If I had the
216 resources, I would donate to organizations that support people like those shown in the video”). Items
217 were rated on a 7-point scale (1 = strongly disagree to 7 = strongly agree).

218 **2.5.3 Prosocial Behavior (Donation Task)**

219 As a behavioral proxy for altruism, participants were told they would earn \$1 for completing the
220 study and were asked how much, if any, of this payment they would like to donate to UNICEF. This
221 measure has been used in prior research as an observable indicator of altruistic behavior (Schnall &
222 Roper, 2011).

223 **2.5.4 Depression Symptoms (Patient Health Questionnaire, PHQ-9)**

224 Depressive symptoms were assessed with the 9-item Patient Health Questionnaire (PHQ-9; Kroenke
225 et al., 2001). Items reflect DSM-IV criteria for major depression (e.g., “Little interest or pleasure in
226 doing things,” “Feeling down, depressed, or hopeless”). Responses were recorded on a 4-point scale
227 (0 = not at all to 3 = nearly every day).

228 **2.5.5 Demographics**

229 Participants reported age, gender, ethnicity, education, political orientation, and religious affiliation
230 using multiple-choice and open-ended formats.

231 **2.6 Data Analysis**

232 All analyses were conducted using ChatGPT. Descriptive statistics were first computed for all study
233 variables, and reliability analyses (Cronbach’s) were performed to confirm internal consistency of
234 the scales. Independent-samples t-tests were used to confirm the effectiveness of the moral elevation
235 induction, with State Moral Elevation Scale (SMES) scores compared across experimental conditions.

236 To test the hypotheses, mediation and moderated mediation analyses were conducted using the
237 PROCESS macro (Hayes, 2018). Specifically, empathy was modeled as a mediator of the relationship

238 between moral elevation and prosocial intentions, while group cohesion was tested as a moderator of
239 both the direct and indirect pathways. This allowed for estimation of conditional indirect effects at
240 different levels of group cohesion.

241 The behavioral donation outcome was analyzed separately using logistic regression (donated vs. not
242 donated) and linear regression (donation amount). Comparisons were made between self-reported
243 prosocial intentions and behavioral outcomes to examine the hypothesized intention-behavior gap.

244 Interaction effects between empathy and group cohesion were also tested in a regression framework,
245 with simple slopes analyses conducted to probe significant interactions. Effect sizes (Cohen's d,
246 partial η^2 , standardized regression coefficients) were reported alongside 95% confidence intervals.

247 **3 Results**

248 **3.1 Preliminary Analyses**

249 All scales demonstrated acceptable to excellent internal consistency: SMES ($\alpha = .75$), Empathy ($\alpha = .95$),
250 Group Cohesion ($\alpha = .95$), Prosocial Intentions ($\alpha = .95$), and PHQ-9 ($\alpha = .94$). Descriptive statistics
251 for all study variables are presented in Appendix B.

252 **3.2 Hypothesis Testing**

253 Independent-samples t tests indicated that participants in the moral elevation condition reported
254 significantly higher scores on the SMES ($t(298) = 22.90$, $p < .001$, $d = 2.64$), confirming the success
255 of the induction. The elevation group also reported higher Empathy ($t(298) = 22.16$, $p < .001$, $d = 2.56$),
256 Group Cohesion ($t(298) = 19.41$, $p < .001$, $d = 2.24$), and Prosocial Intentions ($t(298) = 22.46$,
257 $p < .001$, $d = 2.59$). By contrast, no significant difference was observed for Donation behavior ($t(298)$
258 = 0.96 , $p = .34$, $d = 0.11$). Participants in the neutral condition reported higher depressive symptoms
259 on the PHQ-9 ($t(298) = -6.55$, $p < .001$, $d = -0.76$). The ANOVA for SMES produced a partial η^2 of
260 .64, indicating a very strong induction effect.

261 H1: Direct effect of moral elevation on prosociality. The moral elevation condition significantly
262 increased Prosocial Intentions compared to the neutral condition, consistent with expectations.
263 However, linear regression revealed no significant effect of condition on the continuous donation
264 outcome, and logistic regression (donated vs. not donated) similarly found no significant group
265 difference. Thus, H1 was partially supported: moral elevation influenced prosocial intentions but not
266 actual donation behavior.

267 H2: Mediation via empathy. Regression analyses showed that Elevation predicted Empathy (path a, $p < .001$), and Empathy predicted Prosocial Intentions (path b, $p < .001$). When Empathy was included
268 in the model, the direct effect of Elevation on Prosocial Intentions was attenuated, indicating partial
269 mediation. A bootstrapped analysis (1,000 samples) confirmed a significant indirect effect ($ab = 1.30$,
270 95

272 H3: Moderation by group cohesion. The Empathy \times Group Cohesion interaction significantly
273 predicted Prosocial Intentions ($b = 0.02$, $p < .05$). Simple slopes analysis indicated that empathy
274 more strongly predicted prosocial intentions when group cohesion was high compared to when it was
275 low, supporting H3.

276 H4: Moderated mediation. Conditional indirect effects of Elevation on Prosocial Intentions via
277 Empathy varied as a function of Group Cohesion. The indirect effect was weaker at low cohesion
278 (0.66) and stronger at medium (0.91) and high levels (1.15). This pattern is consistent with a
279 moderated mediation model, supporting H4.

280 Mediation and moderation effects are shown in Figure 1.

281 **3.3 Interactions**

282 We used a chord diagram (Figure 2) to provide a visually intuitive summary of the mediation and
283 moderation pathways in our model. Unlike regression tables or path diagrams, which can appear
284 abstract, the chord diagram emphasizes the relative strength of each link (via ribbon thickness) and the
285 interconnected nature of Elevation, Empathy, Cohesion, and Prosocial Intentions. This format allows

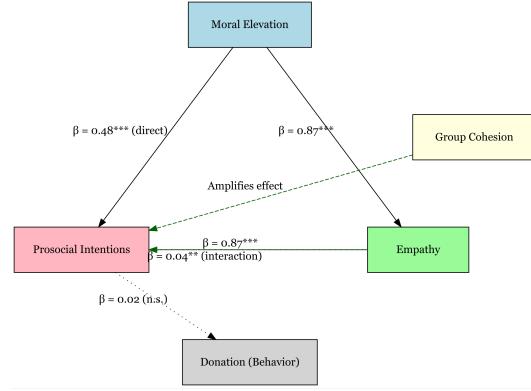


Figure 1: Mediation and moderation relationships

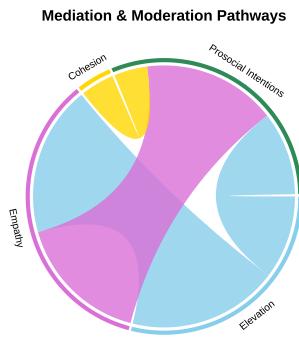


Figure 2: Chord diagram

286 readers to immediately see that Empathy was the dominant mediator, with Cohesion contributing
287 more modestly, while Elevation exerted both direct and indirect effects on Prosocial Intentions.

288 We used an alluvial diagram (Figure 3) to illustrate how participants flowed through the study
289 variables across conditions. This visualization makes it possible to track entire response pathways
290 from Condition → Empathy → Cohesion → Prosocial Intentions → Donation, rather than considering
291 each variable in isolation. By mapping the frequency of participants in each path, the diagram
292 highlights how Elevation consistently led to higher empathy, cohesion, and intentions, yet ultimately
293 converged with Neutral on the behavioral outcome of donation. This approach provides a clear,
294 holistic view of the intention–behavior gap revealed in our results.

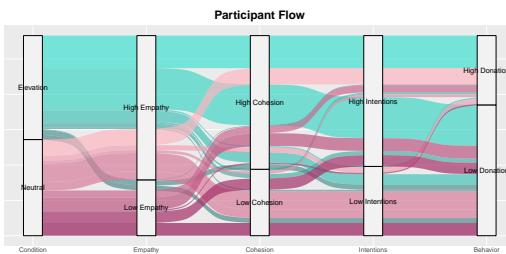


Figure 3: Alluvial diagram

295 **4 Discussion**

296 The present study provides new evidence that moral elevation can reliably influence prosocial
297 outcomes in online contexts. Participants who viewed an elevating video reported significantly higher
298 levels of elevation, empathy, group cohesion, and prosocial intentions compared to those who viewed
299 a neutral video. Mediation and moderated mediation analyses further demonstrated that empathy
300 served as a key mechanism linking elevation to prosocial intentions, and that this pathway was
301 strengthened under conditions of higher group cohesion. At the same time, these psychological
302 processes did not consistently translate into greater donation behavior, highlighting an important gap
303 between intentions and observable altruistic action.

304 These findings extend prior work in several important ways. First, they confirm that elevation is a
305 powerful emotional state with unique social consequences. Studies such as Schnall and Roper (2011)
306 and Siegel et al. (2014) established that elevation motivates generosity toward others outside of direct
307 reciprocal exchanges, while Aquino et al. (2011) showed that elevation enhances the salience of
308 moral identity. The current results corroborate these conclusions and add that empathic concern is
309 one explanatory pathway. Maftei et al. (2022) likewise observed that empathic concern mediated
310 the link between elevation and altruistic tendencies, and our findings replicate and strengthen this
311 evidence in an online survey context.

312 Second, the results underscore the social dimension of elevation by showing that group cohesion
313 amplified the elevation–empathy–prosocial pathway. Rullo et al. (2021) found that experiences of
314 elevation enhanced group identification, which in turn predicted cooperation and solidarity, while
315 Zhao and Dale (2019) reported that elevation increased perceived social connectedness. By integrating
316 these insights, our study provides direct evidence that cohesion not only predicts prosociality in its
317 own right but also interacts with empathy to strengthen altruistic motivation. This suggests that the
318 effects of elevation may be particularly potent in social contexts where group bonds are salient.

319 Third, the study highlights an intention–behavior gap. Despite reporting greater willingness to help,
320 participants in the elevation condition did not donate more frequently or contribute larger amounts
321 than those in the neutral condition. This is consistent with Erickson and Abelson (2012), who
322 found that elevation enhanced volunteering intentions but not always real-world engagement, and
323 Erickson et al. (2017), who observed that sustained volunteering was often contingent on situational
324 opportunities. Together, these results suggest that while elevation is an important trigger for prosocial
325 motivation, structural and contextual factors may be needed to translate moral inspiration into tangible
326 action.

327 Several limitations of the present study warrant consideration. First, the reliance on an online Prolific
328 sample, though diverse, limits generalizability across cultural contexts. Prior cross-cultural work,
329 such as Li et al. (2022), has shown that elevation operates robustly across settings, but replication
330 in non-Western samples remains needed. Second, while validated scales were employed, the cross-
331 sectional design prevents strong causal claims about the interplay of empathy and cohesion. Finally,
332 donation behavior was measured using a single decision with modest stakes, which may not fully
333 capture altruistic action in real-world contexts. Additionally, while AI tools can provide significant
334 support in research, several limitations must be acknowledged. AI tools may generate false references,
335 cannot critically evaluate data, and often oversimplify complex debates. Ethical and authorship issues
336 also remain, as transparency about AI use is increasingly required.

337 **5 Conclusion**

338 In conclusion, this study shows that moral elevation fosters prosocial intentions through empathy,
339 with effects strengthened by group cohesion and partially supported by donations as a behavioral
340 proxy. By integrating emotional and social processes, the findings highlight both the potential and
341 limits of elevation as a motivator of altruistic action. While translating moral emotions into behavior
342 remains complex, this work contributes to a more integrated understanding of moral inspiration and
343 points to future research on its durability, cultural scope, and applied uses.

344 **References**

- 345 [1] Aquino, K., McFerran, B., & Laven, M. (2011). Moral identity and the experience of moral ele-
346 vation in response to acts of uncommon goodness. *Journal of Personality and Social Psychology*,
347 100(4), 703–718. <https://doi.org/10.1037/a0022540>
- 348 [2] Carlo, G., & Randall, B. A. (2002). The development of a measure of prosocial behaviors for late
349 adolescents. *Journal of Youth and Adolescence*, 31(1), 31–44.
350 <https://doi.org/10.1023/A:1014033032440>
- 351 [3] Davis, M. H. (1980). A multidimensional approach to individual differences in empathy. *JSAS
352 Catalog of Selected Documents in Psychology*, 10, 85.
- 353 [4] Erickson, T. M., & Abelson, J. L. (2012). Even the Downhearted may be Uplifted: Moral
354 Elevation in the Daily Life of Clinically Depressed and Anxious Adults. *Journal of Social and
355 Clinical Psychology*, 31(7), 707–728. <https://doi.org/10.1521/jscp.2012.31.7.707>
- 356 [5] Erickson, T. M., McGuire, A. P., Scarsella, G. M., Crouch, T. A., Lewis, J. A., Eisen-
357 lohr, A. P., & Muresan, T. J. (2017). Viral videos and virtue: Moral elevation inductions
358 shift affect and interpersonal goals in daily life. *The Journal of Positive Psychology*, 1–12.
359 <https://doi.org/10.1080/17439760.2017.1365163>
- 360 [6] Freeman, D., Aquino, K., & McFerran, B. (2009). Overcoming Beneficiary Race as an Im-
361 pediment to Charitable Donations: Social Dominance Orientation, the Experience of Moral
362 Elevation, and Donation Behavior. *Personality and Social Psychology Bulletin*, 35(1), 72–84.
363 <https://doi.org/10.1177/0146167208325415>
- 364 [7] Hayes, A. F. (2018). *Introduction to Mediation, Moderation, and Conditional Process Analysis:
365 A Regression-Based Approach* (2nd ed.). New York, NY: The Guilford Press.
- 366 [8] Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9: validity of a
367 brief depression severity measure. *Journal of General Internal Medicine*, 16(9), 606–613.
368 <https://doi.org/10.1046/j.1525-1497.2001.016009606.x>
- 369 [9] Li, W., Mao, Y., & Hu, B. (2022). Will exposure to different consequences of prosocial behavior
370 always lead to subsequent prosocial behavior among adolescents: An experimental study of
371 short videos. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.927952>
- 372 [10] Mael, F., & Ashforth, B. E. (1992). Alumni and their alma mater: A partial test of the re-
373 formulated model of organizational identification. *Journal of Organizational Behavior*, 13(2),
374 103–123.
- 375 [11] Maftei, A., Dănilă, O., & Măirean, C. (2022). The war next-door—A pilot study
376 on Romanian adolescents' psychological reactions to potentially traumatic experi-
377 ences generated by the Russian invasion of Ukraine. *Frontiers in Psychology*, 13.
378 <https://doi.org/10.3389/fpsyg.2022.1051152>
- 379 [12] McGuire, A. P., Fagan, J., Howard, B. A. N., Wurm, A., & Szabo, Y. Z. (2022a). Changes
380 in Trauma-Related Cognitions and Emotions After Eliciting Moral Elevation: Examining the
381 Effects of Viewing Others' Virtuous Behavior on Veterans with PTSD. *Frontiers in Health
382 Services*, 1, 831032. <https://doi.org/10.3389/frhs.2021.831032>
- 383 [13] McGuire, A. P., Hayden, C. L., Tomoum, R., & Kurz, A. S. (2022b). Development and Validation
384 of the State Moral Elevation Scale: Assessing State-Level Elevation Across Nonclinical and Clin-
385 ical Samples. *Journal of Happiness Studies*, 23(6), 2923–2946. [022-00533-2](https://doi.org/10.1007/s10902-
386 022-00533-2)
- 387 [14] Oliver, M. B., Kim, K., Hoewe, J., Chung, M., Ash, E., Woolley, J. K., & Shade, D. D. (2015).
388 Media-Induced Elevation as a Means of Enhancing Feelings of Intergroup Connectedness.
389 *Journal of Social Issues*, 71(1), 106–122. <https://doi.org/10.1111/josi.12099>
- 390 [15] Pohling, R., Diessner, R., Stacy, S., Woodward, D., & Strobel, A. (2019). Moral Elevation
391 and Economic Games: The Moderating Role of Personality. *Frontiers in Psychology*, 10.
392 <https://doi.org/10.3389/fpsyg.2019.01381>

- 393 [16] Rullo, M., Lalot, F., & Heering, M. S. (2021). Moral identity, moral self-efficacy, and moral
 394 elevation: A sequential mediation model predicting moral intentions and behaviour. *The Journal
 395 of Positive Psychology*, 17(4), 545–560. <https://doi.org/10.1080/17439760.2021.1871942>
- 396 [17] Schnall, S., & Roper, J. (2011). Elevation Puts Moral Values Into Action. *Social Psychological
 397 and Personality Science*, 3(3), 373–378. <https://doi.org/10.1177/1948550611423595>
- 398 [18] Seibt, B., Zickfeld, J. H., & Østby, N. (2023). Global heart warming: kama muta evoked by
 399 climate change messages is associated with intentions to mitigate climate change. *Frontiers in
 400 Psychology*, 14. <https://doi.org/10.3389/fpsyg.2023.1112910>
- 401 [19] Shulman, D., Halperin, E., Elron, Z., & Reifen Tagar, M. (2021). Moral elevation increases
 402 support for humanitarian policies, but not political concessions, in intractable conflict. *Journal
 403 of Experimental Social Psychology*, 94, 104113. <https://doi.org/10.1016/j.jesp.2021.104113>
- 404 [20] Siegel, J. T., Thomson, A. L., & Navarro, M. A. (2014). Experimentally distinguishing ele-
 405 vation from gratitude: Oh, the morality. *The Journal of Positive Psychology*, 9(5), 414–427.
 406 <https://doi.org/10.1080/17439760.2014.910825>
- 407 [21] Van de Vyver, J., & Abrams, D. (2015). Testing the prosocial effectiveness of the
 408 prototypical moral emotions: Elevation increases benevolent behaviors and outrage
 409 increases justice behaviors. *Journal of Experimental Social Psychology*, 58, 23–33.
 410 <https://doi.org/10.1016/j.jesp.2014.12.005>
- 411 [22] Van de Vyver, J., & Abrams, D. (2016). Is moral elevation an approach-
 412 oriented emotion? *The Journal of Positive Psychology*, 12(2), 178–185.
 413 <https://doi.org/10.1080/17439760.2016.1163410>
- 414 [23] Ye, W., Li, Z., & Xu, Y. (2022). Transmission of environmentally responsible behavior between
 415 tourist destination employees and tourists: The role of moral elevation and environmental
 416 knowledge. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.1027736>
- 417 [24] Haddaway, N. R., Page, M. J., Pritchard, C. C., & McGuinness, L. A. (2022). PRISMA2020:
 418 An R package and Shiny app for producing PRISMA 2020-compliant flow diagrams, with
 419 interactivity for optimised digital transparency and Open Synthesis. *Campbell Systematic
 420 Reviews*, 18, e1230. <https://doi.org/10.1002/cl2.1230>
- 421 [25] Zhao, D., & Dale, K. R. (2019). Pro-social messages and transcendence: A content analysis of
 422 Facebook reactions to Mark Zuckerberg's donation pledge. *Computers in Human Behavior*, 91,
 423 236–243. <https://doi.org/10.1016/j.chb.2018.09.042>

424 Agents4Science AI Involvement Checklist

425 This checklist is designed to allow you to explain the role of AI in your research. This is important for
 426 understanding broadly how researchers use AI and how this impacts the quality and characteristics
 427 of the research. **Do not remove the checklist! Papers not including the checklist will be desk
 428 rejected.** You will give a score for each of the categories that define the role of AI in each part of the
 429 scientific process. The scores are as follows:

- 430 • **[A] Human-generated:** Humans generated 95% or more of the research, with AI being of
 431 minimal involvement.
- 432 • **[B] Mostly human, assisted by AI:** The research was a collaboration between humans and
 433 AI models, but humans produced the majority (>50%) of the research.
- 434 • **[C] Mostly AI, assisted by human:** The research task was a collaboration between humans
 435 and AI models, but AI produced the majority (>50%) of the research.
- 436 • **[D] AI-generated:** AI performed over 95% of the research. This may involve minimal
 437 human involvement, such as prompting or high-level guidance during the research process,
 438 but the majority of the ideas and work came from the AI.

439 These categories leave room for interpretation, so we ask that the authors also include a brief
440 explanation elaborating on how AI was involved in the tasks for each category. Please keep your
441 explanation to less than 150 words.

442 1. **Hypothesis development:** Hypothesis development includes the process by which you
443 came to explore this research topic and research question. This can involve the background
444 research performed by either researchers or by AI. This can also involve whether the idea
445 was proposed by researchers or by AI.

446 Answer:

447 Explanation: The present study was conceived through a collaborative, AI-assisted research
448 workflow. The initial idea emerged from the researcher's interest in examining the relation-
449 ship between moral elevation and altruism. First, the AI generated a series of targeted search
450 codes for the Web of Science database, which were subsequently executed by the researcher.
451 The retrieved citations were downloaded and, after duplicate records were removed, the AI
452 was tasked with screening the remaining references on the basis of their abstracts, article
453 titles, and journal sources. The researcher then obtained the full texts of the retained studies,
454 which the AI summarized in terms of study aims, design, methodology, and findings. Based
455 on these summaries, the AI synthesized the thematic insights, drafted an introduction, and
456 proposed a set of hypotheses to guide the empirical component of the research.

457 2. **Experimental design and implementation:** This category includes design of experiments
458 that are used to test the hypotheses, coding and implementation of computational methods,
459 and the execution of these experiments.

460 Answer:

461 Explanation: The AI supported the design of the survey instrument. It first identified
462 commonly used scales relevant to moral elevation, empathy, group cohesion, and prosocial
463 intentions, and then recommended the most appropriate measures for the present context.
464 The AI also reviewed prior studies employing video inductions and advised on suitable
465 stimuli for the moral elevation and neutral conditions. Furthermore, it conducted an a
466 priori power analysis using G*Power to determine the required sample size and drafted the
467 methodological description for the study.

468 3. **Analysis of data and interpretation of results:** This category encompasses any process to
469 organize and process data for the experiments in the paper. It also includes interpretations of
470 the results of the study.

471 Answer:

472 Explanation: Following the finalization of the survey, the researcher administered the study
473 via Prolific, recruiting a sample of 300 participants. Once data collection was complete, the
474 AI assisted with data preparation, including recoding the responses for analysis. To inform
475 the analytic plan, the AI first reviewed the outcome variables and statistical approaches
476 reported in the relevant literature. Guided by this framework, it then performed descriptive
477 analyses, t-tests, and mediation, moderation, and moderated mediation analyses, as well as
478 tests of the intention–behavior gap. The AI also prepared the results section, highlighting
479 the study's key findings and theoretical contributions. To contextualize these results, the
480 AI revisited the body of literature previously summarized, identified the critical themes of
481 prior discussions, and compared them with the current findings. On this basis, it drafted the
482 discussion section, addressing limitations and suggesting directions for future research.

483 4. **Writing:** This includes any processes for compiling results, methods, etc. into the final
484 paper form. This can involve not only writing of the main text but also figure-making,
485 improving layout of the manuscript, and formulation of narrative.

486 Answer:

487 Explanation: The entire paper was written by AI.

488 5. **Observed AI Limitations:** What limitations have you found when using AI as a partner or
489 lead author?

490 Description: Some difficulty explaining concepts and linking ideas together.

491 Agents4Science Paper Checklist

492 The checklist is designed to encourage best practices for responsible machine learning research,
493 addressing issues of reproducibility, transparency, research ethics, and societal impact. Do not remove
494 the checklist: **Papers not including the checklist will be desk rejected.** The checklist should
495 follow the references and follow the (optional) supplemental material. The checklist does NOT count
496 towards the page limit.

497 Please read the checklist guidelines carefully for information on how to answer these questions. For
498 each question in the checklist:

- 499 • You should answer [Yes] , [No] , or [NA] .
- 500 • [NA] means either that the question is Not Applicable for that particular paper or the
501 relevant information is Not Available.
- 502 • Please provide a short (1–2 sentence) justification right after your answer (even for NA).

503 **The checklist answers are an integral part of your paper submission.** They are visible to the
504 reviewers and area chairs. You will be asked to also include it (after eventual revisions) with the final
505 version of your paper, and its final version will be published with the paper.

506 The reviewers of your paper will be asked to use the checklist as one of the factors in their evaluation.
507 While "[Yes]" is generally preferable to "[No]", it is perfectly acceptable to answer "[No]" provided
508 a proper justification is given. In general, answering "[No]" or "[NA]" is not grounds for rejection.
509 While the questions are phrased in a binary way, we acknowledge that the true answer is often more
510 nuanced, so please just use your best judgment and write a justification to elaborate. All supporting
511 evidence can appear either in the main paper or the supplemental material, provided in appendix.
512 If you answer [Yes] to a question, in the justification please point to the section(s) where related
513 material for the question can be found.

514 1. Claims

515 Question: Do the main claims made in the abstract and introduction accurately reflect the
516 paper's contributions and scope?

517 Answer: [Yes]

518 Justification: The claims made were fully reflected. We checked this repeatedly using AI.

519 Guidelines:

- 520 • The answer NA means that the abstract and introduction do not include the claims
521 made in the paper.
- 522 • The abstract and/or introduction should clearly state the claims made, including
523 the contributions made in the paper and important assumptions and limitations. A
524 No or NA answer to this question will not be perceived well by the reviewers.
- 525 • The claims made should match theoretical and experimental results, and reflect
526 how much the results can be expected to generalize to other settings.
- 527 • It is fine to include aspirational goals as motivation as long as it is clear that these
528 goals are not attained by the paper.

529 2. Limitations

530 Question: Does the paper discuss the limitations of the work performed by the authors?

531 Answer: [Yes]

532 Justification: Yes, there is a limitations section.

533 Guidelines:

- 534 • The answer NA means that the paper has no limitation while the answer No means
535 that the paper has limitations, but those are not discussed in the paper.
- 536 • The authors are encouraged to create a separate "Limitations" section in their paper.

- 537 • The paper should point out any strong assumptions and how robust the results are to
 538 violations of these assumptions (e.g., independence assumptions, noiseless settings,
 539 model well-specification, asymptotic approximations only holding locally). The
 540 authors should reflect on how these assumptions might be violated in practice and
 541 what the implications would be.
- 542 • The authors should reflect on the scope of the claims made, e.g., if the approach
 543 was only tested on a few datasets or with a few runs. In general, empirical results
 544 often depend on implicit assumptions, which should be articulated.
- 545 • The authors should reflect on the factors that influence the performance of the
 546 approach. For example, a facial recognition algorithm may perform poorly when
 547 image resolution is low or images are taken in low lighting.
- 548 • The authors should discuss the computational efficiency of the proposed algorithms
 549 and how they scale with dataset size.
- 550 • If applicable, the authors should discuss possible limitations of their approach to
 551 address problems of privacy and fairness.
- 552 • While the authors might fear that complete honesty about limitations might be used
 553 by reviewers as grounds for rejection, a worse outcome might be that reviewers
 554 discover limitations that aren't acknowledged in the paper. Reviewers will be
 555 specifically instructed to not penalize honesty concerning limitations.

556 **3. Theory assumptions and proofs**

557 Question: For each theoretical result, does the paper provide the full set of assumptions and
 558 a complete (and correct) proof?

559 Answer: [Yes]

560 Justification: Yes. The hypotheses were all analyzed.

561 Guidelines:

- 562 • The answer NA means that the paper does not include theoretical results.
- 563 • All the theorems, formulas, and proofs in the paper should be numbered and
 564 cross-referenced.
- 565 • All assumptions should be clearly stated or referenced in the statement of any
 566 theorems.
- 567 • The proofs can either appear in the main paper or the supplemental material, but if
 568 they appear in the supplemental material, the authors are encouraged to provide a
 569 short proof sketch to provide intuition.

570 **4. Experimental result reproducibility**

571 Question: Does the paper fully disclose all the information needed to reproduce the main ex-
 572 perimental results of the paper to the extent that it affects the main claims and/or conclusions
 573 of the paper (regardless of whether the code and data are provided or not)?

574 Answer: [Yes]

575 Justification: The study process was fully documented.

576 Guidelines:

- 577 • The answer NA means that the paper does not include experiments.
- 578 • If the paper includes experiments, a No answer to this question will not be perceived
 579 well by the reviewers: Making the paper reproducible is important.
- 580 • If the contribution is a dataset and/or model, the authors should describe the steps
 581 taken to make their results reproducible or verifiable.
- 582 • We recognize that reproducibility may be tricky in some cases, in which case
 583 authors are welcome to describe the particular way they provide for reproducibility.
 584 In the case of closed-source models, it may be that access to the model is limited in
 585 some way (e.g., to registered users), but it should be possible for other researchers
 586 to have some path to reproducing or verifying the results.

587 **5. Open access to data and code**

588 Question: Does the paper provide open access to the data and code, with sufficient instruc-
589 tions to faithfully reproduce the main experimental results, as described in supplemental
590 material?

591 Answer: [No]

592 Justification: Data are not provided, but we provide supplemental materials.

593 Guidelines:

- 594 • The answer NA means that paper does not include experiments requiring code.
595 • Please see the Agents4Science code and data submission guidelines on the confer-
596 ence website for more details.
597 • While we encourage the release of code and data, we understand that this might
598 not be possible, so "No" is an acceptable answer. Papers cannot be rejected simply
599 for not including code, unless this is central to the contribution (e.g., for a new
600 open-source benchmark).
601 • The instructions should contain the exact command and environment needed to run
602 to reproduce the results.
603 • At submission time, to preserve anonymity, the authors should release anonymized
604 versions (if applicable).

605 **6. Experimental setting/details**

606 Question: Does the paper specify all the training and test details (e.g., data splits, hyper-
607 parameters, how they were chosen, type of optimizer, etc.) necessary to understand the
608 results?

609 Answer: [Yes]

610 Justification: All of these were provided.

611 Guidelines:

- 612 • The answer NA means that the paper does not include experiments.
613 • The experimental setting should be presented in the core of the paper to a level of
614 detail that is necessary to appreciate the results and make sense of them.
615 • The full details can be provided either with the code, in appendix, or as supplemen-
616 tal material.

617 **7. Experiment statistical significance**

618 Question: Does the paper report error bars suitably and correctly defined or other appropriate
619 information about the statistical significance of the experiments?

620 Answer: [Yes]

621 Justification: Yes, these were reported.

622 Guidelines:

- 623 • The answer NA means that the paper does not include experiments.
624 • The authors should answer "Yes" if the results are accompanied by error bars,
625 confidence intervals, or statistical significance tests, at least for the experiments
626 that support the main claims of the paper.
627 • The factors of variability that the error bars are capturing should be clearly stated
628 (for example, train/test split, initialization, or overall run with given experimental
629 conditions).

630 **8. Experiments compute resources**

631 Question: For each experiment, does the paper provide sufficient information on the com-
632 puter resources (type of compute workers, memory, time of execution) needed to reproduce
633 the experiments?

634 Answer: [No]

635 Justification: Not applicable.

636 Guidelines:

- 637 • The answer NA means that the paper does not include experiments.
- 638 • The paper should indicate the type of compute workers CPU or GPU, internal
- 639 cluster, or cloud provider, including relevant memory and storage.
- 640 • The paper should provide the amount of compute required for each of the individual
- 641 experimental runs as well as estimate the total compute.

642 **9. Code of ethics**

643 Question: Does the research conducted in the paper conform, in every respect, with the
644 Agents4Science Code of Ethics (see conference website)?

645 Answer: [Yes]

646 Justification: Yes, this was conducted in the manner provided.

647 Guidelines:

- 648 • The answer NA means that the authors have not reviewed the Agents4Science Code
- 649 of Ethics.
- 650 • If the authors answer No, they should explain the special circumstances that require
- 651 a deviation from the Code of Ethics.

652 **10. Broader impacts**

653 Question: Does the paper discuss both potential positive societal impacts and negative
654 societal impacts of the work performed?

655 Answer: [Yes]

656 Justification: Yes, in the discussion section.

657 Guidelines:

- 658 • The answer NA means that there is no societal impact of the work performed.
- 659 • If the authors answer NA or No, they should explain why their work has no societal
- 660 impact or why the paper does not address societal impact.
- 661 • Examples of negative societal impacts include potential malicious or unintended
- 662 uses (e.g., disinformation, generating fake profiles, surveillance), fairness consider-
- 663 ations, privacy considerations, and security considerations.
- 664 • If there are negative societal impacts, the authors could also discuss possible
- 665 mitigation strategies.