

From Self-Interest to Collective Good: How Moral Framing Affects the Justification of Free-Riding Behavior

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Supplementary Materials: Code, Data, Materials [see [Index of Supplementary Materials](#)]



Abstract

Free riding behaviors, such as tax evasion and exploiting public resources, erode societal trust and cooperation. Using a representative survey conducted in Spain ($N = 2,000$, Catalonia) with an embedded experiment that randomly exposed participants to different moral framings, this study examines how such framings shape attitudes towards free riding, including tax evasion, claiming undeserved benefits or stealing a ride. Drawing on Moral Foundations Theory, we test three framings – social order, pro-community altruism and personal autonomy – based on alignment with Authority, Loyalty, and Liberty moral intuitions, respectively. Results indicate that framing cooperation as a matter of social order significantly reduces justification of free riding, while appeals to pro-community altruism have a weaker but still negative effect. Contrary to expectations, the personal autonomy framing does not increase tolerance for free riding, suggesting limited persuasive power in this context. Mediation analysis indicates that collective orientation functions as a central pathway linking moral framing and attitudes toward free riding. Moderation analysis reveals that political ideology and, to a lesser extent, institutional trust, condition the effects on collective orientation, with right-leaning and low-trust individuals demonstrating greater differences under social order framing as compared to control condition. These findings underscore the role of moral narratives in shaping attitudes toward free riding, with implications for public messaging and policy interventions.



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Keywords

free riding, social dilemmas, morality, social norms, survey experiment, moral framing, mediation analysis

In many contemporary societies, most individuals contribute to essential public services through taxation or equivalent collective arrangements, yet a significant minority free rides – evading obligations and shifting the burden onto compliant contributors. This behavior exemplifies a classic collective-action dilemma, where individual incentives to defect conflict with the broader societal good. Addressing such behaviors is not only a matter of efficiency but also of social justice, as persistent free riding shifts burdens unfairly and weakens the moral basis of collective solidarity. While much research has focused on institutional solutions – such as stricter regulations or penalties, studies have also highlighted the impact of moral framing on decision-making (Brugman, 2024; Feinberg & Willer, 2019; Kodapanakkal et al., 2022).

This study employs an experimental approach to examine how different moral narratives – social order, pro-community altruism, and personal autonomy – influence justifications for free riding. These narratives are designed to activate distinct moral intuitions (Graham et al., 2013), shaping individuals' willingness to endorse or reject opportunistic behaviors. Beyond the well-established binding domains of Loyalty and Authority, we also test a Liberty-based framing to explore how appeals to autonomy fit within the broader moral foundations framework and whether they elicit distinct patterns of persuasion.

We further propose that these effects operate through variation in collective orientation – the extent to which individuals internalize moral responsibility toward the group and prioritize the group's welfare over personal benefit (Cialdini & Goldstein, 2004). Focusing on this attitudinal mechanism allows us to explain not only whether moral framings work but also how they translate into attitudes towards free riding. Additionally, we examine how institutional trust and political ideology moderate responses to moral framing. Integrating these moderators with the mediating mechanism within a single large-scale survey experiment enables a more comprehensive account of when and for whom moral language reinforces opposition to free riding.

Taken together, this study offers both theoretical and empirical contributions. It clarifies how moral framings shape moral judgment through internalized collective orientation and how these effects vary across levels of trust and ideology. Applying Moral Foundations Theory (MFT) to a public-goods dilemma extends moral-framing research beyond familiar issues such as environmental and health behavior (Feinberg & Willer, 2013; Wolsko et al., 2016) to the problem of free riding. By contrasting binding and liberty-based narratives within a socially realistic design, the study delineates the boundaries of moral framing's influence and provides insights into how moral discourse can foster or impede disapproval of free riding in everyday civic life.

Moral Foundations of Free Riding Disapproval

Free riding occurs when people benefit from a resource or collective effort without contributing to its upkeep, thereby undermining cooperation and leading to suboptimal group outcomes (Olson, 1965). It is most studied within traditional rational-choice approaches which emphasize strategic deterrents such as punishment and reputational sanctions as key mechanisms for curbing opportunism (Fehr & Gächter, 2000). However, research in moral psychology suggests that we should consider not only external incentives but also deeply rooted moral intuitions that determine whether individuals perceive opportunism as a minor infraction or a serious violation.

Moral Foundations Theory (MFT, Graham et al., 2013) proposes that moral judgments are guided by distinct foundational domains some of which may be especially relevant in case of shaping attitudes towards free riding. For one, Fairness/Cheating emphasizes proportionality and the expectation that all individuals contribute equally. From this standpoint, free riding represents a clear violation of reciprocity norms. When individuals fail to reciprocate, they disrupt the implicit social contract of mutual exchange, which almost universally leads to moral disapproval (Vauclair & Fischer, 2011).

However, this default disapproval can be further strengthened or weakened by making other foundations salient through moral suasion. Loyalty/Betrayal highlights the importance of group solidarity, reinforcing moral expectations that ingroup members contribute to shared goals. Individuals who strongly identify with a social group may therefore perceive free riding not only as a fairness violation but also as a betrayal of collective duty. Similarly, Authority/Subversion contributes to moral opposition to free riding by stressing the importance of rule maintenance, institutional legitimacy, and social hierarchy. Rule following is viewed as a moral obligation grounded in respect for legitimate authority and tradition.

Yet not all moral intuitions inherently oppose free-riding and self-serving behavior (Fiske & Rai, 2014). For instance, Liberty/Oppression, introduced in subsequent research (Iyer et al., 2012), captures concerns about coercion, personal freedom, and resistance to institutional constraint. Prioritizing autonomy may lead to a view of free riding as a rational assertion of independence, not a moral failure. Although MFT also includes the Care/Harm and Sanctity/Degradation foundations, these are less directly related to free riding. They focus instead on concrete harm to specific individuals, or on issues of purity and contamination, respectively.

Collective Orientation as a Mediator

To explain how salience of these distinct moral foundations influence attitudes toward free riding, we propose collective orientation – a sense of moral responsibility toward the group welfare – as a key psychological mechanism. This construct builds on research in social psychology emphasizing internal commitments to cooperation (Bicchieri, 2006;

Tyler, 2006; Van Lange et al., 2013) and reflects the degree to which individuals prioritize group welfare over personal advantage.

The logic for this mediating pathway is clarified by the traditional MFT classification of foundations. MFT divides moral domain into two categories: binding foundations, which emphasize social cohesion and group harmony, and individualizing foundations, which prioritize individual well-being and personal rights (Haidt, 2012). Loyalty/Betrayal and Authority/Subversion belong to the binding type. Liberty/Oppression, in turn, while not officially a part of individualizing foundations, is seen as being in tension with the Authority/Subversion foundation and placing individual and their freedom first (Haidt, 2012; Iyer et al., 2012).

This distinction allows us to suggest how salience of these foundations should affect attitudes towards free riding through collective orientation. The Authority/Subversion foundation should heighten collective orientation by emphasizing duty to uphold social stability. The Loyalty/Betrayal foundation should similarly increase collective orientation by stressing solidarity and shared goals. In contrast, Liberty/Oppression foundation may lessen collective orientation by legitimizing self-interest and downplaying obligations to others.

In sum, we posit that collective orientation is the mediating pathway through which moral framings influence opposition to free riding. These propositions are consistent with research showing that stronger internalized group obligations increase the likelihood of condemning norm violations (Bicchieri, 2006; Cialdini & Goldstein, 2004).

Moderating Roles of Trust and Ideology

Institutional trust and political ideology both shape how strongly moral narratives that emphasize particular foundations influence attitudes toward free riding. Institutional trust reflects confidence in the fairness, efficiency, and legitimacy of public institutions (Newton, 2001; Rothstein & Uslaner, 2005). Thus, individuals with high trust in institutions tend to support the norms upheld by these institutions, which implies that additional moral cues may have only marginal effects due to ceiling constraints. In contrast, low trust individuals, who are skeptical of institutional motives, may be more responsive to moral persuasion when the content aligns with their concerns, such as in the case of personal autonomy framing emphasizing resistance from oppression. In turn, binding appeals can substitute for missing institutional trust by appealing to group solidarity and social stability.

Political ideology further shapes responses to moral cues (Hibbing & Theiss-Morse, 2001; Jost et al., 2003). Left-leaning individuals typically endorse equality and redistribution, predisposing them toward self-sacrifice for collective benefit. Because their baseline opposition to self-serving behavior is already high, the influence of moral cues is likely to be limited and primarily reinforcing (Carmines & D'Amico, 2015). Right-leaning individuals, while generally opposing opportunism that undermines reciprocity and fairness

(Weeden & Kurzban, 2014), may have more ambivalent reactions. On the one hand, they tend to give greater weight to authority and loyalty intuitions (Haidt & Graham, 2007), which makes them particularly receptive to messages emphasizing rule maintenance, deterrence, and group commitment. At the same time, liberty concerns are also more salient on the right (Iyer et al., 2012), meaning that autonomy-based appeals can resonate with this public when institutional control is viewed as excessive.

Taken together, levels of institutional trust and ideological concerns about government overreach condition how moral narratives are interpreted. As a result, the effects of moral suasion aimed at making specific foundation salient are unlikely to be uniform; instead, depend on the predispositions individuals bring to the interpretive task.

Method

Study Design and Analytical Framework

This study employs a between-participants experimental design embedded within a broader survey conducted by the *Centre d'Estudis d'Opinió* (Center for Public Opinion Studies), the official polling institute of the Catalan Government in Spain. The survey, designed for methodological research, included various experimental components, with the experiment analyzed here as the first in the sequence. It uses a moral framing approach which investigates how presenting information through the lens of moral values influences people's attitudes, judgments, and behaviors (Brugman, 2024; Feinberg & Willer, 2019; Kodapanakkal et al., 2022).

The total sample consisted of 2,023 internet users aged 16 and older residing in Catalonia, recruited from the Netquest's internet access panel and stratified by sex, age, and education level. Data collection was conducted via self-administered online interviews, ensuring consistency in the delivery of experimental stimuli¹. The survey experiment involved three treatment groups and one control group, with each of the four subsamples comprising approximately 500 individuals. Participants were exposed to one of three moral framing treatments: two rooted in binding moral foundations – social order and pro-community altruism – and one based on Liberty/Oppression – personal autonomy. Below, we provide a detailed description of these treatment conditions and their theoretical underpinnings.

1) Comprehensive details about the survey, including access to the dataset can be found at: <https://osf.io/7jez8/> and also in the Supplementary Information link: <https://osf.io/t36rf/files/tgnx8>

Moral Framing Treatments

To examine how different moral foundations shape justifications for free riding, we introduced three experimental conditions reflecting binding or autonomy-based narratives, plus a control group. Each vignette was constructed to evoke a distinct moral intuition without explicitly naming its moral content, thereby minimizing demand effects.

Social Order Treatment (Authority/Subversion) emphasizes deference to rules that uphold social stability. Participants read:

“When people follow social norms and rules, great things can be achieved. For example, on the roads, millions of people drive safely and effectively because speed limits are mostly respected, traffic signals are observed, and safe distances are maintained.”

Pro-Community Altruism Treatment (Loyalty/Betrayal) highlights the importance of group solidarity and contribution to shared goals. Participants read:

“When people set aside personal interests and unite in a collective project, great things can be achieved. For example, a large part of the success of the 1992 Barcelona Olympics was due to the selfless participation of thousands of volunteers.”

Personal Autonomy Treatment (Liberty/Oppression) focuses on individual freedom, personal success, and resistance to overregulation. Participants read:

“When an individual sets aside some of the limitations imposed by society, great things can be achieved. For example, some of the world’s most successful entrepreneurs have achieved success by finding ways for society to not overly dictate how they manage their time and resources.”

Control group Participants read no vignette and answered the questions.

The framing vignettes were theory-driven and designed by the authors to reflect key moral intuitions associated with the Authority, Loyalty and Liberty foundations. Their design drew on prior applications of Moral Foundations Theory (e.g., [Graham et al., 2013](#); [Haidt & Graham, 2007](#)) and mirrored naturalistic language used in public narratives. In applied settings, such framings can evoke culturally specific associations (e.g., national pride or class-based imagery) alongside the targeted moral intuitions. Our intention was to capture these primary moral cues while acknowledging that public moral language is inherently polysemic, and that real-world discourse often intertwines multiple symbolic meanings.

It is important to note that while the vignettes were not adapted from pre-validated instruments and did not include direct manipulation checks, they were designed to activate moral intuitions related to the tension between personal and group welfare.

Measures

To evaluate the effects of moral framing, the study focused on two key attitudinal variables: collective orientation and justification of free riding behaviors.

Collective orientation was measured on a bipolar 0-10 scale, where 0 represents the view that “the influence of the collective should be limited in favor of individual freedom” and 10 signifies that “individual benefit should be limited in favor of the collective”.

The *justification of free riding* was assessed using a five-item index ($\alpha = 0.79$) adapted from the Morally Debatable Behaviors Scale (MDBS), widely used in the World Values Survey (WVS) and European Values Study (EVS). Respondents rated the justifiability of five behaviors on a 0-10 scale, (0 = never justifiable and 10 = always justifiable). These behaviors included:

- Claiming state benefits without entitlement.
- Evading public transport fares without paying.
- Cheating on taxes whenever possible.
- Using personal contacts to bypass a healthcare waiting list.
- Avoiding VAT payment on invoices.

The exact wording of all survey questions employed can be found in the online [Supplementary Information \(hereafter SI\)](#), Section B.

Institutional trust was measured with a question “To what extent do you personally trust the Parliament of Catalonia?” on 0-10 scales where 0 signifies minimal trust and 10 maximum trust.

Political ideology was assessed with a question “In politics, people sometimes talk of 'left' and 'right'. Using a scale from 0 to 10, where 0 means the left and 10 means the right, where would you place yourself?”.

Hypotheses

Building on moral persuasion research, we propose that distinct moral framings will exert varying influences on both collective orientation and justification of free riding:

H1: Social Order Framing (Authority/Subversion).

Emphasizing social order will increase collective orientation and decrease free-riding justification relative to the control group.

H2: Pro-Community Altruism Framing (Loyalty/Betrayal).

Emphasizing group solidarity and shared goals will similarly boost collective orientation and reduce free-riding justification compared to control.

H3: Personal Autonomy Framing (Liberty/Oppression).

Emphasizing individual freedom and resistance to overregulation is expected to lower collective orientation and heighten free-riding justification, contrasted with control.

H4: Mediation Hypothesis.

Collective orientation mediates the impact of moral framing on free-riding attitudes. Binding narratives (social order, pro-community altruism framings) should strengthen collective orientation and thus discourage free riding, whereas the personal autonomy framing should weaken it, thus raising justification of free riding.

H5: Moderation Hypotheses.

H5a (Institutional Trust). Individuals with low institutional trust are expected to exhibit larger differences between treatment and control conditions than individuals with high institutional trust, whose baseline collective orientation is expected to be strong by default.

H5b (Political Ideology). Right-leaning respondents are expected to exhibit larger differences between treatment and control conditions than left-leaning respondents, whose baseline collective orientation is expected to be high by default.

H6: Moderated Mediation Hypothesis.

If institutional trust and political ideology condition responses to framings (H5), and collective orientation mediates the association between moral narratives and justification of free riding (H4), it follows that the indirect pathway through collective orientation should differ across levels of institutional trust and political ideology.

Analytical Strategy

To test our hypotheses about the effects of moral framing on free riding, we employed a multi-step approach: confirmatory factor analysis (CFA), mediation, moderation, and moderated mediation. First, CFA was used to ascertain that the justification of free riding scale represents a coherent construct.

Next, we used OLS regression models to estimate experimental main effects and ascertain how each framing (social order, pro-community altruism, personal autonomy) shapes free-riding attitudes relative to control. Although mediation and moderation are central to our inquiry, the direct framing effects remain important for understanding baseline differences.

To determine whether collective orientation mediates the link between moral framing and free-riding justification, we specified structural equations models and used [Preacher and Hayes \(2008\)](#) bootstrapped confidence intervals to assess indirect effects. This al-

lowed us to gauge whether shifts in the sense of moral responsibility toward the group welfare, prompted by each framing, explain changes in free-riding attitudes.

We then examine institutional trust and ideology as moderators by estimating interaction terms in OLS regression models. Finally, we conduct first-stage moderated mediation analysis (Hayes, 2015) to assess whether trust and ideology condition both the direct and indirect effects of collective orientation on free-riding justification.

Results and Data Analysis

A preliminary step before the analysis is to confirm that the free-riding justification scale, our main outcome variable, measures a coherent underlying construct. We conducted a confirmatory factor analysis (CFA) with one latent variable and five observed variables. The results, presented in Figure A1 (SI), indicate a good model fit, with SRMR below the .09 threshold and a sufficiently high CD value (0.82)². Due to robust standard errors, other fit indices are not computed. Factor loadings exceed .5, confirming that all items strongly represent the latent construct.

We constructed an index variable from the justification of free riding battery by computing latent factor scores (Figure A2, SI). To simplify interpretation and maintain consistency with the original scale, we use an additive index divided by five, thereby preserving the 0–10 range when examining the main effects. All analyses are replicated using the latent factor score, with detailed results in the SI file. In the mediation and moderated-mediation analyses, the latent factor is explicitly modeled to link measurement and structural components within an integrated structural-equation-model framework.

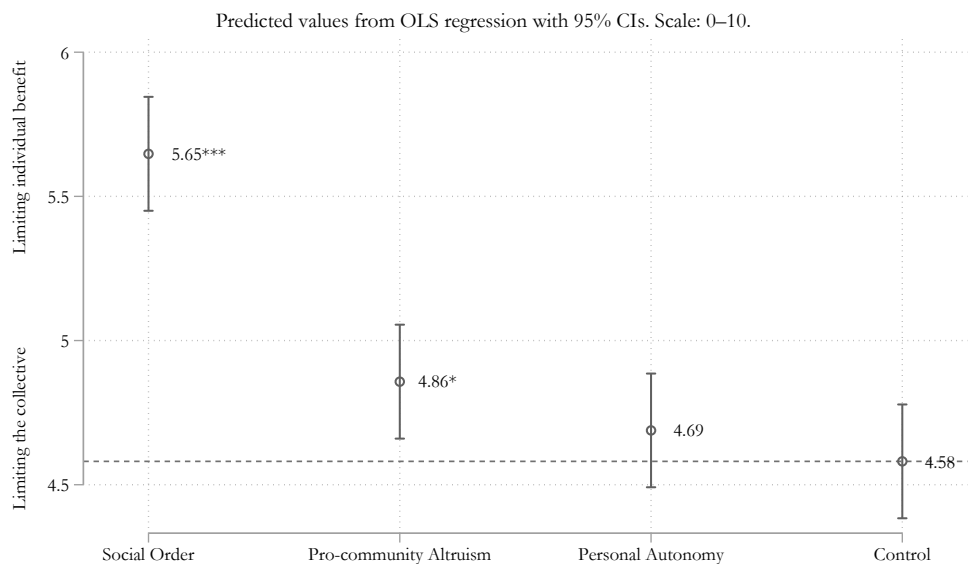
Main Effects of the Moral Framings

After ascertaining the scale's coherence, we examined how each moral framing shaped collective orientation by running a regression analysis with control group as a reference. As Figure 1 shows, consistent with expectations, binding framings (social order and pro-community altruism) were associated with higher levels of collective orientation, although the magnitude varied. The social order treatment produced the most robust effect ($b = 1.066$, $p < .001$)³, while the pro-community altruism framing showed a weaker effect that did not reach conventional significance ($b = 0.276$, $p = .052$), though it was directionally consistent with expectations (see also Table 1).

2) SRMR = Standardized Root Mean Square Residual; CD = Coefficient of Determination.

3) Standardized effect sizes for all treatments relative to the control are reported in the online SI, Table A1.

Figure 1
Effects of the Experiment on Collective Orientation



Note. The dotted line represents the average value of the control group, which serves as a benchmark for interpreting treatment effects across conditions. Error bars indicate 95% CIs. CIs are instrumental to visualize uncertainty of the point estimates; however, they should not be used to infer the significance of differences between groups, as they do not reflect the standard error of the difference.

* $p < .10$. ** $p < .05$. *** $p < .01$.

Surprisingly, the personal autonomy framing did not lessen collective orientation. Its effect was nonsignificant ($b = 0.107$, $p = .451$) and, if anything, trended in the opposite direction. This suggests that the exposure to an autonomy-based appeal may have triggered a counterreaction, thus reinforcing collective orientation rather than weakening it.

We next examined whether these treatments changed participants’ justifications for free riding. As shown in Figure 2, the social order framing and the pro-community altruism framing led to statistically significant decreases in the justification of free riding ($b = -0.287$, $p = .025$ and $b = -0.273$; $p = .032$, respectively), suggesting that exposure to binding moral narratives strengthens moral opposition to opportunistic behavior⁴.

4) The same pattern emerges when using the latent factor scores from the CFA; predicted values are reported in the SI, Figure A3.

Table 1
OLS Regression Models Predicting Collective Orientation and Justification of Free Riding (corresponding to Figures 1 and 2)

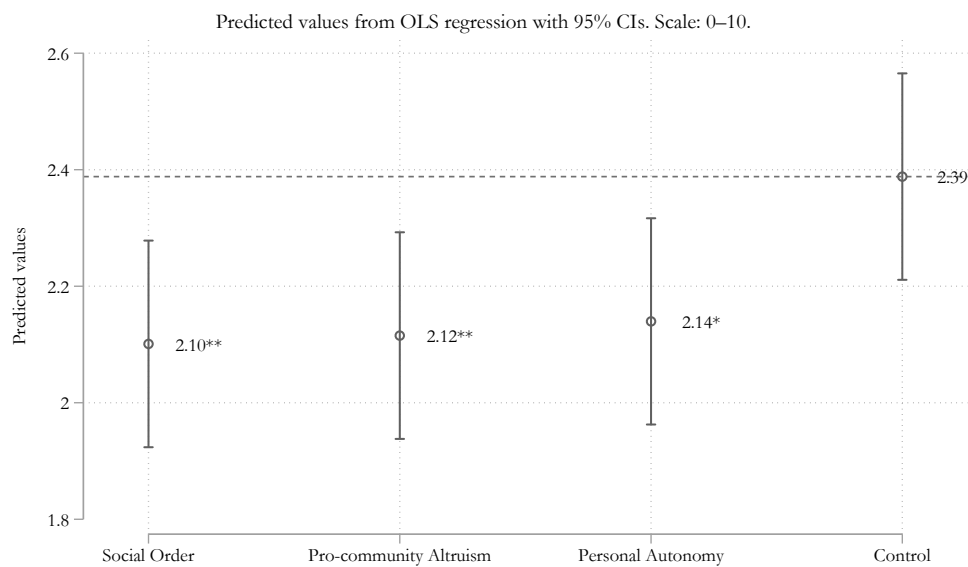
Treatment condition	(1) Collective orientation	(2) Justification free riding
Social order		
<i>b</i>	1.066***	-0.287**
β	[0.201***]	[-0.061**]
<i>SE</i>	0.142	0.128
<i>t</i>	7.49	-2.25
Pro-community altruism		
<i>b</i>	0.276*	-0.273**
β	[0.052*]	[-0.058**]
<i>SE</i>	0.142	0.128
<i>t</i>	1.94	-2.13
Personal autonomy		
<i>b</i>	0.107	-0.248*
β	[0.020]	[-0.053*]
<i>SE</i>	0.142	0.128
<i>t</i>	0.75	-1.95
Control (reference)		
Constant		
<i>b</i>	4.581***	2.388***
<i>SE</i>	0.101	0.090
<i>t</i>	45.52	26.43
<i>R</i> ²	0.033	0.003
Observations	2,023	2,023

p* < .10. *p* < .05. ****p* < .01.

However, again, the personal autonomy framing does not produce the expected increase in justification of free riding. Instead of making participants more accepting of opportunism, the effect appears directionally aligned with the binding treatments (*b* = -0.248, *p* = .052).

These results support H1 and offer tentative backing for H2, with the pro-community altruism framing producing a weaker effect. Overall, the binding moral framings tended to reduce justification for free riding, though the strength of the effect varied across treatments. However, H3 must be rejected, as the personal autonomy framing failed to increase justification for free riding and may even trigger a counterreaction.

Figure 2
Effects of the Experiment on Justification of Free-Riding Behaviors, Additive Index From the 5 Items Battery



Note. The dotted line represents the value of the control group, which serves as a benchmark for interpreting treatment effects across conditions. Error bars indicate 95% CIs.
* $p < .10$. ** $p < .05$. *** $p < .01$.

Additional analyses (Figure A4, SI) show that when collective orientation was included as a covariate, much of the direct effect of binding treatments on free-riding justification diminished⁵. This is an indication that moral framing may be shaping free-riding attitudes by fostering collective orientation, rather than exerting a direct impact. These results lend initial support to H4, suggesting that variation in collective orientation, rather than direct appeals alone, drive moral judgments about free riding.

Mediation Analysis

We next examined whether moral framing exerts a direct impact on free-riding attitudes or operates indirectly via collective orientation, understood as the internalized prioritization of group welfare. To estimate these mediation models, we created three dichotomous treatment variables (each comparing a specific framing to the control) and applied structural equation modeling (SEM) using Stata’s ‘medsem’ command (Mehmetoglu, 2018).

5) Equivalent attenuation is observed when using the latent factor score (Figure A5, SI).

Each model was estimated separately with bootstrapped standard errors based on 500 Monte Carlo replications to compute indirect effects. This approach clarifies how binding and autonomy-based framings differentially foster or diminish collective orientation, which then predicts stricter or more lenient attitudes towards free riding. The findings reinforce that internalized cooperative dispositions, not momentary responses to external prompts, primarily drive judgments about free riding.

Figure 3 shows that exposure to the social order framing (X_1) lowered free-riding justification (Y) via collective orientation (M). Specifically, the indirect path through collective orientation was statistically significant ($b = 0.094$, $p < .001$), whereas the direct path was not ($b = 0.167$, $p = .115$). According to Zhao et al.'s criteria (2010) the pattern is consistent with indirect-only (full) mediation. This framework identifies the indirect effect as the dominant pathway, though the absence of a significant direct effect should not be interpreted as evidence that the direct path is zero. We, therefore, interpret this with caution given the correlational nature of the design.

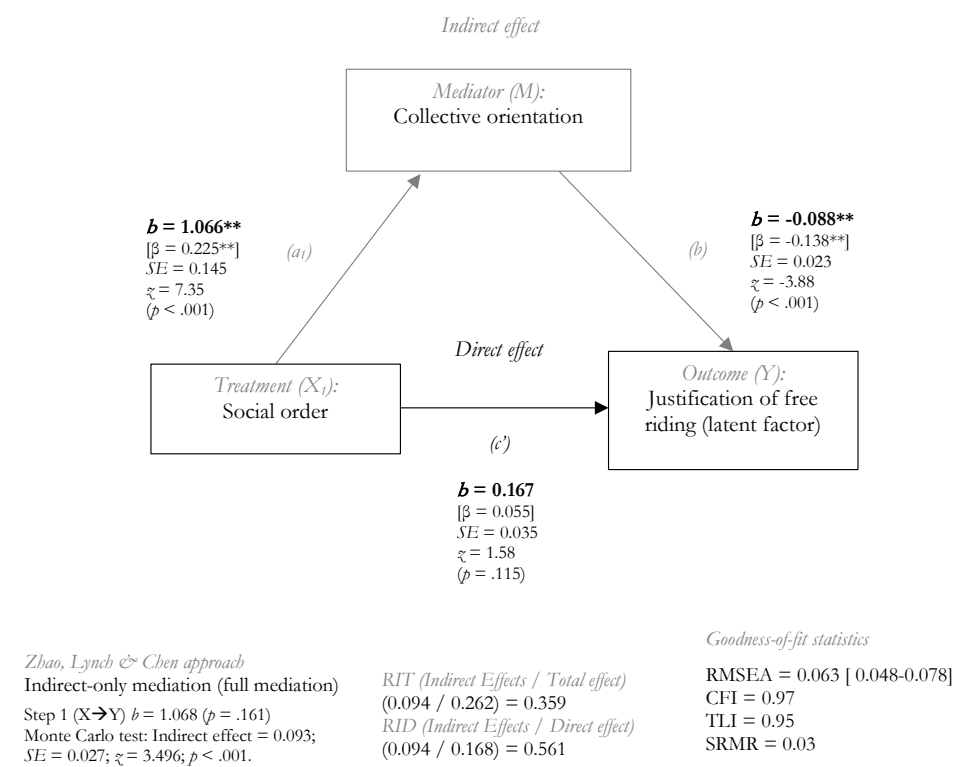
Around 35.9% of the total effect is mediated by collective orientation, with an indirect effect about 0.56 times the size of the direct effect. These results support the view that reinforcing the priority of group welfare – via shifts in collective orientation – may plausibly explain how moral framing reduces justification of free riding. While this analysis cannot establish causality definitively, the observed pattern is consistent with our theoretical model and provides support for this part of H4.

Figure A6 in the SI examines whether emphasizing altruistic volunteers pursuing a shared societal goal (X_2) reduces free-riding justification (Y) through collective orientation (M). The estimated indirect effect is small and not statistically significant ($b = 0.017$, $p = .103$ by Sobel test; $p = .110$ by Monte Carlo), whereas the direct effect is marginally nonsignificant ($b = 0.191$, $p = .051$). According to Zhao et al.'s (2010) framework, this pattern provides no evidence of mediation.

The underlying path coefficients are directionally consistent with the theoretical model: the pro-community altruism framing increased collective orientation ($b = 0.276$, $p = .044$), and collective orientation was associated with lower justification of free riding ($b = -0.063$, $p = .005$). However, because the indirect effect was not statistically significant, there is no evidence that collective orientation mediates this relationship.

By contrast, the personal autonomy treatment exhibited no statistically significant direct or indirect effects (see Figure A7, in the SI), thus providing no evidence of an effect collective orientation.

Figure 3
Mediation Analysis of the Effect of the Social Order Treatment on Justification of Free Riding Through Collective Orientation



Note. Coefficients in bold are unstandardized and represent effects relative to the control group (no framing) estimated from a structural-equation model. Standardized coefficients are shown in brackets. RIT (ratio of indirect to total effect) and RID (ratio of indirect to direct effect) are reported as descriptive measures of effect decomposition and should be interpreted with caution, particularly when direct or indirect effects are not statistically significant.

Moderation Analysis

Trust in Institutions

To test whether institutional trust constitutes a dimension along which responses to moral framing vary, we estimated a regression model with interaction effects (see Table 2, Model 1). The results suggest a moderation effect of institutional trust emerged only under the social order framing ($b = -0.10$, $p = .055$), while for the other two framings it was well below the conventional threshold for statistical significance.

Table 2
OLS Regression Models Predicting Collective Orientation With Interaction Effects for Institutional Trust (Model 1) and Political Ideology (Model 2)

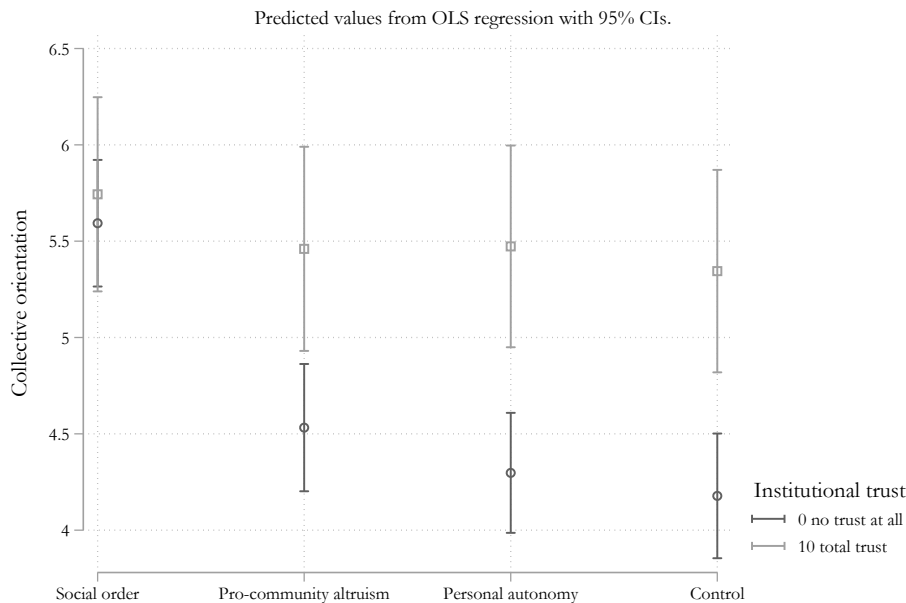
Predictors	Collective orientation					
	Model 1			Model 2		
	Estimates	SE	Statistic	Estimates	SE	Statistic
(Intercept)	4.18***	0.16	25.32	6.00***	0.23	26.52
Experimental treatments						
Social order (vs. control)	1.42***	0.24	6.02	0.42	0.33	1.28
Pro-comm. altruism (vs. control)	0.35	0.24	1.50	-0.19	0.33	-0.58
Personal autonomy (vs. control)	0.12	0.23	0.52	0.16	0.32	0.49
Institutional trust						
Social order*Inst. trust	-0.10	0.05	-1.92			
Pro-comm. altruism*Inst. trust	-0.02	0.05	-0.44			
Personal autonomy*Inst. trust	0.00	0.05	0.02			
Left-right ideology				-0.34***	0.05	-6.96
Social order*Ideology				0.15*	0.07	2.11
Pro-comm. altruism*Ideology				0.11	0.07	1.51
Personal autonomy*Ideology				-0.01	0.07	-0.20
Observations	2023			2023		
R ² / R ² adjusted	0.045 / 0.042			0.092 / 0.089		

p* < .05. *p* < .01. ****p* < .001.

Figure 4 presents predicted values of collective orientation for each condition differentiated by the levels of institutional trust. In line with Hypothesis 5a, in the control condition, collective orientation was markedly different for high-trust and low-trust individuals: by default, confidence in institutions makes individuals more willing to contribute to the common pool, while the lack of it makes people more self-oriented. Under the social order framing, however, the collective orientation of the least trusting individuals almost reached the level of the most trusting, indicating stronger framing effect for the former. The social order framing therefore reduced the trust-based difference in collective orientation that characterized the control group.

In this way, Hypothesis 5a was partially confirmed: Where confidence in institutions is weak, moral appeals emphasizing rule adherence may serve a compensatory role. Conversely, when institutional trust is high, preexisting confidence in institutional fairness may limit the additional association of moral framing with collective orientation. However, the effects of pro-community altruism and personal autonomy framings do not significantly depend on the level of institutional trust. Models adjusting for sex, age, and education yield substantively similar patterns, as shown in Figure A8, SI.

Figure 4
Moderation Effects of Institutional Trust on Collective Orientation



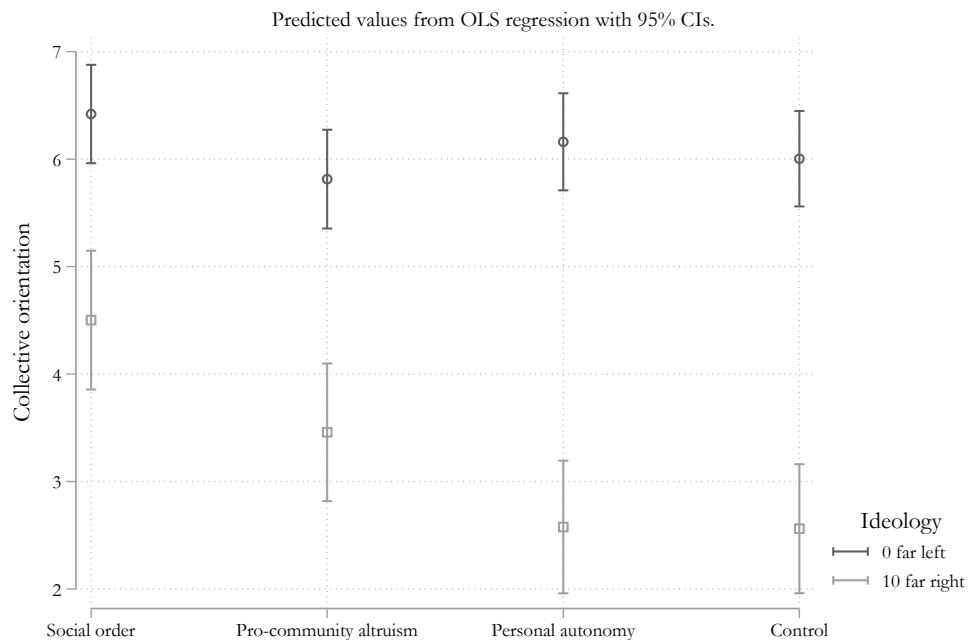
Note. Predicted values of collective orientation are plotted across the four experimental conditions (Social order, Pro-community altruism, Personal autonomy, and Control). Point estimates are shown at two levels of institutional trust (0 = no trust at all, 10 = total trust). Error bars indicate 95% CIs.

Left-Right Ideology

To test whether political ideology provides an additional source of heterogeneity in responses to moral framing, an analogous model was fitted (see Table 2, Model 2). Like in the previous case, interaction effects were observed only under the social order framing ($b = 0.15$, $p = .035$). Figure 5 presents predicted values of collective orientation under each condition differentiated for those at the extremes of the left-right scale, where 0 denotes left and 10 denotes right. Under control condition, collective orientation is notably lower for the right-wingers as compared to the left. This pattern accords with research indicating that conservatives tend to emphasize personal autonomy (Jost et al., 2003), whereas left leaning individuals more strongly endorse communal welfare (Carmines & D’Amico, 2015). Under the social order framing, the difference in collective orientation across the ideological scale is less pronounced than in the control condition. The gap closure is driven primarily by respondents on the right: their level of collective orientation is higher in the treatment condition than in the control condition, whereas levels among left leaning respondents are largely unchanged. The social order framing

therefore increases collective orientation among right leaning respondents relative to the control condition, thereby reducing the ideological gap observed in the control group.

Figure 5
Moderation Effects of Left/Right Ideology on Collective Orientation



Note. Predicted values of collective orientation are plotted across the four experimental conditions (Social order, Pro-community altruism, Personal autonomy, and Control). Point estimates are shown at two levels of political ideology (0 = far left, 10 = far right). Error bars indicate 95% CIs.

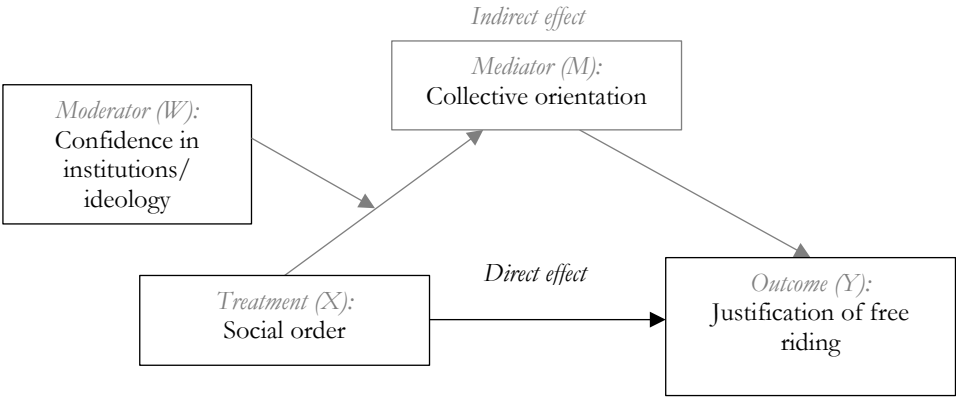
In this way, Hypothesis 5b is partially confirmed: a framing that emphasizes social order resonates more strongly among right-leaning respondents. Meanwhile, the lack of moderation effects for the remaining treatments indicates that the effect of pro-community altruism framing and the lack of it for personal autonomy are symmetric across the ideological spectrum. Models adjusting for sex, age, and education yield substantively similar patterns, as shown in [Figure A9, SI](#).

Moderated Mediation Analysis

To assess whether institutional trust or political ideology modifies the indirect effect of social order framing on free-riding attitudes via collective orientation, we conducted a first-stage moderated mediation analysis ([Crowson, 2021](#)). [Figure 6](#) presents a conceptual

representation of this analysis for institutional trust. As shown in Table A2 in the SI, contrary to H6, there is no evidence that institutional trust conditions the indirect pathway through collective orientation. The confidence intervals for the moderated mediation index include zero, indicating that trust does not significantly condition the strength of the indirect effect. Thus, although the direct moderation results are broadly consistent with theoretical expectation about variation by institutional trust, the data do not support a moderated mediation process in which trust conditions the indirect pathway through collective orientation.

Figure 6
Conceptual Depiction of a First-Stage Moderated Mediation



An equivalent moderated mediation test for left-right ideology also failed to reveal significant moderation of the mediator of the mediating pathway ($IMM = -0.016$, $CI = [-0.038, 0.001]$; see Table A3, SI). Although right- and left-leaning individuals differed in their direct responses to the social order frames, both groups displayed similar mediation patterns through collective orientation. The indirect effects were significant across ideological levels but did not vary significantly in strength, suggesting that while right-leaning individuals may be somewhat more responsive to social-order arguments. This difference did not alter the underlying mediating process. These findings indicate that political ideology, like institutional trust, does not substantially modify whether moral framings operate through internalized priority for group welfare.

Discussion

This study set out to examine how different moral framings – social order, pro-community altruism, and personal autonomy – shape attitudes toward free riding, and whether these effects operate through collective orientation as a mediating mechanism. It also assessed whether these relationships vary across levels of institutional trust and political ideology.

This study provides new insights into how moral framing shapes justifications for free riding. Specifically, our findings indicate that social order and pro-community altruism framings reduce justification of free riding, whereas, contrary to expectations, a personal autonomy framing does not increase it. The social order treatment had the strongest effect on collective orientation and produced consistent reductions in justification of free riding, suggesting that appeals to societal rules that uphold stability effectively reinforce opposition to free riding. This aligns with prior research indicating that norms emphasizing order and deterrence have broad appeal and can promote cooperation (Gintis, 2009; Tyler, 2006).

However, the personal autonomy framing produced an unexpected effect: rather than legitimizing free riding as an assertion of self-reliance, it may have reinforced collective concerns, even though the effect was slightly below the conventional significance threshold. In contexts where group welfare is salient, autonomy-based narratives may trigger resistance, prompting reaffirmation of free riding disapproval. Attempts to frame free riding as permissible self-interest may backfire, reinforcing concerns about its communal costs. These findings highlight an important asymmetry in moral responsiveness, underscoring not only the power of binding narratives compared to autonomy-based ones but also the variable receptiveness to different moral appeals depending on contextual factors. While the social order framing appears broadly effective, autonomy-centered appeals may require greater nuance, as their impact can depend on cultural norms and preexisting commitments to group welfare (Chan, 2021; Song et al., 2025). This pattern is consistent with the idea that liberty occupies an ambiguous position within Moral Foundations Theory, in that it is partly individualizing but conceptually distinct. Its weaker or more variable effects are therefore theoretically informative rather than anomalous, suggesting that autonomy-based appeals engage different evaluative processes from those elicited by binding foundations and help delineate the scope of moral persuasion across moral domains.

A key contribution of the study is demonstrating that collective orientation plays a central mediating role in linking moral framing to attitudes toward free riding. Conceptually, treating priority of group welfare over personal interest clarifies the attitudinal pathways through which messages tapping on binding moral intuitions shape (in)tolerance towards opportunistic behavior. The social order framing yielded the strongest mediation effect, suggesting that emphasizing social stability is associated with higher

levels of internalized commitment to group welfare. For the pro-community altruism framing, although the component paths are directionally consistent with this mechanism, we did not find evidence of mediation through collective orientation. Importantly, if moral framing works solely as a short-term nudge, we would expect only direct effects on justification of free riding. However, the results indicate that variation in collective orientation may provide a plausible attitudinal pathway through which moral narratives shape opposition to free riding. Although potentially extending beyond immediate reactions, though the durability of these changes remains uncertain.

The impact of moral framing is not uniform across individuals. Institutional trust conditions how people respond to moral narratives, shaping whether and to what extent framing influences collective orientation. Our results suggest a distinctive pattern: low-trust individuals showed notable differences between treatment and control conditions when exposed to a social order message, while the effect for high-trust individuals was negligible since their baseline commitment to equality and redistribution was already strong. This suggests that moral narratives can act as a substitute for institutional legitimacy, providing an alternative mechanism to discourage lenient attitudes to free riding among distrustful audiences. These patterns are broadly consistent with arguments that when institutional trust is limited, an internal conviction to respect formal rules may provide an alternative normative reference point (Tabellini, 2010). However, when institutional trust is high, it tends to stabilize people's existing orientations, thus reducing the extent to which additional moral cues can shift them (Newton, 2001).

Political ideology more markedly structures how respondents relate to moral framings. In the control condition, right-leaning individuals report much lower collective orientation than those on the left. Under the social order framing, these ideological differences are reduced, primarily because collective orientation among right-leaning respondents is higher relative to the control condition. Meanwhile, left-leaning individuals, who already exhibit high baseline support for collective norms ensuring redistribution, showed almost no differences between treatment and control conditions. These results align with research indicating that right-leaning individuals place greater emphasis on order and social stability (Duckitt & Sibley, 2010; Graham et al., 2013; Haidt, 2012) and often interpret free riding through concerns about reciprocity and exploitation (Petersen, 2015; Weeden & Kurzban, 2014).

These ideological differences should not be read as simple contrasts in cooperative motivation. The social order framing may resonate with right-leaning individuals not because they are inherently more collective oriented, but because of their greater endorsement of binding moral foundations (Graham et al., 2013). At the same time, preference for equality and redistribution provide alternative routes to free-riding attitudes among left-leaning individuals and corresponding appeals could potentially raise their disapproval even further. While our design does not explicitly test these mechanisms, the fact that leftists begin with higher levels of opposition to free riding can be considered an

indirect indication. This supports calls for a more nuanced understanding of ideological differences, for it indicates that right- and left-leaning individuals do not respond monolithically to moral appeals. Instead, the effectiveness of moral framing hinges on how well it aligns with existing normative concerns and institutional skepticism.

The asymmetry in the moderation results is also theoretically meaningful. The social order framing was the only treatment associated with clear conditional patterns across both moderators. By contrast, the pro-community altruism and personal autonomy framings may have invoked additional culturally specific associations – such as national pride in the Barcelona Olympics example or class-related or elite imagery in the autonomy vignette, which we discuss among limitations. These competing associations likely diluted the extent to which these treatments activated their intended moral intuitions, helping explain why neither produced comparable conditional patterns.

Implications

These outcomes carry significant implications for public messaging and institutional strategies aimed at promoting civic cooperation and discouraging free riding. Social order appeals, such as stressing the societal benefits of following tax laws or traffic regulations, appear more potent than purely altruistic frames. Public agencies, including tax authorities, traffic regulators, and health services, could apply this logic by framing rule-following as a moral contribution to societal stability (e.g., “When everyone pays their share, society runs smoothly”).

Further, our findings suggest that to be efficient, such messages should be tailored to distinct ideological groups and groups with different levels of institutional trust. Left-leaning audiences, though generally favoring redistribution, may still find fairness-based arguments compelling, while right-leaning groups respondents appear more receptive to messages emphasizing stability and institutional order. Likewise, trust in institutions cannot be assumed to magnify moral persuasion; among low trust individuals, moral justifications may partially offset skepticism about institutional authority.

Taken together, these findings extend moral-framing research in several directions. By applying Moral Foundations Theory to the problem of free riding, the study demonstrates that moral narratives influence attitudes toward everyday collective obligations, not only abstract ethical issues such as environmental protection. The results also highlight the importance of collective orientation as an attitudinal mechanism through which moral messages shape moral judgment, clarifying how moral cues become internalized rather than merely shifting opinions. At the same time, the surprisingly similar patterns observed across binding and liberty-based appeals reveal the scope conditions of moral persuasion, showing that moral narratives may produce the opposite effect if misaligned with cultural norms. Finally, the observed differences across institutional trust and political ideology indicate that moral framing operates within a broader social context, where values and beliefs shape responsiveness to moral appeals. Together, these insights offer

a more comprehensive understanding of when and why moral communication fosters collective responsibility.

Limitations

Despite these contributions, certain caveats warrant attention. First, self-reported attitudes may not translate seamlessly into real-world behavior. Future research should include behavioral measures (e.g., actual tax compliance or participatory tasks) to assess if moral framing extends to concrete actions. Second, the study did not include an embedded manipulation check, a limitation that future work could address through pilot testing or post-exposure validation. In our design, however, the mediation through collective orientation provides an indirect indication of construct validity: the framings first influenced collective orientation and only then altered judgments of free riding, suggesting activation of the intended moral intuitions rather than surface-level alignment. This sequential pattern helps mitigate concerns about conceptual overlap between the social-order framing and the outcome measure, as the indirect effect through collective orientation indicates shifts in perceived group-related duty rather than mere wording correspondence. Nevertheless, given the correlational nature of the mediator, these indirect pathways should be interpreted as suggestive rather than definitive causal mechanisms.

A further limitation concerns the restricted set of moral foundations included in the experiment. Our design intentionally focused on Authority/Subversion, Loyalty/Betrayal, and Liberty/Oppression because these domains most directly speak to the tension between individual and collective interests inherent in free-riding dilemmas. However, we did not examine the effects of Fairness/Cheating, Care/Harm and Sanctity/Degradation foundations. In the first case, we reasoned that the mere content of foundation predetermines its salience when making moral judgments about free riding behavior, while we were more interested in how evoking other foundations may shift the general disapproval caused by opportunistic behavior. In contrast, the latter two foundations, emphasizing the immorality of causing direct harm to another person and impurity, respectively, in our view, may be linked to such acts as tax evasion or claiming governmental benefits only indirectly. However, we recognize that including these additional foundations could reveal different or stronger patterns of moral persuasion, particularly among left-leaning individuals. Future studies may explore Equity vs Proportionality domains which Fairness was lately divided into (Atari et al., 2023) or test whether moral framing is effective if it relies on more indirectly linked representations (e.g., recovery of trauma survivors or cleanliness of public spaces obtained through collective efforts).

An additional limitation concerns the use of a single-item measure to capture collective orientation⁶. While the item was conceptually grounded and performed well in the analyses, single-item constructs may be more vulnerable to measurement error and may not fully capture the underlying psychological mechanism. Nonetheless, its clarity

and parsimony enabled clean modeling of mediation in a complex setting, suggesting promise for future scale development. Future research would benefit from validating this construct with a multi-item scale, which could offer a more nuanced understanding of how internalized prioritization of group welfare over personal interest influence attitudes towards free riding.

The study was conducted in Spain, a context characterized by relatively high institutional centralization, moderate civic trust, and comparatively strong relational collectivist orientations in everyday social life (Hofstede et al., 2010; Triandis, 1995) – features that may shape how moral narratives about authority, duty, and group solidarity are interpreted. The cultural specificity of moral foundations could therefore influence both the strength and direction of moral-framing effects. Replications in more diverse sociopolitical environments, particularly those differing in institutional trust, political polarization, or prevailing forms of collectivism, would help clarify the generalizability and cultural situatedness of these findings⁷. Relatedly, the survey lacked direct measures of national pride, class attitudes, or elite perceptions, limiting assessment of whether such factors condition responses to moral framings. Future research could incorporate these indicators to examine whether affective national attachment or socioeconomic perceptions shape sensitivity to binding or autonomy-based appeals.

Additionally, while collective orientation emerged as a central mechanism, other psychological processes, such as moral emotions or social identity, could interact with moral narratives. Lastly, longitudinal designs would clarify whether repeated exposure to social order or pro-community altruism framings produces durable transformations in cooperative behavior. Addressing these possibilities would further refine our understanding of how moral persuasion and institutional contexts intersect to shape public disapproval of free riding.

Conclusions

Our findings demonstrate the potential of moral framing to shape attitudes toward free riding, with social order narratives producing the most consistent and substantively larger effects. Importantly, collective orientation functions as a central mediating pathway

6) This limitation also applies to the moderator variables, which are measured using single-item indicators and may therefore be more susceptible to measurement error.

7) Given the cultural and contextual specificity of the experimental materials, alternative interpretations of the moral framings cannot be ruled out. The pro-community altruism vignette, centered on the 1992 Barcelona Olympics, may also have evoked national pride or collective identity, while the personal autonomy vignette might have triggered associations with social class or elite privilege. Although these possibilities could partly shape responses, they are consistent with the broader view that moral language in public discourse activates multiple, culturally embedded meanings. The sequential pattern observed – moral framing influencing collective orientation, which in turn predicts attitudes toward free riding – suggests that, despite these possibilities, the manipulations engaged the intended moral intuitions rather than simply reflecting contextual associations.

linking moral framing to attitudes toward free riding in the case of social order framing. Still, individual differences – particularly institutional trust and political ideology – structure patterns of response to this framing.

These findings advance research on moral framing, when and how individuals can be prompted to interpret cooperation through distinct moral lenses. Acknowledging these variations can inform the design of interventions aimed at fostering civic cooperation and discouraging free riding, particularly in contexts where trust and civic engagement are strained.

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Data Availability: The dataset and replication code used in this study are available via OSF at: <https://osf.io/7jez8/>

Supplementary Materials

The Supplementary Materials contain the following items:

- The dataset and replication code used in this study (Tormos & Nastina, 2026S-a)
- Online Supplementary Information (SI): Supplementary materials, including additional analyses, robustness checks, surveys instruments, and treatment vignettes (Tormos & Nastina, 2026S-b)

Index of Supplementary Materials

Tormos, R., & Nastina, E. (2026S-a). *Replication materials for: From self-interest to collective good: How moral framing affects the justification of free-riding behavior* [Research data and code]. OSF. <https://osf.io/7jez8/>

Tormos, R., & Nastina, E. (2026S-b). *Supplementary materials to "From self-interest to collective good: How moral framing affects the justification of free-riding behavior"* [Supplementary information]. OSF. <https://osf.io/t36rf/files/tgnx8>

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