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# Spiritual Formidability Predicts the Will to Self-sacrifice Through Collective Narcissism

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## Abstract

Perceiving the ingroup as spiritually formidable—with inner strength and conviction—is strongly associated with the will to self-sacrifice. Yet, its underlying mechanisms remain unclear. Across five studies, we test a mechanism through which spiritual formidability operates: collective narcissism—the belief that the ingroup is exceptional but not sufficiently recognized by others. A preliminary study showed that collective narcissism, but not ingroup satisfaction, predicted costly pro-group sacrifices. Studies 1a and 1b revealed that, among inmates belonging to street gangs or delinquent bands, the perceived spiritual formidability of the ingroup was associated with collective narcissism and willingness to engage in costly pro-group sacrifices. In addition, the effect of perceived spiritual formidability on costly sacrifices was mediated by collective narcissism. Study 2 replicated and extended the effects to self-sacrifice for religion among imprisoned jihadists. Lastly, Study 3 offered causal evidence of the mediation among members of the general population.

*Keywords:* formidability, collective narcissism, collective action, costly sacrifices, intergroup conflict

## Introduction

Throughout history, the outcomes of violent confrontations have hinged on the material and non-material strengths and weaknesses of the opposing parties (e.g., Fessler et al., 2023; Gómez et al. 2017). The mightiest warriors and the most resolute souls have enjoyed clear advantages over their weaker adversaries, basking in the glory of triumph and dominance. This has led to the development of highly specialized cognitive representations that facilitate swift decisions in the heat of conflict. However, the treatment of these representations in the literature is far from uniform.

According to the formidability representation hypothesis, the decision to fight, flee, or negotiate is assisted by a single cognitive representation that distills the prospective opponent's assets and liabilities compared to one's own (e.g., Fessler et al., 2012, 2023; Holbrook et al., 2016; Scrivner et al., 2020). This representation encapsulates the combination physical, technical, and psychosocial resources that work in tandem to determine perceptions of relative formidability, which are summarized by stature, size, and muscularity, operating as a unitary construct. Following this hypothesis, the formidability representation evolved as part of a broader suite of mechanisms for conflict regulation and status allocation, enabling automatic and quick assessments of other's relative capacity to impose their will and resist coercion, which can be deployed to take decisions with minimal cognitive effort (Durkee et al., 2018; Fessler et al., 2012; Lukaszewski et al., 2016). Because it integrates cues that go beyond physical strength, such as coalitionary support (e.g., Fessler & Holbrook, 2013) or willingness to take risks (Fessler et al., 2014), its influence extends from fighting decisions to broader social judgments about leadership and the distribution of status within groups (e.g., Lukaszewski et al., 2016).

Building on this framework, other researchers have identified two distinct dimensions of formidability that contribute to battle decision-making: physical formidability, which refers

to material strength and technical resources, and spiritual formidability, which comprises the strength of conviction in the causes or values one is fighting for, along with the resolve to pursue them (Gómez et al., 2017). Studies involving fighters from various continents support this perspective and indicate that perceived spiritual formidability is a better predictor of the will to fight and self-sacrifice for the group and its central values than perceived physical formidability (e.g., Atran et al., 2018; Gómez et al., 2017; Gómez, Vázquez, & Atran, 2023; Tossell et al., 2022).

Unlike physical formidability, which relies on cost-benefit analyses and encourages fighting behaviors exclusively against materially weaker enemies, spiritual formidability can motivate individuals and groups to fight when they are not endowed with the material capabilities needed to outcompete their adversaries (e.g., Atran, 2020; Gómez, Vázquez, & Atran, 2023). Though this might seem illogical, under such circumstances the readiness to undertake risks and personal sacrifices provides the only realistic prospect of overcoming physically stronger opponents who are less inclined to disregard the costs of their actions (e.g. Atran, 2020; Darwin, 1871; Ibn Khaldun, 1967).

Spiritual formidability may have been favored as a mechanism enhancing the relative fitness of cohesive groups through moralized commitments that align individual goals with the goals of the ingroup (e.g., Atran, 2010; McCullough, 2020). At its core, perceiving the ingroup as spiritually formidable implies recognizing that its members are bound by moralized ideas, such as sacred values or moral convictions, that draw clear boundaries between “us” and “them” and allow the coordination of individual actions toward common ends (Atran, 2010; Ellemers, 2017; Tomasello & Vaish, 2013). Sacred values refer to beliefs, practices, or objects regarded as non-fungible with material goods and non-negotiable with profane issues (Baron & Spranca, 1997; Tetlock, 2003). They can be religious or secular, such as God or Nation, and tend to function as symbolic cornerstones of group identity—stable, resistant to social pressure,

and largely immune to temporal discounting (Atran, 2010, 2020; Sheikh et al., 2013). The stronger the attachment to such values, the greater the willingness to endure self-sacrifices and to fight for them (Atran & Ginges, 2012; Ginges et al., 2007). Moral convictions are deeply internalized beliefs about right and wrong that form part of the personal self and create a sense of moral obligation to act accordingly (Skitka et al., 2005, 2021; Sabucedo et al., 2018). Often aligned with social norms and experienced as imperatives rather than preferences (Ellemers, 2017), they might even motivate heroic behavior, compelling individuals to act in defense of what they perceive as right (Janoff-Bulman & Bharadwaj, 2017).

Because moralized beliefs motivate individuals to uphold them even under adverse circumstances, they communicate principled dedication and serve as reliable signals of strength of character and trustworthiness (Song et al., 2025), thereby playing a central role in shaping intragroup and intergroup dynamics. Moral criteria often outweigh instrumental considerations as the primary standards that guide group belonging (e.g., Ellemers, 2017). Moreover, there is also evidence showing that shared values and convictions can galvanize individuals who feel viscerally connected to the ingroup to fight, die, and self-sacrifice for the group and its members (Swann et al., 2014). As a result, perceptions of spiritual formidability serve as an exceptional catalyst for extreme actions undertaken in defense of the ingroup and its defining values.

However, despite its pivotal role in shaping the will to fight and the readiness to take risks and make self-sacrifices, research on representations of spiritual formidability is still in its infancy. With the present manuscript, we aim to advance our knowledge by examining the role played by a mechanism that might explain the impact of perceived spiritual formidability on the will to self-sacrifice for group and values: collective narcissism, the belief that the ingroup is exceptional and deserving of special treatment but not sufficiently appreciated by others (Golec de Zavala et al., 2009).

## **Spiritual Formidability Drives the Will to Fight and Self-Sacrifice**

Scientific interest in the study of spiritual formidability was sparked by field interviews with combatants from the Islamic State of Iraq and the Levant (ISIS) and the Kurdistan Workers' Party (PKK) conducted in Iraq during 2015 (Gómez et al., 2017). When discussing the relative formidability of the groups fighting in their country, the interviewees did not view formidability as a unitary concept, establishing a clear distinction between physical and spiritual formidability. They downplayed the significance of physical formidability and instead highlighted spiritual formidability (*ruhi bi ghiyrat* in both Arabic and Kurdish, or “spirit with fervor” to fight for what is most cherished) as the most critical factor for victory in conflict. These findings led the authors to adapt dynamic measures of physical formidability to assess spiritual formidability and to conduct further ethnographic research with frontline combatants (i.e., Peshmerga, Arab Sunni militia, Iraqi army Kurds) in Iraq, and online studies with general population in Spain, to examine the relative importance of physical and spiritual formidability in battlefield decision-making (for further details about the measures of physical and spiritual formidability, see Supplementary Materials). Their results underscore the relevance of contrasting the effect of the two dimensions of formidability on the willingness to fight and self-sacrifice.

All participants conceived physical formidability in terms of firepower and manpower, and spiritual formidability in terms of inner conviction and internal strength. Frontline combatants and Spaniards who envisioned the ingroup as more spiritually formidable than the outgroup showed a greater willingness to fight and die to protect their group and its core values than those who saw the ingroup as spiritually weaker, whereas the perceived relative physical formidability did not predict their will to fight and die. Moreover, Spaniards who saw ISIS as spiritually stronger than Spain experienced intense negative emotions (e.g., fear, panic) and were least willing to fight and die for democracy and country, which suggest that perceiving

the enemy as more spiritually formidable than the ingroup may have a paralyzing or demoralizing effect in combat (Gómez et al., 2017).

Further evidence of the key role of the ingroup's spiritual formidability on the will to fight and self-sacrifice was provided by additional fieldwork and online studies with different populations, including general population in Europe, jihadist terrorists and street gang members, Moroccans from neighborhoods associated with the global jihad movement, USAFA cadets, and individuals from several countries involved in conflict, as Iraq, Lebanon, Palestine, or Ukraine (Gómez, Vázquez, & Atran, 2023; Tossell et al., 2022). Many of these studies directly compared perceptions of spiritual and physical formidability on the will to fight and self-sacrifice, consistently showing that spiritual formidability is the stronger predictor.

Research has also begun to shed light on the processes leading to the development of perceptions of spiritual formidability, as well as the mechanisms that explain its effects, though our understanding of these phenomena is still very limited. Concerning its causal antecedents, studies in both WEIRD (i.e., Western, Educated, Industrialized, Rich, and Democratic) and non-WEIRD countries have revealed that perceptions of collective spiritual formidability might originate from identity fusion (Gómez, Vázquez, & Atran, 2023). Identity fusion is a synergistic union between the personal self and a target of fusion as a group, individual, or ideological conviction that gives rise to visceral responsibility toward the target and a strong sense of personal agency (Gómez et al., 2011, 2020, 2024; Chinchilla et al., 2022; Swann et al., 2010, 2012, 2024).

Regarding why spiritual formidability causes the will to fight and self-sacrifice, Tossell et al. (2022) conducted several studies showing that perceptions of personal spiritual formidability foster the will to self-sacrifice through group loyalty. Relatedly, in the work by Gómez et al. (2023), it was found that perceptions of collective spiritual formidability increase the will to fight and self-sacrifice by boosting trust in the ingroup and its allies.

The results of the studies by Tossell et al. (2022), and Gómez et al. (2023), provide evidence supporting the thesis that spiritual formidability galvanizes people to fight and self-sacrifice by promoting the development of strong bonds within the group that enhance mutual support, solidarity, and cooperation. Along with that, we suspect that the effect of spiritual formidability on the will to fight might also stem from processes that are not based on loyalty and parochial benevolence. Particularly, it might be caused by the perception of the ingroup as extraordinary and deserving of special treatment, coupled with the desire to revel in its greatness. The concept that most accurately encapsulates this notion in social psychology is collective narcissism (Golec de Zavala, 2024; Golec de Zavala et al., 2009).

### **Connecting Spiritual Formidability to the Will to Fight through Collective Narcissism**

Collective narcissism is the belief that the ingroup is exceptional and entitled to special recognition and privileged treatment but not sufficiently recognized by others (e.g., Golec de Zavala, 2011, 2024). It entails a positive ingroup evaluation, but it is a defensive form of ingroup attachment aimed at satisfying individual enhancement needs through membership in a group that is perceived as extraordinary (e.g., Cichocka et al., 2018; Golec de Zavala, 2024; Golec de Zavala et al., 2020, 2021).

This belief can be endorsed with regards to any social group (e.g., Golec de Zavala et al., 2009, 2019); and any reason can be used to claim that the ingroup is exceptional and more deserving than others (e.g., Golec de Zavala et al., 2019; Golec de Zavala & Lantos, 2020), which suggest that perceptions of ingroup spiritual formidability might promote collective narcissism. Indeed, although collective narcissism has been mostly linked to defensive responses to perceived lack of recognition or status (Golec de Zavala, 2024; Golec de Zavala et al., 2019), recent evidence and historical analyses provide indirect support for the idea that positive narratives emphasizing the ingroup's spiritual formidability might foster narcissistic forms of group attachment. For example, Hungarian state propaganda capitalizes on this by

portraying the nation—despite being largely secular—as a bastion defending Christian values; and narratives of martyrdom, suffering, and resistance in lost battles, as observed in Hungary, Poland, and Serbia, have likewise been deployed to provide fertile ground for collective narcissism among the citizens of these countries (Forgas & Lantos, 2020). Moreover, claims about adherence to sacred values and traditional moral beliefs may be particularly powerful in eliciting this form of attachment, as suggested by research revealing that collective narcissism is stronger among members of fundamentalist Islamic organizations, who display a more rigid adherence to religious precepts, than among members of more tolerant Islamic organizations (Yustisia et al., 2020).

Additional literature on morality also supports the idea that narratives emphasizing spiritual formidability may be particularly effective in eliciting collective narcissism, compared to narratives highlighting other positive qualities of the ingroup, such as material capabilities, agency, or sociability. Indeed, moral commitment plays a central role in determining attraction and attachment to social groups, and since moral and spiritual values are more subjectively defined than material endowments, achievements, or outcomes, their perception is less constrained by objective evidence (e.g., Ellemers, 2017). As a result, claims of spiritual formidability might be relatively easy to make and difficult to disprove, as they rely on moralized ideas that lack clear objective benchmarks. They are also likely to generate feelings of underappreciation or lack of recognition from others, since assertions of moral superiority are rarely recognized by outgroup members (Ellemers et al., 1997; Ellemers & Van Rijsdijk, 1997). Consequently, narratives of spiritual formidability may be particularly effective in activating the sense that the ingroup’s worth is insufficiently acknowledged by others.

Collective narcissism is characterized by chronic preoccupation with the ingroup’s external image and feelings of resentment over the lack of validation from others (Golec de

Zavala, 2024; Golec de Zavala et al., 2009). In this sense, it differs from non-defensive or secure forms of ingroup attachment that represent genuine feelings of satisfaction and pride for belonging to a group that is seen as inherently valuable, regardless of the recognition provided by others, such as ingroup satisfaction (Leach et al., 2008). The distinction between both types of attachment is critical to understanding intergroup and intragroup dynamics (Cichocka, 2016; Cichocka et al., 2018; Golec de Zavala, 2024).

At the intergroup level, collective narcissism is positively related to hypersensitivity to threats to the ingroup's image (Golec de Zavala et al., 2016); beliefs about hostile and conspiratorial intentions towards the ingroup (Dyduch-Hazar et al., 2019; Golec de Zavala & Cichocka, 2012); and outgroup derogation, prejudice, and intergroup hostility (e.g., Bagci et al., 2021; Cichocka et al., 2018; Golec de Zavala et al., 2009; Guerra et al., 2022; Verkuiten et al., 2022). In contrast, ingroup satisfaction is negatively related or not related to these variables (for a comprehensive review, see Golec de Zavala, 2024).

At the intragroup level, collective narcissism is linked to a preoccupation with the ingroup's image. Conversely, ingroup satisfaction is related to an authentic concern for the well-being of the group and its members (Cichocka, 2016; Cichocka et al., 2018; Federico et al., 2021; Golec de Zavala, 2024). This means that collective narcissists are sometimes willing to sacrifice other group members to protect the ingroup's image (Cichocka & Cislak, 2020; Cislak, Marchlewska et al., 2021; Gronfeldt et al., 2020; Mashuri et al., 2022), or to intentionally harm and exploit their fellows to advance their personal interests (Biddlestone et al., 2022; Cichocka et al., 2021).

Paradoxically, despite being associated with selfish motivations, there is evidence showing that collective narcissism may drive individuals to fight and self-sacrifice for the ingroup when circumstances are perceived as threatening (e.g., Bagci et al., 2022; Jasko et al., 2020; Marinthe et al., 2022). These actions are presumably undertaken because they allow

individuals to achieve personal positive distinctiveness, respect, and significance (e.g., Jasko et al., 2020). For example, among members of advantaged groups, collective narcissism is positively related to implication in reactionary movements aimed at reinforcing their privileges, whereas secure attachment does not predict participation in these movements (Marinthe et al. 2022). Similarly, among members of disadvantaged groups, collective narcissism is positively related to the will to engage in collective actions to advance equality and social justice, even after accounting for the effect of ingroup satisfaction (e.g., Bagci et al., 2022).

Additional studies on the processes of radicalization leading to violence have also shown that collective narcissism might drive individuals to risk their lives and die for the ingroup—although the researchers did not control for the effect of secure group attachment in this case—(Jasko et al., 2020; Yustisia et al., 2020). Yustisia et al. (2020) found that collective narcissism predicts endorsement of extreme behaviors, such as fighting and dying, among members of Sunni Islamic organizations in Indonesia; and Jasko et al. (2020) found that collective narcissism predicts endorsement of suicide terrorism among individuals belonging to extremist networks in Sri Lanka, Morocco, and Indonesia. Taking these results into account and considering that the subjective nature of spiritual formidability might easily promote illusions of undervalued greatness, we reasoned that perceptions of ingroup spiritual formidability might lead to collective narcissism and, through this mechanism, increase the will to engage in extreme self-sacrifices on its behalf. The studies presented in this manuscript are designed to test this assumption.

## **Overview of the studies**

The present manuscript outlines five studies exploring the hypothesis that collective narcissism mediates the relationship between perceived ingroup spiritual formidability and willingness to self-sacrifice. A preliminary study assessed if collective narcissism predicts self-sacrifice beyond ingroup satisfaction. Two field studies with imprisoned members of street

gangs (Study 1a) and delinquent bands (Study 1b) examined the relationship between the perceived spiritual formidability of the ingroup, collective narcissism, and willingness to make extreme self-sacrifices, including the potential mediation by collective narcissism. A field study with imprisoned jihadists (Study 2) explored whether the effects extend to self-sacrifices for the values that are central for the group. Lastly, an online experiment (Study 3) aimed to provide causal evidence for the mediation.

Participants in Studies 1a, 1b, and 2 were inmates in 36 penitentiary centers across Spain, selected according to the information managed by the Spanish Penitentiary Institution. They fell into three groups: (1) inmates convicted of crimes related to membership in street gangs (Study 1a); (2) inmates convicted of crimes related to membership in delinquent bands (Study 1b); and (3) inmates convicted of crimes related to jihadist terrorism or who were engaging in proselytism within prison (Study 2). These studies are part of a broader project where participants took part in an interview unrelated to the goals of the present research and answered to the questionnaire. The interviews were conducted by individual members of our research team, in a private room without prison staff present and without access to the responses by prison authorities. Participants acknowledged human subject protections through informed consent. Sample sizes were not determined *a priori*; all inmates who wanted to participate in the research were included (for more details, see Gómez et al. 2021, 2022, 2024; Gómez, Chiclana et al., 2023; and Gómez, Vázquez, & Atran, 2023). Participants in the preliminary study and Study 3 were general population recruited through a snowball sampling method wherein students from an open university asked their acquaintances to participate. These studies were open for a week and then closed; sample sizes were not calculated *a priori*. We did not exclude any participants from the samples.

The diversity of our samples constitutes one of the main strengths of this research. Although they differ in composition and context, all involve settings in which conflict and

perceived intergroup threats are salient, creating conditions under which costly self-sacrifice becomes meaningful. This diversity allows for a robust test of the proposed mechanism across general population and several populations that remain under-researched in social and political psychology, such as incarcerated members of street gangs, delinquent bands, and jihadist groups, which are difficult to access for empirical research. Prior studies have shown that spiritual formidability operates in similar ways among general population and multiple groups that engage in violence or are exposed to violent conflict (e.g., Gómez et al., 2017; Gómez, Vázquez, & Atran, 2023; Tossell et al., 2020). Therefore, we expected the mediational model tested in the present research to function similarly across the various settings featured in the studies.

The research received approval from the Ethics Committee of our university (Approval Number: 39-SISH-PSI-2023). Materials and data from the studies are openly available in “Open Science Framework” at [https://osf.io/yns7b/?view\\_only=31bd21b88e1e41b985b779334b9d503b](https://osf.io/yns7b/?view_only=31bd21b88e1e41b985b779334b9d503b). Due to the extremely sensitive nature of Studies 1a, 1b, and 2, all information regarding sociodemographic variables has been removed from the public datasets to prevent the potential identification of participants.

### **Preliminary Study**

We conducted a preliminary study to test whether collective narcissism predicts willingness to engage in costly self-sacrifices on behalf of the ingroup, after accounting for the variance shared with ingroup satisfaction. To the best of our knowledge, no prior research has examined whether collective narcissism predicts self-sacrificial intentions while controlling for non-defensive forms of group attachment, which rendered this test necessary to establish the role of collective narcissism in predicting such outcomes. In line with the results of previous studies focused on willingness to partake in collective actions (e.g., Bagci et al., 2022; Marinthe

et al. 2022), we expected a positive relationship between collective narcissism and endorsement of self-sacrifices.

## Method

### *Participants*

The sample was composed by 420 participants (91.7% Spaniards, 60.5% women,  $M_{age} = 39.14$ ,  $SD = 16.16$ ).

*Power analysis.* We conducted a *post hoc* power analysis with G\*Power (Faul et al., 2007) for lineal multiple regression (fixed model,  $R^2$  deviation from zero) to determine the statistical power achieved by the study considering our overall effect size. With our sample size and two predictors (national collective narcissism and national satisfaction), the study had 100% power.

### *Procedure and measures*

The preliminary study was conducted online, via Qualtrics. First, we measured national collective narcissism and national satisfaction in counterbalanced order. After that, we measured willingness to engage in extreme self-sacrifices for the country. *National collective narcissism* was measured with the five-item scale developed by Golec de Zavala et al. (2013). Example items include “I will never be satisfied until my country gets the recognition it deserves” and “If my country had a major influence in the world, the world would be a much better place” ( $\alpha = .88$ ). *National satisfaction* was measured with the four-item ingroup satisfaction scale by Leach and collaborators (2008). Example items include “I am glad to be from my country” and “I think that my country has a lot to be proud of” ( $\alpha = .91$ ). Lastly, *willingness to engage in extreme self-sacrifices* was measured with four items taken from Sheikh et al. (2016). Example items include “If necessary, I will be willing to go to jail to defend my country” and “If necessary, I would be willing to die to defend my country” ( $\alpha = .85$ ).

.93). Unless otherwise stated, responses to the measures used in all studies ranged from 0 (*completely disagree*) to 6 (*completely agree*).

## Results

Table 1 shows the descriptive statistics and zero order correlations between variables for all the studies. In the preliminary study, all variables were positively and significantly related.

A multiple regression including collective narcissism and ingroup satisfaction as simultaneous predictors and costly sacrifices as dependent variable revealed that the overall effect of our model was significant,  $F(2,417) = 67.62, p < .001, R^2 = .25, f^2 = .33$ . National narcissism emerged as a significant positive predictor of the will to self-sacrifice  $B = 0.46, SE = 0.05, t(417) = 8.47, p < .001, 95\% \text{ CI} [0.356, 0.572]$ , while the effect of national satisfaction was not significant,  $B = 0.09, SE = 0.06, t(417) = 1.43, p = .155, 95\% \text{ CI} [-0.034, 0.217]$ .

## Discussion

The results of the preliminary study showed that national collective narcissism significantly predicted endorsement of extreme self-sacrifices on behalf of the country after controlling for the effect of national satisfaction. This lent credence to the notion that collective narcissism might motivate individuals to undertake extreme actions to defend the ingroup, setting the stage for examining the mediational role of collective narcissism on the effects of spiritual formidability.

### Studies 1a and 1b

Studies 1a and 1b sought to test if the envisioned spiritual formidability of the ingroup is positively related to collective narcissism and willingness to engage in extreme self-sacrifices on its behalf, and whether the effect of perceived spiritual formidability on self-sacrifices is mediated by collective narcissism, among individuals known for engaging in

extreme actions to protect the ingroup and its members: street gangs and delinquent bands, respectively.

## Method

### *Participants*

The sample of Study 1a consisted of 70 inmates ( $M_{age} = 27.64$ ,  $SD = 6.65$ ) from countries across Europe, Africa, and America, convicted of crimes related to their membership in street gangs – e.g., Trinitarios, Latin Kings, Ñetas. Study 1b included a sample of 47 inmates ( $M_{age} = 46.34$ ,  $SD = 9.00$ ) from countries spanning Europe, Africa, America, and Asia, imprisoned for offences related to their membership in delinquent bands – i.e., organized groups that engage in petty criminal activities, such as robberies or drug trafficking. All participants were male.

*Power analysis.* We conducted *post hoc* power analyses with the online tool developed by Schoeman et al. (2017) to determine the statistical power achieved by the studies. Considering our sample sizes and the sizes of the standard deviations and the standardized coefficients of the mediation models, Study 1a had 98% power and Study 1b 93% power (see Supplementary Materials).

### *Procedure and measures*

The studies had a cross-sectional design. We measured the envisioned spiritual formidability of the ingroup followed by collective narcissism and willingness to engage in costly self-sacrifices. Before completing the measures, participants were asked to think about the street gang or delinquent band they belonged to and to respond to all questions with that group in mind. *Perceived spiritual formidability* was measured with a dynamic measure showing a human body that varies in size and muscularity (Gómez et al., 2017; Gómez, Vázquez, & Atran 2023; Tossell et al., 2022). Participants had to click and drag a slider until the body reached the appearance that best represented the ingroup's spiritual formidability.

Scores range from 0 to 1, with higher scores indicating more formidability. *Collective narcissism* was measured with an adapted version of the scale from the preliminary study (e.g., “If my group had a major influence on the world, the world would be a much better place”;  $\alpha_s = .87$  and  $.81$  for street gangs and delinquent bands, respectively). *Willingness to engage in costly self-sacrifices* was measured with a five-item scale developed in close consultation with prison psychologists to capture sacrifices considered extreme in the prison context (e.g., “If it was necessary to defend my group, I would be willing to move to a prison further away from my family”, “If it was necessary to defend my group, I would be willing to give up communications with my family or important people outside prison”;  $\alpha_s = .85$  and  $.86$  for street gangs and delinquent bands, respectively). For a detailed discussion of the procedure followed to develop the latter scale, see Gómez et al. (2022).

## Results

The descriptive statistics and zero order correlations between variables are displayed in Table 1. All variables were positively and significantly related in the two studies.

To test our hypothesis that the positive relationship between spiritual formidability and willingness to self-sacrifice would be mediated by collective narcissism, we conducted bootstrapped (5,000 boots) mediation analysis with the Macro PROCESS (Hayes, 2018; Model 4). Spiritual formidability was included as predictor, collective narcissism as mediator, and willingness to self-sacrifice as outcome variable.

In Study 1a, results revealed significant effects of spiritual formidability on collective narcissism,  $B = 2.79$ ,  $SE = 0.71$ ,  $t(68) = 3.92$ ,  $p < .001$ , 95% CI [1.369, 4.206], and willingness to self-sacrifice,  $B = 1.55$ ,  $SE = 0.50$ ,  $t(68) = 2.98$ ,  $p = .003$ , 95% CI [0.516, 2.591], such that collective narcissism and willingness to engage in costly self-sacrifices on behalf of the gang augmented as its perceived spiritual formidability increased. The indirect effect of spiritual

formidability on willingness to self-sacrifice through collective narcissism was significant as well,  $IE = 1.05$ , 95% CI [0.417, 1.864].

In Study 1b, results showed significant effects of spiritual formidability on collective narcissism,  $B = 2.47$ ,  $SE = 0.55$ ,  $t(45) = 4.47$ ,  $p < .001$ , 95% CI [1.357, 3.580], and willingness to engage in self-sacrifices,  $B = 1.82$ ,  $SE = 0.46$ ,  $t(45) = 3.92$ ,  $p < .001$ , 95% CI [0.890, 2.768], indicating that collective narcissism and willingness to engage in self-sacrifices on behalf of the band increased as its envisioned spiritual formidability augmented. The indirect effect of spiritual formidability on willingness to self-sacrifice through collective narcissism was also significant,  $IE = 0.83$ , 95% CI [0.190, 1.635] (see Figure 1).

## Discussion

The results of Studies 1a and 1b indicate that the envisioned spiritual formidability of the ingroup was positively related to collective narcissism and willingness to engage in costly self-sacrifices on its behalf. Also as expected, the effect of spiritual formidability on willingness to self-sacrifice appeared to be mediated by collective narcissism. The results were replicated among imprisoned street gang and delinquent band members, respectively.

These findings are consistent with the idea that one of the mechanisms through which spiritual formidability drives extreme self-sacrifices is collective narcissism. Still, self-sacrifice is not always directed to the ingroup or its members alone, but also toward the values that define the group's identity, with people often making their greatest exertions for transcendent ideas that embody their sense of "who they are". For instance, recent research on sacred values shows that people might be willing to incur great personal costs to defend them because they are experienced as constitutive of the ingroup's essence (e.g., Atran & Ginges, 2012; Black, 2024). This raises the possibility that the same mediational pathway identified in Studies 1a and 1b may also operate when the values that define the ingroup's identity are at stake. To test this idea, we conducted Study 2.

## Study 2

Study 2 was designed to test whether the perceived spiritual formidability of the ingroup is positively related to collective narcissism and willingness to engage in extreme self-sacrifices for its central values, and if the effect of the perceived spiritual formidability on willingness to self-sacrifice is mediated by collective narcissism. To this end, we collected a sample of individuals who recurrently engage in extreme behaviors on behalf of their values, jihadist extremists, and adapted the measure of self-sacrifices used in the previous studies to tap willingness to sacrifice for Islam.

### Method

#### *Participants*

Study 2 included a sample of 88 inmates (7% women,  $M_{age} = 34.59$ ,  $SD = 8.75$ ) from countries across Europe, Africa, America, and Asia, convicted for crimes related to jihadist terrorism – including the Madrid train bombings of 2004, the attacks on pedestrians in the Rambla of Barcelona of 2017, and several thwarted plots across Europe – or who engaged in proselytizing activities within prison.

*Power analysis.* A *post hoc* power analysis with the online tool developed by Schoeman and collaborators (2017), showed that, considering our sample size and the size of the standard deviations and the standardized coefficients of the mediation model, Study 3 had 72% power (see Supplementary Materials).

#### *Procedure and measures*

Study 2 had a cross-sectional design. We measured the envisioned spiritual formidability of the ingroup – i.e., Muslims – followed by collective narcissism and willingness to engage in costly self-sacrifices for the ideology. *Perceived spiritual formidability* and *collective narcissism* ( $\alpha = .76$ ) were assessed as in Studies 1a and 1b. *Willingness to engage in costly self-sacrifices* was measured with the same scale used in Studies 1a and 1b but adapted

to the religion of the participants (e.g., “If it was necessary to defend Islam, I would be willing to move to a prison further away from my family”;  $\alpha = .90$ ).

## Results

Table 1 shows the descriptive statistics and zero order correlations between variables. All variables were positively and significantly related.

A bootstrapped (5,000 boots) mediation analysis with PROCESS (Hayes, 2018; Model 4), including perceived spiritual formidability as predictor, ideological narcissism as mediator, and willingness to self-sacrifice as outcome variable, showed significant effects of spiritual formidability on collective narcissism,  $B = 1.47$ ,  $SE = 0.57$ ,  $t(86) = 2.58$ ,  $p = .012$ , 95% CI [0.335, 2.598], and willingness to self-sacrifice,  $B = 1.32$ ,  $SE = 0.60$ ,  $t(86) = 2.21$ ,  $p = .029$ , 95% CI [0.135, 2.512], indicating that collective narcissism and willingness to engage in self-sacrifices on behalf of Islam increased as the perceived spiritual formidability of Muslims augmented. The indirect effect of spiritual formidability on willingness to self-sacrifice through collective narcissism was significant as well,  $IE = 0.93$ , 95% CI [0.126, 1.862] (see Figure 2). Additional analyses controlling for the effect of participants’ gender revealed the same pattern of results (see Supplementary Materials).

## Discussion

The results of Study 2 indicate that the envisioned spiritual formidability of the ingroup was positively related to collective narcissism and willingness to engage in costly self-sacrifices on behalf of Islam among imprisoned jihadists. Also, the indirect effect of spiritual formidability on willingness to self-sacrifice through collective narcissism was significant.

These findings support the idea that perceiving the ingroup as spiritually formidable drives individuals to self-sacrifice for the ingroup’s values increasing collective narcissism. Thus, the catalyzing impact of the perceived spiritual formidability of the ingroup on the willingness to self-sacrifice through narcissistic beliefs seems to transcend the group itself and

extend to its core beliefs. However, the correlational design of the preceding studies did not allow us to establish causality. Study 3 was designed to solve this limitation by manipulating spiritual formidability.

### **Study 3**

As advised by Spencer et al. (2005), Study 3 complements our findings of correlational mediation in Studies 1a, 1b, and 2 by manipulating the hypothesized predictor, spiritual formidability, through bogus feedback. For this purpose, we told some participants that most ingroup members perceived the ingroup as very spiritually formidable, whereas the remaining participants were not provided any information in this regard. Although this type of manipulation had not been tested by previous research, it has been argued that shared narratives of positive distinctiveness can be used to feed collective narcissism (e.g., Forgas & Lantos, 2020; Golec de Zavala, 2024). This theoretical background led us to assume that our manipulation would be effective.

We expected that, as compared to not providing information to the participants, telling them that most ingroup members envision the ingroup as spiritually formidable would increase collective narcissism and willingness to fight and die.

## **Method**

### ***Participants***

The sample was composed by 457 Spaniards (56.2% women,  $M_{age} = 36.14$ ,  $SD = 14.55$ ).

*Power analysis.* We conducted a *post hoc* power analysis using G\*Power (Faul et al., 2007) for F tests (ANOVA: fixed Effects, omnibus, one-way) to determine the statistical power achieved by the study, considering the size of the effect of the experimental manipulation on the dependent variable. With our sample size, Study 2 had 85% power.

### ***Procedure and measures***

To maximize perceptions of ingroup threat, we conducted the study amid the COVID-19-related sanitary supply crisis of 2019/2020. In this period, wealthy nations competed with less economically developed countries and among themselves for privileged access to sanitary supplies and vaccines to control the spread of the pandemic, generating mistrust and social unrest (e.g., Bollyky & Brown, 2020; Young Voices, 2020). This context was deliberately selected because spiritual formidability and collective narcissism are most likely to predict pro-group behaviors when the ingroup is perceived to be under threat (e.g., Gómez et al., 2017; Gómez, Vázquez, & Atran, 2023; Golec de Zavala, 2024).

Participants were first informed that we had conducted a study with a representative sample of Spaniards to examine their perceptions of the spiritual strength of Spain. We provided them with a definition of spiritual formidability, and they were also shown a picture composed of an array of six figures depicting a human body of increasing size and muscularity, which was purportedly used to assess said perceptions. Subsequently, participants were randomly assigned to one of two experimental conditions. In the *high spiritual formidability condition* ( $n = 219$ ), participants learned that most Spaniards had chosen the second largest body, viewing Spain as very strong spiritually. In the *control condition* ( $n = 238$ ), participants were told that the figure that most Spaniards deemed as most representative of the spiritual formidability of Spain and their thoughts about the issue would be revealed to them at the end of the study.

Following this, we measured *collective narcissism* and *willingness to engage in extreme self-sacrifices* using the same scales from the preliminary study, but adapted to the COVID-19 context (e.g., “If my country had a major influence on the world, the world would be a much better place to deal with the COVID pandemic”, for collective narcissism, and “If necessary, I would be willing to die to defend my country from COVID”, for self-sacrifices;  $\alpha_s = .71$  and  $.74$ , respectively). Lastly, as manipulation check, we measured the *perceived spiritual formidability of Spain* with the same scale as in Studies 1a and 1b, adapted for the country.

Given that spiritual formidability is a non-observable, highly ambiguous trait and people tend to rely on others' views when evaluating ambiguous characteristics—particularly when these views are widely shared by ingroup members (Deutsch & Gerard, 1955; Cialdini & Goldstein, 2004)—we expected that our manipulation would shape participants' perceptions of their group's spiritual formidability through informational social influence.

## Results

Table 1 shows the descriptive statistics and zero order correlations within the high spiritual formidability (Panel A), the control condition (Panel B), as well as across conditions. All variables were positively and significantly related in the high spiritual formidability condition and across conditions. In the control condition, collective narcissism was positively and significantly related to willingness to engage in extreme self-sacrifices, although the remaining relationships between variables were not significant.

*Manipulation check.* An ANOVA with the experimental condition as predictor and the perceived spiritual formidability of the country as dependent variable indicated that the manipulation was successful. Participants in the high spiritual formidability condition perceived Spain as more spiritually formidable ( $M = 0.53$ ,  $SD = 0.25$ ) than those in the control condition ( $M = 0.45$ ,  $SD = 0.27$ ),  $F(1,455) = 12.59$ ,  $p < .001$ ,  $\eta_p^2 = .03$ ,  $f = 0.17$ .

*Main analyses.* To assess the effect of the experimental manipulation on the primary variables, we conducted two separate ANOVAs with the experimental condition as predictor and collective narcissism and willingness to engage in extreme self-sacrifices, respectively, as dependent variables. The results showed that participants in the experimental condition scored higher in collective narcissism ( $M = 2.59$ ,  $SD = 1.10$ ) than those in the control condition ( $M = 2.08$ ,  $SD = 1.27$ ),  $F(1,455) = 20.32$ ,  $p < .001$ ,  $\eta_p^2 = .04$ ,  $f = 0.20$ . Similarly, participants in the experimental condition were more willing to engage in extreme self-sacrifices for Spain ( $M = 2.08$ ,  $SD = 1.27$ ),  $F(1,455) = 20.32$ ,  $p < .001$ ,  $\eta_p^2 = .04$ ,  $f = 0.20$ .

$0.94, SD = 1.13$ ) compared to participants in the control group ( $M = 0.65, SD = 0.82$ ),  $F(1,455) = 10.07, p = .002, \eta_p^2 = .02, f = 0.14$ , than participants in the control condition.

Lastly, to test the hypothesis that the effect of the experimental manipulation on the willingness to engage in extreme self-sacrifices would be mediated by collective narcissism, we conducted a bootstrapped (boots = 5,000) mediation analysis with PROCESS (Hayes 2018; Model 4), including the experimental condition (0 = *control*; 1 = *high spiritual formidability*) as predictor, collective narcissism as mediator, and willingness to engage in extreme self-sacrifices as outcome variable. The results revealed that the effect of the experimental condition on willingness to self-sacrifice was mediated by collective narcissism,  $IE = 0.10, 95\% \text{ CI } [0.043, 0.173]$  (see Figure 3).

## **Discussion**

The results of Study 3 revealed that participants who were informed that most members of their country perceived it as very spiritually formidable scored higher on collective narcissism, and were more willing to self-sacrifice for their country, than participants who did not receive any information in this regard. Moreover, the effect of this manipulation on the willingness to self-sacrifice was mediated by collective narcissism.

These results extend the findings from Studies 1a, 1b, and 2 to individuals who do not regularly engage into extreme actions and provide causal evidence in support of our mediation hypothesis.

## **General Discussion**

This research delves into the relationship between the envisioned spiritual formidability of the ingroup—i.e., the strength of conviction in the causes or values it is fighting for, along with the willpower to pursue them—collective narcissism—i.e., the belief that the ingroup is exceptional but not sufficiently recognized by other—and the willingness to engage in costly self-sacrifices. In a preliminary study, national collective narcissism predicted willingness to

self-sacrifice to defend the country after controlling for the effect of national satisfaction. Subsequent studies with incarcerated members of street bands (Study 1a) and delinquent bands (Study 1b) showed that the perceived spiritual formidability of the ingroup was positively related to collective narcissism and willingness to engage in costly sacrifices for the ingroup in prison; and that the effect of perceived spiritual formidability on endorsement of self-sacrifices was statistically mediated by collective narcissism. A study with imprisoned jihadists extended these findings to the willingness to self-sacrifice for the ingroup's core values and beliefs (Study 2). Finally, an online experiment during the COVID-19 related sanitary-supply crisis of 2019/2020 provided causal evidence for the mediational mechanism (Study 3). Our findings replicate across different samples (i.e., street gangs, delinquent bands, jihadists, general population), research designs (i.e. cross-sectional, experimental), and targets of self-sacrificial behaviors (i.e., the ingroup, the ingroup's core values). Although we did not preregister the studies, this broad spectrum of evidence leads us to conclude with a fair level of confidence that seeing the ingroup as spiritually formidable galvanizes people to sacrifice for their group and ideological convictions by generating the belief that the ingroup is exceptional and deserves special recognition, although not sufficiently appreciated by others.

At a theoretical level, our studies enrich the understanding of the psychosocial processes that explain the effects of perceptions of spiritual formidability on the willingness to self-sacrifice for groups and values, highlighting a mediational mechanism not examined to date: collective narcissism. Prior research on this topic has merely concentrated on mechanisms that foster readiness to engage in risky and costly behaviors by enhancing group cohesion and love, such as group loyalty (Tossell et al., 2023) or trust (Gómez et al., 2023). In contrast, our studies suggest that collective narcissism, a defensive form of ingroup attachment driven by the need for personal self-enhancement, plays a critical role in motivating individuals who see the ingroup as spiritually strong towards self-sacrificial actions, marking a distinctive departure

from the established models that emphasize secure attachment and altruistic motivations. Our findings align with the results of research on the quest for significance, which demonstrate that individuals are often willing to undertake extraordinary sacrifices to gain social recognition (Jasko et al., 2020; Kruglanski et al., 2019), and highlight the utmost importance of considering spiritual and symbolic concerns in human battle (e.g., Atran, 2020; Darwin, 1871).

Along with that, our studies also advance knowledge of the potential antecedents of collective narcissism. While it has been widely stated that collective narcissism is deeply related to the shared narratives through which ingroup members build the ingroup's identity (e.g., Golec de Zavala, 2024; Golec de Zavala et al., 2019), existing research has exclusively focused on the effects of personal and group threats and frustrated needs (see Golec de Zavala, 2024). This focus might mistakenly suggest that openly questioning the status of the self or the ingroup is a necessary condition for the emergence of collective narcissism. Our studies challenge this, showing that shared narratives highlighting its positive qualities can lead individuals to endorse collective narcissistic beliefs and, under certain conditions, to engage in costly behaviors on behalf of the group and its values. Taken together, existing evidence indicates that shared histories about spiritual formidability may be especially likely to evoke collective narcissism compared to narratives highlighting other positive qualities of the ingroup (e.g., Ellemers, 2017; Ellemers et al., 1997; Ellemers & Van Rijswijk, 1997), but future research should test this proposition.

At an applied level, although self-sacrificial actions motivated by spiritual formidability and collective narcissism can aid ingroup survival under severe threat, extensive research reveals that collective narcissism has a very prominent “dark side” (for a review, see Golec de Zavala, 2024). Collective narcissism fosters an antagonistic mindset, encouraging black and white thinking and zero-sum views of intergroup dynamics. This mentality obstructs negotiation and mutualistic relationships within and outside the ingroup. It often leads to the

support of autocratic, belligerent leaders, and fuels intergroup aggression and hostility, which can escalate into devastating violence, deep-rooted conflicts, wars, and even terrorism. Our studies point to three different strategies that might be useful to avert such outcomes and promote peace: (1) exposing discrepancies between the ingroup's professed values and its actual behavior—which may diminish the perception of the ingroup's spiritual strength; (2) spreading narratives emphasizing that all human groups tend to hold sacred values they are willing to fight for—which may facilitate awareness that spiritual strength is inherent to our species; and (3) championing stories that frame negotiation, cooperation, and peace as cornerstones of true spiritual strength—which may short-circuit the psychological machinery and ideological justifications linking collective narcissism to aggression and violence. Since individuals deeply committed to the ingroup tend to deny its wrongdoings (Besta et al., 2014), and collective narcissists react defensively to criticism directed at the ingroup (Golec de Zavala et al., 2013, 2023), the latter two strategies could prove more successful, thought further research is needed to ascertain their relative efficacy.

Our studies have several limitations as well. Firstly, garnering the resources and trust needed for conducting research with incarcerated individuals is exceptionally challenging (Chinchilla et al., 2024; Gómez, Vázquez et al., 2023). Because of this, sample sizes in our field studies are relatively small, with Study 2, focusing on jihadists, being slightly underpowered. However, the same pattern of results replicates across three different violent groups and general population, including participants from countries of different continents, intimating that the positive association between the variables and the mediation found in our studies is ecologically relevant and valid. Further research should examine whether the indirect effect of spiritual formidability on the willingness to self-sacrifice via collective narcissism also operates among groups engaged in extreme actions to achieve social justice that do not involve violence, such as environmental and animal rights activists, human rights advocates,

or peaceful resistance movements. Egalitarian and universalist values, characteristic of these groups, may either prevent ingroup spiritual formidability from translating into narcissistic beliefs by emphasizing common humanity, or might be utilized to justify ingroup superiority claims, potentially leading to collective narcissism (e.g., Golec de Zavala, 2024; Golec de Zavala et al., 2019). If so, narcissistic hostility may be tempered by the communal norms and self-transcendent emotions tied to the peaceful pursuit of social equality and justice (e.g., Golec de Zavala, 2024; Golec de Zavala et al., 2023). Secondly, it is important to examine whether the effect of the perceived spiritual formidability of the ingroup on the willingness to self-sacrifice is mediated by other types of ingroup attachment that entail an uncritical idealization of the ingroup without focusing on social entitlement and lack of recognition, such as ingroup glorification—i.e., viewing the ingroup as superior and revering its central symbols—(Roccas et al., 2006). Contrasting the effect of ingroup glorification and collective narcissism could reveal if perceiving the ingroup’s greatness as undervalued by others is the key driver of the association between variables we observed in our studies. Thirdly, our studies resonate with previous literature on the influence of ingroup norms on attitudes and behaviors (e.g., Gómez et al., 2018), showing that informing participants that most ingroup members envision the group as spiritually strong increases collective narcissism and willingness to engage in extreme self-sacrifices for the group. While our studies do not specifically address this issue, abundant research has found that this kind of influence operates heterogeneously among the group members, being greater among those who psychologically align with the ingroup compared to those who do not (e.g., Spears, 2021). Consequently, future studies should explore whether the effects of the manipulation that we observed in Study 3 are moderated by identity fusion or other indicators of ingroup commitment. Fourthly, it is worth noting that our experimental manipulation of perceived spiritual formidability may have activated psychological processes beyond those theorized, which could have contributed to the observed increase in collective

narcissism, such as a generalized sense of pride, empowerment, or perceived unity. Future studies should disentangle these potential intervening processes. Lastly, since all the samples included in our studies are linked by the common thread of intergroup tension, future research should examine whether perceiving the ingroup as spiritually formidable fosters collective narcissism and willingness to self-sacrifice in contexts characterized by mutualistic or cooperative relationships between groups.

## **Conclusions**

Our studies unveil the interplay between the perceived spiritual formidability of the ingroup, collective narcissism, and the willingness to embark on self-sacrifices, thereby enhancing our comprehension of the non-material aspects of human conflict. While previous research has shown that seeing the ingroup as spiritually strong might enhance willingness to fight and die via group loyalty and trust (Gómez, Atran & Vázquez, 2023; Tossell et al., 2023), our studies demonstrate that perceptions of spiritual formidability can foster self-sacrifice for the ingroup and its values through less “benign” mechanisms. Specifically, viewing the ingroup as spiritually formidable can promote the belief that the ingroup is extraordinary and not sufficiently recognized by others, which, in turn, can lead individuals to engage in great risks and personal sacrifices for the group and its values. Because such narcissistic beliefs are also tied to a strong preference for intergroup hostility and aggression (e.g., Golec de Zavala, 2024; Golec de Zavala et al., 2019), it is imperative to develop strategies to prevent this mechanism from giving rise to harmful or malicious actions. We believe that this can be achieved highlighting inconsistencies between the ingroup’s values and its behaviors, emphasizing that most human collectives are strongly motivated to fight for their moral convictions and sacred values, and depicting cooperation and peace as the only values that make humans spiritually formidable. In the turbulent times we live in, where war and polarization are commonplace, these strategies might be particularly valuable.

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**Table 1.** Means, standard deviations, and zero order correlations between variables

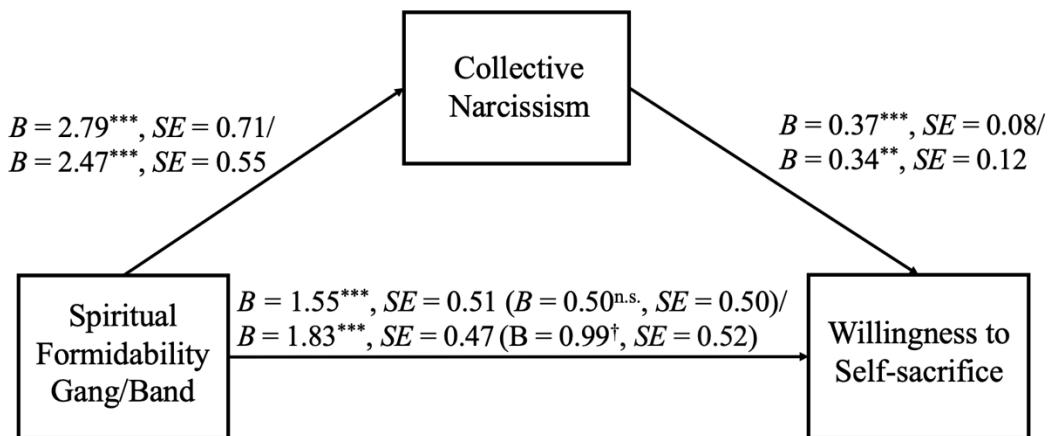
Study	Variable	<i>M</i>	<i>SD</i>	1.	2.	3.
Preliminary Study	1. National Collective Narcissism	2.61	1.58	-	-	-
	2. National Satisfaction	4.52	1.36	.59***	-	-
	3. Self-sacrifices	1.30	1.64	.49***	.34***	-
Study 1a	1. Spiritual Formidability	.64	.30	-	-	-
	2. Collective Narcissism	2.30	1.97	.43***	-	-
	2. Self-sacrifices	.78	1.38	.34**	.58***	-
Study 2	1. Spiritual Formidability	0.62	0.31	-	-	-
	2. Collective Narcissism	2.22	1.69	.27*	-	-
	3. Self-sacrifices	1.38	1.76	.23*	.63***	-
Study 3	<u>A. High spiritual formidability condition</u>					
	1. Spiritual Formidability	.53	.25	-	-	-
	2. Collective Narcissism	2.59	1.10	.24***	-	-
	3. Self-sacrifices	0.94	1.13	.16*	.29***	-
	<u>B. Control condition</u>					

1. Spiritual	.45	.27	-	-	-
Formidability					
2. Collective	2.08	1.27	.11	-	-
Narcissism					
3. Self-sacrifices	0.65	0.82	.10	.19***	-
<b><u>C. Correlations between variables across conditions</u></b>					
1. Spiritual	0.49	0.27	-	-	-
Formidability					
2. Collective	2.32	1.22	.19***	-	-
Narcissism					
3. Self-sacrifices	0.79	0.99	.15***	.26***	-

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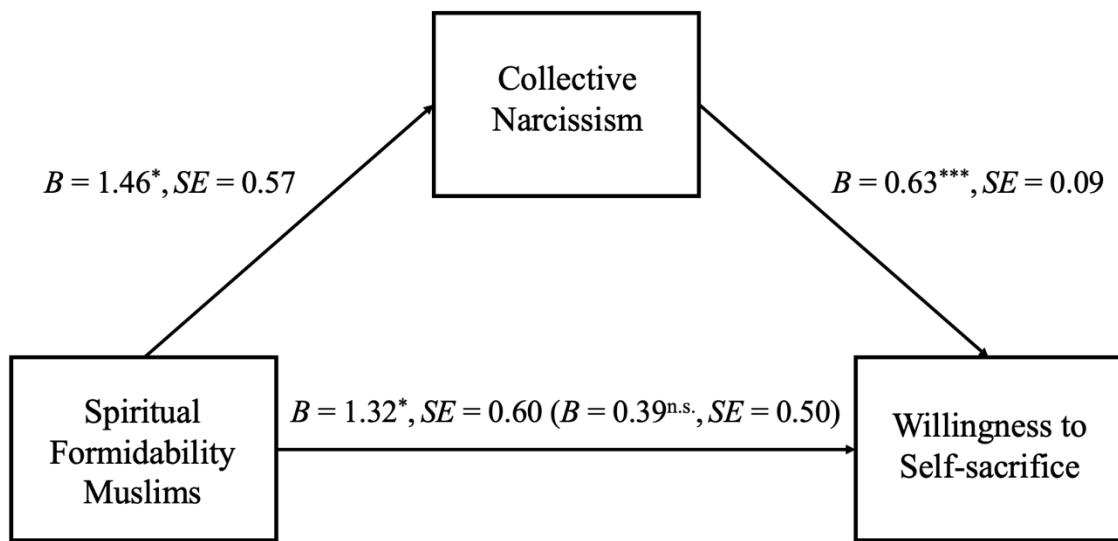
\*\*\*  $p = .001$ , \*\*  $p = .01$ , \*  $p = .05$

**Figure 1.** Path model displaying the mediation analyses for Studies 1a and 1b



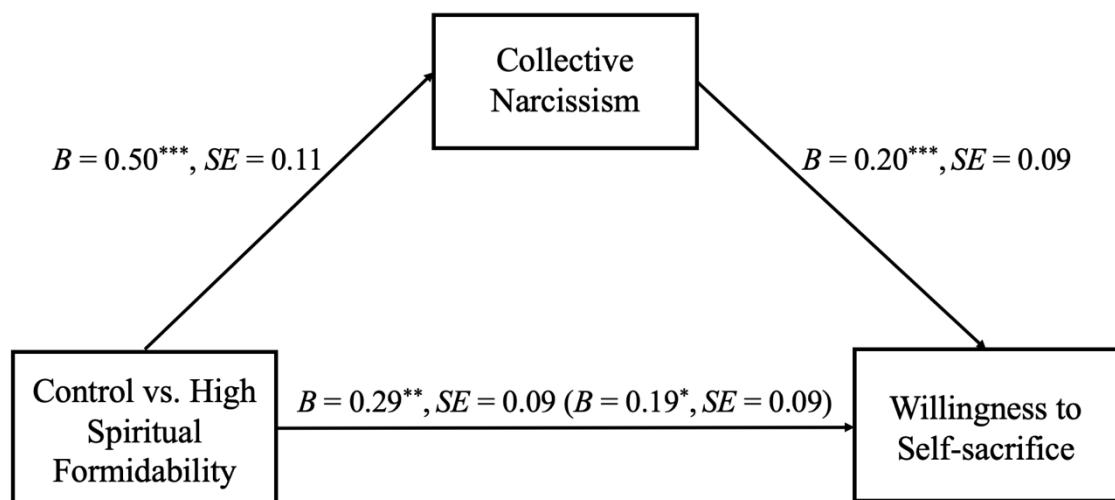
Coefficients before the slash refer to the street gang sample (Study 1a); those after the slash refer to the delinquent band sample (Study 1b). All coefficients are unstandardized. \*\*\*  $p < .001$ , \*\*  $p < .01$ , \*  $p < .05$ , †  $p < .10$ , n.s. non-significant.

**Figure 2.** Path model displaying the mediation analysis for Study 2



All coefficients are unstandardized. \*\*\*  $p < .001$ , \*  $p < .05$ , <sup>n.s.</sup> non-significant.

**Figure 3.** Path model displaying the mediation analysis for Study 3



All coefficients are unstandardized. \*\*\*  $p < .001$ , \*\*  $p < .01$  , \*  $p < .05$ .