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Helpful and In Danger: Attributes and Correlates of Perceived Occupational Heroism

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Studies were approved by a local ethical committee under the reference numbers 2025175137983710040 and 2025175820653410122. Prior to their participation, each participant confirmed that their participation was voluntary, that they could withdraw at any time without giving a reason, and that their confidential, anonymized data could be used and shared for research purposes.

Data availability statement
All data, materials and codes have been made publicly available via the Open Science Framework and can be accessed at https://osf.io/tpgax/overview?view_only=e68d76c69f36486789b85c3c3dc8913e.

Words count: 9966

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Abstract

Some occupations such as firefighters are described as heroic, while others, such as healthcare workers, are applauded as "heroes" in crises. In two preregistered correlational studies conducted on representative UK samples, we evaluated theory-based attributes of occupational heroism, and its relationship to specific policy-relevant attitudes toward occupations. In study 1 (N = 430), we confirmed that occupational heroism relates to the perceived helpfulness and risk exposure of workers. In study 2 (N = 840), we further showed that occupational heroism is associated with a moral shield: workers' hero status correlates with decreased acceptability of criticism toward them, and increased support for deregulating them and protecting them from punishment for rule-breaking. Unlike previous findings suggesting a willingness to exploit heroized workers, heroism correlated with increased gratitude towards workers, support for their demands, and perception that they are vulnerable. Societal consequences and relevance for policy making are discussed.

keywords: heroism, risk, altruism, moral shield, social perception

Words count: 9966

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Helpful and In Danger: Attributes and Correlates of Perceived Occupational Heroism

Although exceptional individuals in any job can be lauded as heroes, some occupations are routinely given the hero label: for example, firefighters (Parkinson et al., 2023). Hero status can also be conferred in a short time: recently, during pandemics such as SARS or COVID-19, frontline healthcare workers became typecast as heroes (Cox, 2020; Mayor et al., 2013; Pangborn et al., 2023; Wagner-Egger et al., 2011). Occupational heroism is important to study because roles such as "hero" are a central feature of moral cognition (Bergstrand & Jasper, 2018; Klapp, 1954; Hartman et al., 2022). These roles apply to individuals and groups, inspiring emulation, shaping collective responses, and affirming social norms (Brink et al., 2022; Klapp, 1954; Neutatz & Tibilova, 2024; Parkinson et al., 2023).

But what is a hero? Definitions of individual heroism converge on two main elements: 1) voluntary *prosocial action* which is 2) undertaken at *personal risk* (e.g., Becker & Eagly, 2004; Franco et al., 2011, 2018; Riches, 2018). Lay prototypes confirm this emphasis, with "brave" and "selfless" among the most cited heroic traits (Kinsella et al., 2015). However, current work establishing these characteristics for collective heroism is scarce. Existing accounts are grounded in sociological theory rather than empirical research (see Gölz, 2021). Parallels also appear to exist between these two traits, and models of paired dimensions in group evaluation such as warmth and competence (Fiske et al., 2002), or communion and agency (Abele et al., 2014). Despite some overlap, the proposed traits of bravery and selflessness seem to be more specific than these models recognize. Bravery is a specific form of agentic competence when faced with danger. Selflessness is a kind of communal warmth that takes a specific, other-helping form; it is not exclusively defined even by the additional

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category of "morality" (e.g. Leach et al., 2015), which also includes different constructs such as honesty and duty.

Faced with these uncertainties, we set out to answer: if risk and altruism are the building blocks of individual heroism, can these traits also structure views of occupational heroism? And which consequences, relevant to how society treats an occupation, are associated with these traits – and the hero label?

Consequences of Occupational Heroism

Understanding the hero role is important, because that role has consequences for how we treat workers. Ironically, some consequences are argued to be detrimental, setting the occupation up for exploitation (Stanley et al., 2023; Stanley & Kay, 2024). For instance, veterans described as heroes were more likely to be assigned to low wage positions (Stanley et al., 2023). In other studies, perceiving healthcare workers as heroes and as victims was associated with sympathy; however, only victimhood predicted intentions to support healthcare workers, whereas heroism perceptions did not (Yuan et al., 2021).

Because the hero label has been proposed to shape social expectations and public sentiment (Klapp, 1954; Bergstrand & Jasper, 2018), we might expect that heroic occupations are seen as deserving praise and benefit. However, research documenting negative responses to acts of extraordinary altruism (Critcher & Dunning, 2011; Lin-Healy & Small, 2013) and more generally to altruistic "do-gooders" (Berman & Silver, 2022) tells us that positive outcomes of helping are not a given. If heroes are seen as altruistic and brave, they could also be judged as self-sufficient and less worthy of social support (see Hartman et al., 2022; Stanley et al., 2023; Stanley & Kay, 2024). These ironic effects of occupational heroism, as a positive but constraining stereotype, also echo research which links even positive gender stereotypes to discriminatory outcomes (Glick & Fiske, 1996, 2001). For instance, in the workplace, men but not women gain recognition from helping, whereas women but not men

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receive backlash from refusing to help co-workers (Heilman & Chen, 2005). Possibly, heroes also reap unwelcome consequences from high standards.

In another line of inquiry, heroism rhetoric about military and police occupations has been criticized as harmful to larger society (Mohammed et al., 2021; Lohmeyer & Taylor, 2021; Parkinson et al., 2023). Specifically, heroic views of an occupation might protect its members from negative sentiment about rule-breaking and misconduct. For instance, reading about a national hero committing military transgressions resulted in less negative judgment than when heroes from other countries did wrong (Ivanović et al., 2021). In countries such as the US with a heroized military, people are more lenient when judging criminal veterans than matched non-veteran criminals (Jay et al., 2017). Social criticism of heroic groups may also attract disapproval, just as other sacred values such as the sanctity of life are protected from criticism (Tetlock et al., 2000). For example, when Australian journalist Yassmin Abdel-Magied reframed the military remembrance of ANZAC Day to highlight human-rights concerns, she faced extensive online harassment and ultimately relocated overseas (Marks, 2017).

Another novel perspective in our research tested whether effects ascribed to occupational heroism depend on a halo effect of positivity, given that general evaluation predominates in meaning (Osgood et al., 1957). Being altruistic and exposed to risk might relate to heroism only because all three concepts are "good" -- not because of semantic content specific to heroism. To our knowledge, no studies investigating occupational heroism have controlled for such halo effects (Stanley et al., 2023; Stanley & Kay, 2024; Yuan et al., 2021).

Studies Overview

In Study 1, targeting a representative set of 53 occupations, we correlationally tested hypotheses about the role of helpfulness and risk in statistically predicting occupational

heroism perceptions. Risk and altruism attributes were evaluated both in terms of concrete occupational traits (i.e., the occupation exposes workers to risk, the occupation is helpful), and in terms of character traits (i.e., workers are brave, workers are selfless). Study 2 focused on six occupations of interest from this set, testing additional correlational hypotheses about policy-relevant attitudes. Each directional, preregistered hypothesis tested for a positive association of heroism with:

H1a: traits related to higher altruism (Study 1 and 2)

H1b: traits related to higher risk (Study 1 and 2)

H2: increased gratitude towards workers (Study 2)

H3: lower support for workers' demands (Study 2)

H4: lower perception that workers are vulnerable (Study 2)

H5: lower criticism acceptability (Study 2)

H6: higher impunity (Study 2)

For each test, we included general attitude toward the occupation as a covariate controlling for positivity halo effects. We also preregistered hypotheses related to ancillary tests: for H1, we tested the interaction of altruism and risk traits as well (both studies), and in H2a,b-H6a,b, we tested the traits of altruism and risk as predictors of outcomes (Study 2). For both studies, our registrations included the study design, planned sample size, inclusion/exclusion criteria, and planned primary analyses. Deviations from the registrations are reported in the manuscript.

Study 1. Attributes of Occupational Heroism

Open data, materials, and codes are available at https://osf.io/tpgax/overview?view_only=e68d76c69f36486789b85c3c3dc8913e. The study was preregistered (https://osf.io/n6mp3) and was approved by a local ethical committee (Ethics ID: 2025175137983710040). Data collection occurred on the 2nd of July, 2025.

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Protocol

Participants were recruited online using Prolific's representative sampling procedure which stratifies participants by sex, ethnicity, and age to match census data from the UK Office of National Statistics. We preregistered a representative sample size of 430 UK residents. This target was based on a previous unpublished study of our variables across five occupations (see SOM for details on this study). The smallest relevant effect in that study was the partial correlation between perceived exposure to danger and perceived heroism for police officers, controlling for attitude, $r = .17$. We therefore used $r = .17$ as the target effect size; a sample of 430 participants provided 95% power to detect an effect of this magnitude. Three participants failed attention checks, and one participant was timed out by Prolific. As preregistered, we excluded these participants and recruited four additional ones to reach 430 participants (225 women, 204 men, and one participant identifying as other, mean age = 47.07, SD = 15.82).

After completing informed consent and a commitment check to encourage honest responding (see Geisen, 2022; Peer et al., 2024), participants rated 53 occupations on the key variables. The occupations were presented in a new random order for each attribute, and the presentation of the attributes themselves was also randomized. After this, participants reported their general attitude toward each occupation. They then supplied demographics and were thanked for their participation.

Target Occupations

Our sample of occupations was based on evaluations of 580 occupations by UK residents (Newlands & Lutz, 2024), including ratings of social value. We aimed for familiar occupations spanning all ten major categories of the International Standard Classification of Occupations (ISCO) groups, with a diversity of consensus social values within each group.

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Within each major ISCO group (e.g., Armed Forces; Managers), we selected one or two occupations for each quintile of social value within that group. We also included six occupations for use in other studies of our program (heroic nurses, soldiers, firefighters, and police officers; less-heroic underwater welders[1] and psychiatrists). For more details on the process, see SOM.[2]

Measures

Study 1 used six single measures, described in Table 1.

Table 1.
Measures in Study 1

Variable	Item	Anchors	Mean	SD
Occupational Heroism	To what extent do you believe the following occupations to be heroes?	Not at all a hero – Very much a hero	2.85	2.01
Character trait: bravery	To what extent do you believe the following occupations to be cowardly or brave?	Cowardly – Brave	4.41	1.53
Character trait: selfless	To what extent do you believe the following occupations to be selfish or selfless?	Selfish – Selfless	4.37	1.57
Occupational trait: danger	To what extent do you believe the following occupations to be exposed to physical danger?	Not at all helpful – Very much helpful	3.40	1.99
Occupational trait: helpfulness	To what extent do you believe the following occupations to actually help other people?	Not at all exposed to danger – Very much exposed to danger	4.06	1.91
Attitude	What is your attitude toward the following occupations?	Very negative – Very positive	4.53	1.58

Attention Checks

[1] We replaced the occupation *Welder* with *Underwater welder* because we planned to include this unfamiliar occupation in study 2.

[2] We rephrased some terms to increase familiarity: "Uber driver" instead of "App-Based Ride-Hail driver (e.g., Uber)", and "Food delivery courier" instead of "App-Based Food Delivery Courier (e.g. Deliveroo)". We used "Machine Operator" and "Farmer" to subsume multiple types of these workers in the ISCO scheme.

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The survey included five items instructing participants to select a specific response (e.g., 'Select 3', 'Tick 5'). Participants who failed at least two attention checks were excluded from the survey.

Results

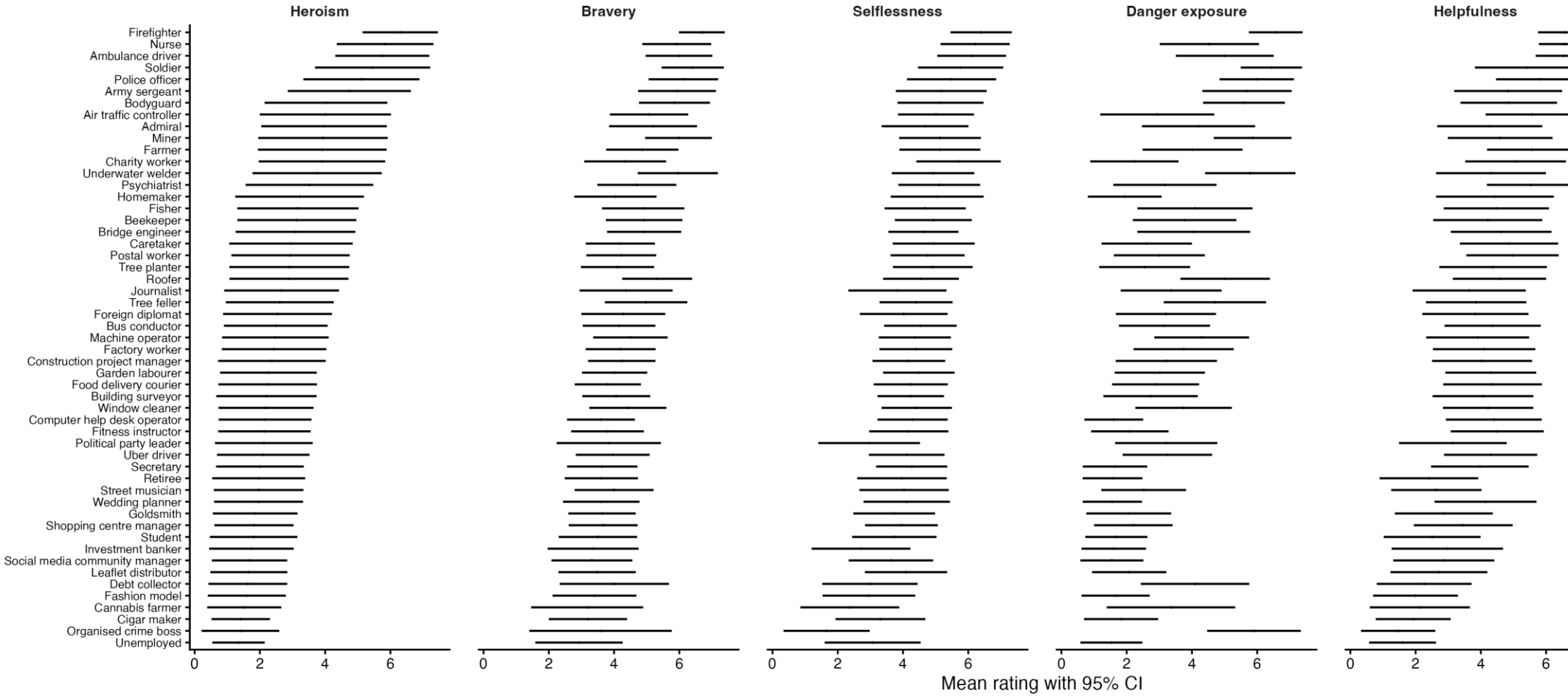
As preregistered, we carried out independent mixed models (one per predictor trait) on the heroism dependent variable, accounting for occupational attitude as a covariate (to eliminate any halo effect) and including random intercepts by participant and occupation, as well as random slopes by occupation.

Means and SD for each main variable for each target occupation are shown in Figure 1. All variables were standardized prior to analysis. Across the four preregistered mixed-effects models, each trait (bravery, selflessness, exposure to danger, helpfulness) significantly predicted occupational heroism above and beyond general attitude (all *ps* < .001). Figure 2A-2D displays the associations between average ratings of heroism (for each participant) and average ratings of each predictor (for each participant) while accounting for attitude.

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Figure 1.

Means and SD for each variable and each target occupation.



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Figure 2.

Correlations between perceived occupational heroism and perceived Helpfulness (A), risk exposure (B), selflessness (C), and bravery (D) in individual models.

Figure 2A - Helpfulness

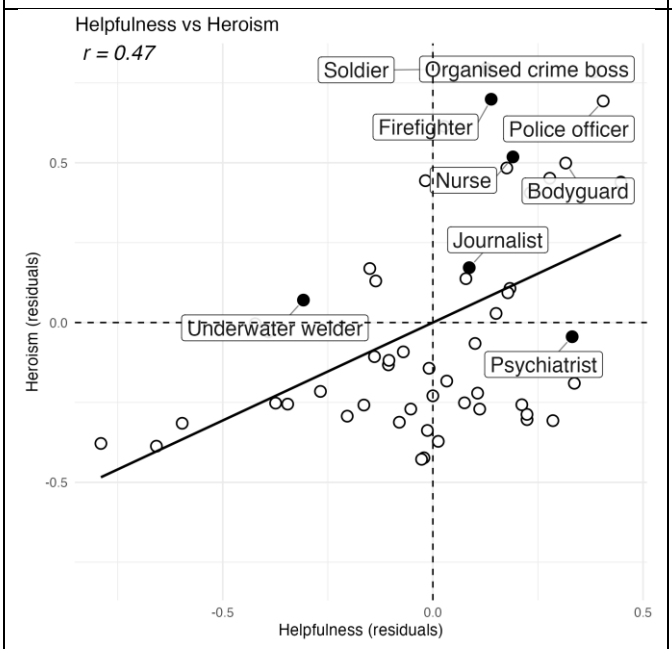


Figure 2B – Risk exposure

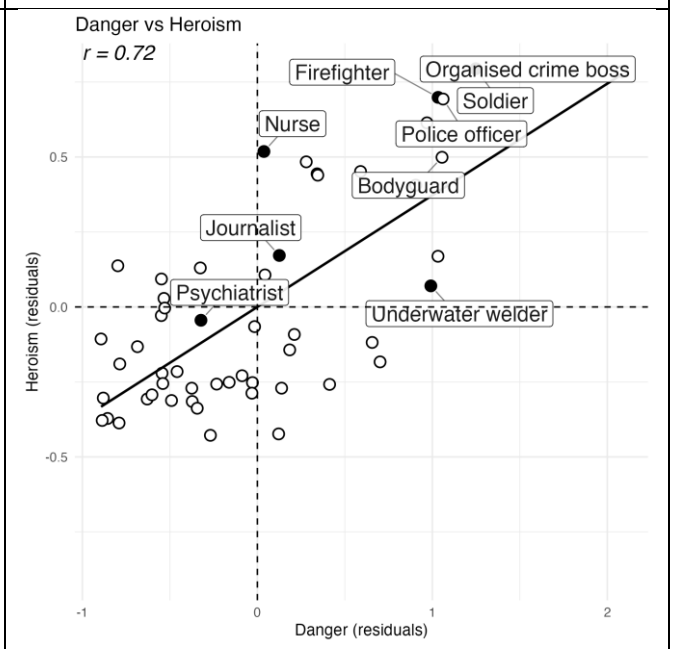


Figure 2C - Selflessness

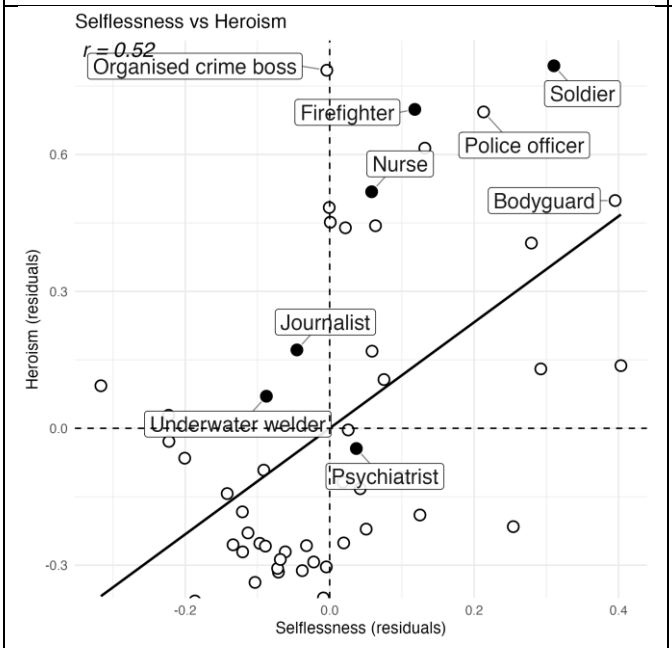
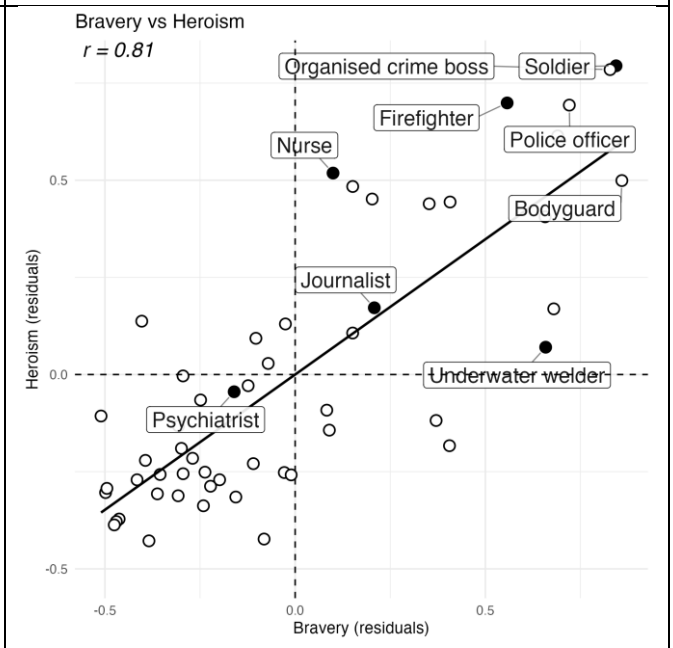


Figure 2D - Bravery



Note: Black data points correspond to occupations of interest in Study 2. Variables displayed are residuals after regressing each variable on attitude.

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All models showed substantial between-occupation variability (from ICC = .52 to ICC = .57). Random slopes analysis showed that, while all traits played a part in most occupations, the hero status of certain groups (e.g., soldiers and firefighters) was especially predicted by bravery, danger, or selflessness, whereas others (e.g., unemployed individuals, cigar makers) showed weaker associations. Details of these independent models are provided in our SOM.

As preregistered, we further explored models that included pairs of attributes as main effects and added the interaction between the two attributes (risk exposure x helpfulness, or bravery x selflessness). Again, we included random intercepts by participant and occupation, as well as random slope by occupation.

In those two mixed models, we found interactions between the predictors, $\beta = 0.07$, $t(22773) = 8.52$, $p < .001$, 95%CI [0.05, 0.08] for the occupational traits, and $\beta = 0.08$, $t(22773) = 14.26$, $p < .001$, 95%CI [0.07, 0.09] for the character traits. The positive coefficients show that these interactions were synergistic: effects of one predictor were stronger at high levels of the other. However, the sizes of the interaction effects were strikingly smaller than the main effects of the predictors in each model: their strongest 95% CI upper bound, .09, was lower than the smallest lower bound for main effects (selflessness, at 0.13). Visual decompositions of these interactions are presented in our SOM.

In our preregistration, we did not specify that the interaction analysis would use attitude as a covariate, because both main effects have evaluation as a common element -- meaning that the main effects would also control for halo effects. However, to quell any doubts, we repeated these analyses adding the attitude covariate, with highly consistent results (see Supplementary Materials).

As non-preregistered exploratory analyses, we conducted an additional model predicting heroism with all four predictors and attitude as a covariate. Variance Inflation Factors were all below 2, suggesting that the estimates were not substantially inflated by collinearity. All

predictors significantly, and independently, predicted heroism; the predictors in the overall model collectively had marginal R^2 = .43. Semi-partial ΔR^2, corresponding to drops in the model marginal R^2 when excluding each predictor from the model (Stoffel et al., 2021), indicated that occupational traits (i.e., risk exposure and helpfulness) had somewhat larger effects on heroism than character traits (i.e., bravery and selflessness) in explaining occupational heroism (see Table 2).

Table 2.

Predictors of Occupational Heroism in a General Mixed Linear Regression Model

Predictor	*β*	95% CI	*t*	Semi-partial R^2
Exposure to danger	0.14	[0.12, 0.15]	22.40***	0.051
Helpfulness	0.19	[0.18, 0.20]	30.77***	0.067
Bravery	0.15	[0.14, 0.16]	26.74***	0.028
Selflessness	0.11	[0.09, 0.12]	19.05***	0.023
Attitude	0.18	[0.17, 0.19]	30.47***	0.033

Note: Semi-partial ΔR^2 were estimated using the partR2 package (Stoffel et al., 2021). ***: p < .001

As preregistered, we looked for multivariate outliers in occupations deviating from the association between heroism and each trait. To do so, we computed Minimum Covariance Determinant (MCD75) with a chi-square cut-off at p = .001, a technique which identifies multivariate outliers (see Leys et al., 2019)[3]. We considered two models: one including heroism and situational evaluations (risk and helpfulness), the other including heroism and character evaluations (bravery and selflessness). To account for attitude, we regressed attitude on each variable and used the resulting residual scores as target variables. Following this process, we identified only one outlier in the model using occupational variables: bodyguard was associated with very high selflessness and bravery scores, but low heroism. In the model using situational variables, only organized crime boss was an outlier, showing high risk-exposure and helpfulness scores in the context of low heroism[4].

Discussion

Study 1 provided evidence for a structure of occupational heroism mapping onto the elements of individual heroism: being altruistic despite personal risk. Indeed, occupational heroism across our representative set of 53 occupations was strongly tied to both objectively and subjectively framed traits: character-based bravery and selflessness on the one hand, and occupational risk exposure and helpfulness on the other. Because attitude was a covariate, these effects were likely to reflect more than mere positive evaluation.

Very few occupations met rigorous criteria for multivariate outliers when controlling for attitude. These two - crime bosses and bodyguards - are understandable, because each face

[3] Note that the preregistered approach was a MCD50 with an alpha set at .1 – however we later discovered that this approach is extremely liberal and does not accurately discriminate outlier values (Leys et al., 2019). We thus revised the parameters of the technique. Indeed, the original analysis identified 16 and 17 outlier occupations, respectively. Also, when attitude was excluded as a covariate, each analysis turned up five occupations as outliers. Details can be found in the SOM.

[4] To rule out that occupational prestige or social value attached to the occupations acted as confounders in these correlations, we included the ratings collected by Newlands and Lutz (2024) as covariates, but without much change to conclusions; see SOM.

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danger while helping a specific clientele, but don't help society at large. It may be worth keeping these exceptions in mind when studying less prototypical examples.

When comparing all predictors of occupational heroism in a single model, all variables still contributed significantly and independently to occupational heroism. However, occupational traits (helpfulness and exposure to danger) showed stronger semi-partial effect sizes on heroism, perhaps because they were framed as objective outcomes rather than subjective motivations.

Altruism and Risk-related attributes, for both occupational and character traits, interacted significantly: the effect of one on occupational heroism increased as the other increased. However, these effects were small compared to the main effects. Although the interaction corroborates formal definitions of individual heroism as being both altruistic and brave, the dominance of main effects opens the possibility of a merely altruistic or merely brave occupation being seen as partially heroic.

Having established these two main attributes of heroism, we investigated in Study 2 how heroism perceptions related to outcomes.

Study 2. Outcomes of Perceived Occupational Heroism

The next study narrowed our focus of occupations but expanded our coverage of the correlates of heroism, now including potential outcomes (H2-11) as well as traits (H1a, 1b) relevant to occupations. We focused on occupational traits in this study (i.e., exposure to risk and helpfulness), which Study 1 indicated as more strongly related to heroism than character traits (i.e., selflessness and bravery). In choosing the situational focus of measurement, we also drew on an experimental study, not reported here, showing stronger effects for manipulations of helpfulness vs. selflessness (a report of this study is available in the SOM).

Of Study 2's target occupations, three were chosen as typically heroic as verified by Study 1 (firefighters, nurses, soldiers), and three non-typically heroic (underwater welders,

psychiatrists, and journalists). Participants received compensation of £9/hour. The study was preregistered (see https://osf.io/e3mhs), and all data, material, and analysis code are reported online (https://osf.io/tpgax/overview?view_only=e68d76c69f36486789b85c3c3dc8913e). The study was approved by the local ethical committee (Ethics ID: 2025175820653410122). Data collection occurred between the 19th of July 2025 and the 22nd of July 2025.

Protocol

As in study 1, participants were recruited using representative sampling on Prolific, with our preregistered sample size of 840 UK residents, based on the smallest correlation found between heroism and any outcome during the validation of the scale used in this study: r = .30 for police officers (see SOM for details on the validation process of the scale). Each of the six target groups of 140 (total: 840) yields a 95% statistical power of detecting this effect size. Eight participants failed the attention checks, and one participant was timed-out by the Prolific platform. Following our plan, we recruited nine additional participants to reach our target (430 women, 403 men, four participants identifying as other, and three participants preferring not to say, mean age = 46.90, SD = 15.59) before analysis.

Participants first completed informed consent and a commitment check as in Study 1, then completed scales measuring our target outcomes. Each participant was randomly assigned to evaluate one of the six occupations. After completing the outcomes, participants completed measures of the occupation's perceived heroism, helpfulness, and risk exposure. They then reported their general attitude toward the occupation, indicated age and gender, and were thanked for participating.

Occupational Heroism Correlates Scale.

We developed a scale to assess outcomes related to occupational heroism. Each target outcome was measured in two ways: a general, context-independent measure, and a specific, context-dependent measure. For details of validation including reliability, factor structure, and

116 further validation of scenarios for specific measures of impunity, see SOM and
117 https://osf.io/tpgax/overview?view_only=e68d76c69f36486789b85c3c3dc8913e. [5]
118 **Gratitude**. The general measure of gratitude was a single item ("To what extent do you feel
119 grateful for [*Target workers*] work?", scores ranging from "1 – Not at all" to "7 – Very
120 much"). The specific measure of gratitude began, "If there were a public campaign in support
121 of [*Target workers*], how likely would you be to do each of these things in response?" then
122 listed three behaviors: sharing a supportive post online, donating money, and volunteering,
123 evaluated on a scale from "1 – Very unlikely" to "7 – Very likely". Reliability of this measure
124 was good, ω = .88.
125 **Support for Worker Demands**. The general measure asked whether it should be the
126 government who takes the lead in proposing occupational salary and benefits improvements
127 (item 1, *reversed*) or the workers (item 2). We reasoned that participants would see the issue
128 as bipolar, supporting government action but opposing worker action the more the occupation
129 was heroized.
130 However, reliability was low, ω = .34, with only a small positive correlation between
131 the two items after recoding, r = .21. Possibly, some participants might agree with helping
132 workers regardless of who initiated the demands, rather than seeing the two questions as zero-
133 sum. Because of this low reliability, we deviated from the registration to analyze only the
134 single item measuring support for workers taking the lead (any difference between this and
135 the two-item measure are reported in the Results section).
136 The specific measure of support consisted of two items measuring support for worker
137 protests (e.g., "[*Target workers*] should protest more for the rights they deserve"). The two
138 items had a good reliability, ω = .86.

[5] We also note that the pilot study provided an initial test of the hypothesis that perceived occupational heroism would be positively associated with support for workers' impunity. Study 2 replicated the results found in the pilot study, supporting our hypothesis.

Vulnerability Perception. The general measure evaluated whether workers were seen as 1) victimized, 2) unfairly treated, and 3) exploited (using a scale from "1 – Not at all", to "7 – Very much"). The items had excellent reliability, ω = .92. The specific measure of victim perception presented a scenario: 'In their professional life, more than 60% of [*Target workers*] have reported intense migraines from working long hours'. Three items assessed beliefs that workers would be resilient (reversed) or need protection (e.g., 'This report shows that psychiatrists require greater protection') using a scale from "1 – Strongly disagree" to "7 – Strongly agree". Reliability was good, ω = .80.

Criticism Acceptability. The general measure included three Likert-type statements assessing agreement with the idea that the occupation should not be criticized (e.g., "People should stop badmouthing journalists"). Reliability was good, ω = .86. The specific measure presented two hate-speech tweets targeting the occupation (e.g., "Journalists should all die and burn in hell"). Participants could select any number of five increasingly negative reactions to the tweets (in order: like, ignore, delete, ban, and prosecute). Each tweet was given a score ranging from 1 (liked) to 5 (prosecution), determined by the most severe selected option. As such, the measure reflects the maximum level of punitive response participants were willing to endorse toward a user posting hateful content online. Reliability between the two tweets was acceptable, ω = .74.

Impunity. The general measure consisted of three items assessing support for defiance of regulations (e.g., "Journalists should be able to do whatever it takes to achieve their mission"), scaled from "1 - Strongly disagree" to "7 - Strongly agree", ω = .82. The specific measure presented a vignette, different for each occupation, where a worker violated rules or ethics (e.g., a journalist illegally tap-wiring a politician's family). Participants answered three items on whether such violations should be legally protected (e.g., "This journalist should be

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protected from prosecution"), scaled from "1 - Strongly disagree" to "7 - Strongly agree". Reliability was excellent, ω = .92.

Occupational Heroism

A single item ("In your personal opinion, to what extent do you agree with the following statements: [*Target workers*] are heroes?") scaled from "1 - Strongly disagree" to "7 - Strongly agree".

Occupational Heroism Attributes

Participants answered situational questions about the traits of the occupation: "[*Target workers*] are exposed to physical danger" and "[*Target workers*] help people" on a scale from "1 – Strongly disagree" to "7 – Strongly agree".

Attitude

A single item, "What is your attitude towards [*Target workers*]?" scaled from "1 - Very negative" to "7 - Very positive".

Attention Checks

These checks were implemented and enforced identically to Study 1.

Results

To test H2 to H6 as preregistered, we computed average scores for each measure (specific and general, separately, for: gratitude towards workers, support for workers' demands, victim perception of workers, criticism acceptability and support for impunity). All variables were standardized using their own means and SD. We used independent Ordinary Least Squares (OLS) regression models with type III sums of squares to predict each of our target outcomes using occupational heroism score and occupations as predictors. As preregistered, for each model, we evaluated normality of residuals distribution by looking at the QQ plot. Huber-weighted robust regressions were modeled and compared to the OLS

models to evaluate the influence of potential outliers (see Wilcox, 2012). All details regarding these diagnostics can be found in the online SOM.

The first preregistered model predicted outcomes using occupational heroism (for H2 - 6) or exposure to risk and helpfulness (for H7-11) as main predictors, and occupation as a nominal covariate. In addition to the main model, we preregistered additional models to compare with the main model: a model using occupation as a moderator in addition to a covariate (thus evaluating how effects of predictors are qualified by the type of occupation considered), a model adding attitude as a covariate in the main model (accounting for halo effects as in Study 1), and a final model adding attitude to the occupation-moderated model. We only report this last model as a test of robustness against halo effects when predictor effects were significantly moderated by type of occupation, without the attitude covariate, in the first place.

An online app was designed as supplementary material to view results from all these preregistered models: [anonymized] (see also SOM for a static PDF version). Overall, main effects of occupational heroism remained stable across all models, regardless of the general vs specific level of the target outcome. With some exceptions, effects were also robust when including the attitude covariate. Table 3 reports descriptive statistics for all main variables within each target occupations. Tables 4 and 5 present statistical details relating to our preregistered tests[6]. For all results, η^2_p with 95% confidence intervals are provided as a measure of effect size.

[6] Because some variables showed substantial skewness, we repeated the analyses using log-transformed scores. This robustness check did not change any statistical conclusions (see SOM for details).

Table 3.

Descriptive statistics

Variable	Welders	Journalists	Nurses	Psychiatrists	Soldiers	Firefighters
Gratitude (G)	5.23 (SD = 1.39)	4.56 (SD = 1.58)	6.26 (SD = 1.21)	5.22 (SD = 1.47)	5.36 (SD = 1.79)	6.56 (SD = 0.82)
Gratitude (S)	3.16 (SD = 1.62)	2.43 (SD = 1.53)	3.98 (SD = 1.68)	3.08 (SD = 1.69)	3.29 (SD = 1.82)	3.83 (SD = 1.61)
Criticism acceptability (G)	2.75 (SD = 1.16)	3.53 (SD = 1.19)	2.28 (SD = 1.18)	3.01 (SD = 1.23)	2.64 (SD = 1.43)	2.25 (SD = 1.07)
Criticism acceptability (S)	2.37 (SD = 0.95)	2.67 (SD = 0.77)	2.22 (SD = 0.89)	2.38 (SD = 0.95)	2.3 (SD = 1.04)	2.1 (SD = 1.01)
Support for Demands (G)	4.84 (SD = 1.21)	4.72 (SD = 1.35)	4.78 (SD = 1.33)	4.92 (SD = 1.13)	4.53 (SD = 1.34)	5.08 (SD = 1.27)
Support for Demands (S)	5.01 (SD = 1.29)	4.46 (SD = 1.43)	5.17 (SD = 1.53)	4.61 (SD = 1.23)	4.54 (SD = 1.54)	4.95 (SD = 1.46)
Victimization (G)	2.84 (SD = 1.49)	2.59 (SD = 1.13)	4.12 (SD = 1.55)	2.37 (SD = 1.2)	3.29 (SD = 1.47)	2.66 (SD = 1.34)
Victimization (S)	5.23 (SD = 1.1)	3.85 (SD = 1.35)	5.39 (SD = 1.07)	4.56 (SD = 1.19)	4.66 (SD = 1.18)	5.15 (SD = 1.07)
Impunity (G)	3.97 (SD = 1.23)	3.37 (SD = 1.39)	3.92 (SD = 1.39)	3.67 (SD = 1.34)	3.68 (SD = 1.58)	4.54 (SD = 1.4)
Impunity (S)	5.32 (SD = 1.55)	2.81 (SD = 1.58)	4.66 (SD = 1.92)	4.13 (SD = 1.82)	5.47 (SD = 1.5)	4.73 (SD = 1.43)
Heroism	4.82 (SD = 1.32)	3.56 (SD = 1.51)	5.63 (SD = 1.58)	4.51 (SD = 1.46)	5.08 (SD = 1.67)	5.95 (SD = 1.15)
Attitude	5.62 (SD = 1)	4.51 (SD = 1.3)	6.29 (SD = 1.07)	5.57 (SD = 1.06)	5.53 (SD = 1.44)	6.5 (SD = 0.76)
Perceived exposure to risk	6.23 (SD = 0.87)	4.89 (SD = 1.31)	5.67 (SD = 1.18)	5.17 (SD = 1.26)	6.33 (SD = 0.84)	6.7 (SD = 0.56)
Perceived Helpfulness	5.73 (SD = 1.08)	4.49 (SD = 1.33)	6.54 (SD = 0.82)	6.02 (SD = 1.02)	5.58 (SD = 1.38)	6.7 (SD = 0.57)

Gratitude

Occupational heroism had a strong positive effect on gratitude, both general and specific. Occupation type affected gratitude on the general measure (see Table 3 for

descriptives), but not on the specific measure, and was also a significant moderator of heroism effects on general gratitude. Specifically, after Tukey corrections for multiple tests, the slope of general gratitude predicting occupational heroism was significantly larger for journalists than firefighters, and the corresponding slope for soldiers was significantly larger than those for firefighters, nurses, psychiatrists and underwater welders. All other pairwise comparisons failed to reach significance. In addition, the effect of heroism on general gratitude was significant within each occupation condition (all *p*s < .001).

By contrast, the correlation between heroism and specific gratitude was not qualified by the type of occupation. Also, results were unchanged when adding attitude as a covariate to either model and either outcome (see SOM).

Support for Workers' Demands

Because of the low reliability of the two items of the general-level measure of the subscale, we focused on the single item measuring support for workers (rather than the government) in initiating changes. Averaging both items did not change the statistical inferences reported (as noted in table 3).

In contrast with our preregistered hypotheses, occupational heroism predicted higher and not lower support for workers' demands, both using the general and the specific measure. Occupation type also predicted support for workers' demands on both measures (see Table 3).

In the second model, occupation type was a significant moderator of heroism effects on specific support for workers' demands. After Tukey corrections, the slope for soldiers was significantly smaller than the slope for nurses, and also journalists. All other pairwise comparisons failed to reach significance. In addition, the effect of heroism on specific support was significant within each occupation condition (all *p*s < .05).

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However, the correlation between heroism and general support for workers' demands was not qualified by the type of occupation. In the third and fourth models, when accounting for attitude, occupational heroism was no longer significantly correlated with the general measure of support in the main model. However, the correlation with the specific measure remained significant, as well as its interaction with occupations (see SOM)[7].

Victim Perception

In contrast with our preregistered hypotheses, occupational heroism was positively associated with both general and specific victim perception. Occupation type also affected both measures (see Table 3) and was a significant moderator of heroism effects on specific, but not general victim perception. Specifically, after Tukey corrections, the heroism-specific victim perception slope for soldiers was significantly smaller than for firefighters; all other pairwise comparisons failed to reach significance. In addition, the slope was significant for each occupation separately (all $ps < .01$). Results remained unchanged when adding attitude as a covariate (see SOM).

Criticism Acceptability

[7] As noted in the introduction, contrasting this support for workers' initiated demands with support for government initiated demands may help disentangling two accounts underlying reduced support for workers' demands. If people report being against government initiated demands, it would emphasise a moral licensing effect whereby the positive act of labelling a group as heroes could justify subsequent negative actions such as granting them more privileges – whereas an account based on the stereotype of heroes as being self-sacrificing would only decrease support for workers' initiated heroes (i.e., heroes should not ask for rewards), but not the government initiated demands. When analysing support for the other item of the subscale, the support for government initiated demands, we found no support for an association between perceived occupational heroism and support for government-initiated demands (with the exception of model 2 that indicated that perceived occupational heroism predicted greater support for government initiated demands). This does not support the idea that participants felt compelled to exploit workers because of feeling licensed to do it by heroising them (see SOM for details).

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Occupational heroism had a strong negative effect on criticism acceptability both using our general measure and our specific measure[8]. Occupation type did not have any main or interaction effect on either general criticism acceptability or specific criticism acceptability. These results remained unchanged when adding attitude as a covariate (see SOM).

Because basing criticism acceptability on the most severe response might have introduced an artificial ordinality, we also treated each option as a separate dichotomous outcome in five logistic regressions. In this approach, suggested by an anonymous reviewer, perceived occupational heroism significantly positively predicted removing the post, banning the user, and prosecuting the user, while it negatively predicted ignoring the post. It also negatively predicted liking the post, but only for one of the two tweets – possibly because very few participants reported they would like the posts. These post-hoc alternative analyses are fully reported in the SOM.

Impunity

Occupational heroism had a strong positive effect on support for impunity, using both measures. Occupation type also related to general support for impunity and on specific support for impunity (see Table 3).

In the second model, occupation type was a significant moderator of heroism effects on general impunity, but not specific. Specifically, after Tukey corrections for multiple tests, only the heroism-general impunity relationship for nurses was significantly lower than that for soldiers. All other pairwise comparisons were nonsignificant. Also, the effect of heroism on general impunity was significant within each occupation condition (all $ps < .01$).

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For general impunity, results remained unchanged when adding attitude as a covariate to the first and second models. However, for specific impunity, accounting for attitude did cancel the effect of occupational heroism, $F(1, 832) = 2.91$, $p = .09$, $\eta^2_p = .003$, 95%CI[<.001, .016], indicating that it might be a halo effect (see SOM).

Effects of Danger and Helpfulness

We further hypothesized that evaluations of danger and helpfulness should also be associated with the predicted outcomes (see H7-H11).

As preregistered, we conducted similar models as before, but using exposure to risk and helpfulness instead of occupational heroism as predictors. Table 6 summarizes the outcomes. Details of each model can be found in the SOM.

Table 4

Main effects of occupational heroism and occupation type on Study 2 outcomes

Outcome	Level	Effect	Test	p	η^2_p [95% CI]
Gratitude	General	Occupational heroism	F(1, 833) = 653.30	< .001	.440 [.390, .480]
		Occupation type	F(5, 833) = 8.16	< .001	.047 [.019, .073]
	Specific	Occupational heroism	F(1, 833) = 264.46	< .001	.240 [.190, .290]
		Occupation type	F(5, 833) = 1.39	.220	.010 [< .001, .019]
Support for demands	General	Occupational heroism	F(1, 833) = 35.38	< .001	.041 [.019, .070]
		Occupation type	F(5, 833) = 3.20	.007	.019 [.002, .036]
	Specific	Occupational heroism	F(1, 833) = 124.46	< .001	.130 [.094, .180]
		Occupation type	F(5, 833) = 3.80	.002	.022 [.003, .041]
Victim perception	General	Occupational heroism	F(1, 833) = 94.47	< .001	.100 [.066, .140]
		Occupation type	F(5, 833) = 26.21	< .001	.140 [.092, .190]
	Specific	Occupational heroism	F(1, 833) = 128.64	< .001	.130 [.094, .180]
		Occupation type	F(5, 833) = 15.52	< .001	.085 [.049, .120]
Criticism acceptability	General	Occupational heroism	F(1, 833) = 354.95	< .001	.300 [.250, .350]
		Occupation type	F(5, 833) = 1.28	.270	.008 [< .001, .017]
	Specific	Occupational heroism	F(1, 831) = 90.18	< .001	.098 [.063, .140]
		Occupation type	F(5, 831) = 0.22	.950	.001 [< .001, .002]
Support for impunity	General	Occupational heroism	F(1, 833) = 121.02	< .001	.130 [.088, .170]
		Occupation type	F(5, 833) = 3.56	.003	.021 [.003, .039]
	Specific	Occupational heroism	F(1, 833) = 52.23	< .001	.059 [.032, .093]
		Occupation type	F(5, 833) = 34.66	< .001	.170 [.130, .210]

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Table 5

Moderation of occupational heroism effects by occupation type and Tukey-corrected follow-up comparisons

Outcome	Level	Test	p	η^2 [95% CI]	Follow-up comparisons
Gratitude	General	F(5, 828) = 8.31	< .001	.048 [.020, .074]	Significant Tukey-corrected slope contrasts: J vs. F, b = -0.39, t(828) = -4.17, p = .0005, 95% CI [-0.67, -0.12]; S vs. F, b = -0.52, t(828) = -5.61, p < .0001, 95% CI [-0.78, -0.25]; S vs. N, b = -0.28, t(828) = -3.68, p = .0034, 95% CI [-0.50, -0.063]; S vs. P, b = -0.29, t(828) = -3.59, p = .0047, 95% CI [-0.51, -0.058]; S vs. W, b = 0.34, t(828) = 4.02, p = .0009, 95% CI [0.099, 0.58]. Simple slopes were significant within all occupations, all ps < .001.
Gratitude	Specific	F(5, 828) = 1.00	.420	.010 [< .001, .014]	No significant moderation.
Support for demands	General	F(5, 828) = 0.89	.490	.005 [< .001, .013]	No significant moderation.
Support for demands	Specific	F(5, 828) = 3.63	.003	.021 [.003, .039]	Significant Tukey-corrected slope contrasts: N vs. S, b = 0.31, t(828) = 3.22, p = .020, 95% CI [0.035, 0.59]; J vs. S, b = 0.29, t(828) = 2.94, p = .040, 95% CI [0.008, 0.57]. Simple slopes were significant within all occupations, all ps < .05.
Victim perception	General	F(5, 828) = 1.47	.200	.009 [< .001, .020]	No significant moderation.
Victim perception	Specific	F(5, 828) = 2.65	.022	.016 [< .001, .031]	Significant Tukey-corrected slope contrast: F vs. S, b = 0.29, t(828) = 3.04, p = .029, 95% CI [0.018, 0.57]. Simple slopes were significant within all occupations, all ps < .01.
Criticism acceptability	General	F(5, 828) = 1.25	.290	.007 [< .001, .017]	No significant moderation.
Criticism acceptability	Specific	F(5, 826) = 1.05	.390	.006 [< .001, .015]	No significant moderation.
Support for impunity	General	F(5, 828) = 3.12	.008	.019 [.001, .035]	Significant Tukey-corrected slope contrast: N vs. S, b = -0.29, t(828) = -3.07, p = .027, 95% CI [-0.57, -0.02]. Simple slopes were significant within all occupations, all ps < .01.
Support for impunity	Specific	F(5, 828) = 1.24	.290	.007 [< .001, .017]	No significant moderation.

Note. η^2p = partial eta squared. Follow-up comparisons are reported only when the interaction between occupational heroism and occupation type was significant. For significant interactions, the follow-up column reports all significant Tukey-corrected pairwise comparisons of occupation-

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specific slopes; all other pairwise comparisons failed to reach significance. The confidence intervals reported for follow-up comparisons refer to differences in slopes, not to η^2p. F: Firefighters; J: Journalists; N: Nurses; P: Psychiatrists; S: Soldiers; W: Underwater welders.

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Table 6.
Summary of significance of associations between each outcome, heroism, and its components

Outcome	Predictor	Significant?	Sig. after controlling for attitude
Gratitude (General)	*Heroism*	***	***
	Helpfulness	***	***
	Risk	ns	ns
Gratitude (Specific)	*Heroism*	***	***
	Helpfulness	***	ns
	Risk	ns	ns
Support for workers' demands (General)	*Heroism*	[***]	ns
	Helpfulness	[***]	ns
	Risk	[***[a]]	[***[a]]
Support for workers' demands (Specific)	*Heroism*	[***]	[***]
	Helpfulness	[***]	ns
	Risk	[***]	[***]
Perception of victimization (General)	*Heroism*	[***]	[***]
	Helpfulness	ns	[*]
	Risk	[***]	[***]
Perception of victimization (Specific)	*Heroism*	[***]	[***]
	Helpfulness	[***]	ns
	Risk	[***]	[***]
	Heroism	***	***

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Criticism acceptability (General)	*Helpfulness*	***	***
	Risk	**	*
Criticism acceptability (Specific)	*Heroism*	***	***
	Helpfulness	***	ns
	Risk	ns	ns
Impunity (General)	*Heroism*	***	***
	Helpfulness	***	ns
	Risk	ns	ns
Impunity (Specific)	*Heroism*	***	ns
	Helpfulness	***	ns
	Risk	*	ns

[a]: inference changed to non-significance when using the whole subscale instead of the single item general measure of support for workers' demands.
Note: ***: $p < .001$, **: $p < .01$, *: $p < .05$, ns: p جي.05. Asterisks in brackets indicate effects in the opposite direction to our initial hypotheses

Replicating the Structure of Occupational Heroism

We went beyond the preregistration to replicate Study 1's findings about the structure of occupational heroism. As expected, when entered simultaneously, both danger and helpfulness predicted occupational heroism, with a very large effect of helpfulness, $F(1,832) = 313.50$, $p < .001$, $\eta^2_p = .27$, 95%CI[.23, .32], and a smaller effect of danger, $F(1, 832) = 13.30$, $p < .001$, $\eta^2_p = .016$, 95%CI[.003, .036]. Although the effect of danger was not qualified by the occupation type, $F(5, 822) = 0.99$, $p = .43$, $\eta^2_p = .006$, 95%CI[<.001, .014], the effect of helpfulness was, $F(5, 822) = 4.03$, $p = .001$, $\eta^2_p = .024$, 95%CI[.004, .043]. After Tukey correction, two comparisons were significant: the effect of perceived helpfulness on

heroism was significantly larger for soldiers vs welders, $b = 0.61$, $t(822) = 3.51$, $p = .0063$, 95%CI[0.11,1.1]; and significantly larger for nurses vs welders, $b = 0.74$, $t(822) = 3.25$, $p = .015$, 95%CI[0.09, 1.39].

When controlling for attitude, both the effect of exposure to risk and helpfulness remained significant, respectively, $F(1, 831) = 8.93$, $p = .003$, $\eta^2_p = .011$, 95%CI[.001, .029], and $F(1, 831) = 21.28$, $p < .001$, $\eta^2_p = .025$, 95%CI[.008, .05]. However, in this analysis, occupations did not qualify any effects (see SOM for details).

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Discussion

Study 2 provided full support for the hypotheses regarding the moral shielding of heroized workers: perceived occupational heroism accompanied lower criticism acceptability and higher support for impunity, both in support for deregulation and in protecting rule-breaking workers from prosecution. Our conclusions held for both general-level and specific-level measures. They also mainly held when controlling for attitude, except for the general-level support for workers measure, and the specific-level impunity measure.

Surprisingly, although heroism was associated with increased gratitude (as predicted), it was not associated with lower perception of workers as suffering and vulnerable, nor with lower support for workers' demands. In fact, we observed opposite effects, with occupational heroism predicting greater support for workers' demands, and greater perception that workers are vulnerable.

Most of the above-described effects of perceived occupational heroism were invariant across most occupations. Soldiers, however, stood out as an exception to this general pattern. Indeed, as shown in table 5, in all cases where there was a significant moderation of occupation on the main effect of heroism, follow-up analyses identified soldiers as different from other occupations. Soldiers' perceived heroism related more strongly to gratitude and impunity, but more weakly to support for demands and perception of victimization[9].

Although attitude was a strong statistical predictor, accounting for attitude did not fully cancel correlations between heroism and our target outcomes, except for the specific measure of support for impunity and the general measure of support for workers' demands. Occupational heroism did show effects beyond mere positivity in the great majority of our

[9] Because the soldier condition behaved unusually, we re-analyzed the data excluding participants assigned to it. Results remained similar, and statistical decisions did not change following their exclusion (see SOM).

measures (8 out of 10), so these two nonsignificant effects might be due to Type II error or idiosyncratic traits of the measures.

As predictors of our main outcomes, helpfulness and risk apparently followed an interpretable pattern of robustness[10]. "Robustness" of a finding is here defined as the strength and significance of the predictors, whether both general and specific measures were significant, and whether this held true when controlling for attitude. By these standards, outcomes related to the moral worth of the occupation, such as gratitude, criticism acceptability, and impunity, were more robustly predicted by helpfulness. In contrast, outcomes more related to vulnerability, such as perception of workers as vulnerable and support for their demands, were more robustly predicted by perceived exposure to risk. Finally, replicating study 1, we found that occupational heroism was associated with perceived exposure to risk and helpfulness regardless of attitude. Interestingly, the effect of helpfulness was strikingly large, and qualified by occupation: compared to soldiers and nurses, welders' helpfulness contributed less to heroism ratings, though still significantly.

General Discussion

Based on theoretical definitions of heroism, our studies assessed how perceptions of occupational heroism correlated with perceptions that their workers are helpful and exposed to risk. Across a representative set of 53 occupations, helpfulness and risk related to heroism in an additive way via main effects, with only a weak synergistic interaction between the two. That is, an occupation seen as helpful but not at risk, or at risk but not particularly helpful, will be seen as semi-heroic, rather than as not heroic at all. Only a few counter-examples to the rule appeared in our outlier analysis; in particular, criminal occupations were seen as high-

[10] We thank an anonymous reviewer for pointing out this pattern to us.

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risk but not very heroic. Indeed, these occupations are not merely unhelpful, but actively harmful to society, and would better fit a villain than a hero role.

We furthermore showed how this folk theory of occupational heroism related to important attitudes and tendencies. Laypeople were more inclined to punish critics of heroically viewed occupations, and to protect such occupations from legal restrictions and prosecutions. Although correlational, our results are compatible with accounts detailing how occupational heroism contributes to an environment in which workers' rule-breaking is enabled. For instance, Puteri et al. (2017) documented how police officers justified accepting bribes by emphasizing the morality of their actions in the context of their profession. This is consistent with the broader literature on moral licensing showing how past good deeds can enable actions that could be seen as immoral (see Merritt et al., 2010 for a literature review).

Heroized occupations in our correlational studies were *more* supported in their working conditions, and *more* seen as vulnerable. This contrasts with previous evidence that workers described heroically are especially exploited (Stanley et al., 2023; Stanley & Kay, 2024) or less appraised as victims needing protection (Yuan et al., 2021), as well as with evidence that other benevolent stereotypes, such as those of women, underpin exploitation (Glick & Fiske, 2001). First, it is important to note that our specific measure of victimization directly assessed the perception that workers are exploited, unfairly treated, and victimized. In contrast, most of Stanley and Kay's (2024) studies measured whether heroic workers would be typecast as more likely to accept exploitative policies. But as one exception, Stanley and Kay (2024, study 5) demonstrated effects on willingness to pay workers, so our findings are not just the result of a difference in question framing.

As our moderation analyses show, these effects were relatively independent of occupation type. While we described occupations in general terms, rather than using specific vignettes as previous research did, we think it unlikely that further deindividualizing workers

would lead to support of better rather than worse treatment. Still, these discrepancies might be explained by other methodological differences. While Stanley and Kay (2024) studied an U.S. sample, we focused on a representative British sample. Differences in work or heroism attitudes between the two countries might account for the difference we found. In addition, correlational designs risk introducing confounds which would be neutralized in an experimental study with a random allocation between each condition such as in Stanley and Kay (2024). Further work using comparable experimental manipulations might be necessary to rule out this explanation.

A perception of self-sacrificing heroes is consistent with our observation that people care about heroes' welfare. However, some implications we thought would follow from self-sacrifice were in fact contradicted by our data: specifically, protesting for collective rights or demanding more benefits was judged to be positively compatible with heroism. We admit one misstep surrounding this latter measure: the low negative correlations between the items supporting worker and government initiatives suggests that participants did not see them as very much opposed. As such, the worker initiative might have partially captured general support for improving the conditions of the workers.

A novel finding, across a variety of occupations, was that occupational heroism accompanies a protective moral environment: people are less critical of heroized workers if they bend the rules. This finding supports other observations that granting blanket hero status to police or military personnel can enable rights and justice violations by them (Clément et al., 2017; Puteri et al., 2017). More generally, regulations, although seen as burdensome, serve the purpose of protecting workers and society from negative consequences of their missions. Yet, we show that labelling occupations as heroic, even nurses or welders, might encourage an environment where the general public would view their transgressions as

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excusable. Therefore, careful consideration should be taken when using heroic rhetoric in public discourse.

In moderation analyses by occupation, we found evidence for a special profile for soldiers across several outcome variables. The reduced association between soldiers' heroism and support for workers' demands could be explained prosaically: it is against regulations for British soldiers to protest or strike. However, other outcomes showed "soldier effects": soldiers' heroism is less strongly related to their victimization and more strongly related to rewards (increased gratitude and impunity). Franco and Zimbardo (2011) noted that the "martial heroism" of soldiers or police is tied to their occupational duty, while civil heroes are not duty-bound. However, on the occupational level, this distinction is less absolute. If any job is heroic, this arises from its defining characteristics, including duty (cf. Goethals & Allison's class of "transparent heroes", 2012). A more reasonable interpretation is that martial *risk,* specifically, is assumed as part of the soldier's job rather than seen as heroic. This would explain why soldiers' heroism is less tied to measures better predicted by risk (demands and vulnerability) and more tied to measures better predicted by helping (gratitude and impunity).

Limitations

As informative as our findings were, several limitations of this work must be emphasized. First, the study was conducted on representative UK samples, so its conclusions can be generalized to the British population but not necessarily to other countries. Some heroic narratives might be specific to certain times and places: soldiers in the US, the National Health Service in the UK post-COVID. In addition, our conclusions are constrained by the set of occupations included. Although we sought a representative sample of occupations in Study 1, the range examined in Study 2 was narrower.

Our assessment of several constructs, including heroism, helpfulness, bravery, selflessness, exposure to danger, and attitude, used single-item measures. This decision was

made because Study 1 tested many occupations, and responses needed to be brief. In Study 2, we decided to keep consistency with Study 1, focusing our development of multi-item measures on the outcomes rather than on measures that we had already made use of. We made these decisions with the understanding that multiple items involve a trade-off between being able to assess cross-sectional reliability, and other factors including construct dilution. Thus, it has been argued that single items are most adequate when measuring an association between a concrete concept (e.g., whether the label "hero" is appropriate) and a concrete object (the occupation; e.g., Allen et al, 2022, Rossiter, 2002.) However, by this standard, it is still possible that our simple measure of occupational evaluation, used as a covariate, is limited in its ability to fully rule out other semantic halo effects not covered by the "positive/negative" dimension.

In a similar way, our study did not account for the presumed gender of workers. Although we did not find that either female-coded nurses or more male-coded firefighters, welders and police officers differed from other occupations, it is noteworthy that heroism is typically male-coded (Parkinson et al., 2023; Rankin & Eagly, 2008). It is possible that the gendering of professions might still contribute some variance to heroism perception, which would be worth studying. In any case, our studies demonstrate that both helpfulness and exposure to risk contribute independently to perceived heroism across all considered occupations, suggesting a universal structure of occupational heroism.

Our surveys relied on respondents' self-reported evaluations of workers. Beyond psychometric concerns related to common-method variance, our findings therefore speak primarily to public opinion, rather than to actual behavior toward these groups. Studies measuring real-life behaviors indicating support or criticism of workers would strengthen the relevance of our findings for policy.

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Most importantly, the article presents a correlational research program, leaving unclear how much heroic perceptions are causal explanations. Although unlikely, it is possible that laypeople infer occupational heroism from their own motivation to shield the workers from criticism and prosecutions. This possibility can only be eliminated through experimental designs allowing causal inferences.

Similarly, although Study 1 found compelling evidence that occupational heroism, altruism and bravery were strongly associated, the design cannot rule out bi-directional links between these dimensions. We have seen medical helping occupations become heroized during health crises such as the covid-19 pandemics, as they faced danger of infection (Blankshain et al., 2022; Mohammed et al., 2021). Even previously unheroic groups, such as food delivery workers, became seen as heroic (Cameron et al., 2022; Friedland & Balkin, 2023), plausibly because of new perceptions that they were delivering essential (not luxury) help, and that they were facing health risks on the job. However, once conferred and reinforced by the media, hero status might also reinforce the perception of risk and helping attributes. Causal tests of these possibilities would be enlightening.

Also, our results concern public perceptions rather than the true personality of people in occupations. Indeed, Rhoads et al. (2023) showed inaccurate perceptions of extraordinary altruists (e.g., organ donors, heroic rescuers): laypeople assumed that altruists would display higher scores than matched controls on all positive personality traits (e.g., extraversion, agreeableness, conscientiousness) whereas extraordinary donors were simply less selfish. It would thus be useful to document the self-perceived and the actual characteristics of occupations that are heroized to greater or lesser extent.

Our research also did not speak to the true working conditions of the occupations, for which perceptions and reality may sometimes be at odds. For instance, in Study 1, technical and industrial jobs (e.g., miners, welders, roofers) were perceived as exposed to less danger

compared with more heroic ones (e.g., firefighters). However, in the UK, the group "agriculture, forestry, and fishing" accounts for the largest rate of occupational fatalities each year: 8.23 per 100,000 workers in 2024/2025 (Health and Safety Executive, 2025). In contrast, firefighters had zero fatalities during the same year (Home Office, 2024). While it is important not to trivialize the risks of firefighting, it seems that exposure to risk might be relatively downplayed for occupations that are not typically heroized (such as fishing or forestry). Although helping is harder to gauge objectively than risk is, some occupations such as sanitation workers may have also had their helpfulness underestimated. Such misperceptions were explicitly addressed in campaigns to boost occupations' status as "key workers" during COVID-19 quarantines (de Camargo et al., 2020).

Relations to Other Theories

The ironic effect of heroism we initially expected could also be explained by the theory of moral licensing (Merritt et al., 2010): granting the 'hero' label to workers is a good deed that may enable later exploitative behaviors towards them. However, the moral licensing mechanism would predict a broad backlash against heroized workers, whereas our predictions based on moral roles would limit backlash to disapproval of specific unheroic actions, such as worker-led protests and expressions of suffering. In any case, neither prediction of ironic effects was validated by Study 2, which found heroism to be broadly beneficial to the interests of the occupation so labeled.

Our two-dimensional structure also broadly resembles models of social perception, in which group perceptions are organized around warmth/communion (possibly including morality) and competence/agency (Abele & Wojciszke, 2014; Fiske et al., 2002). Our dimensions plausibly show some overlap with the others: helpfulness is akin to warmth-related and moral content, whereas bravery may imply agency. However, our data have reinforced our initial beliefs that heroism involves more specific concepts. For example,

engineers might plausibly be seen as very competent, and entertainers as very warm. Yet in our Study 1, these categories were not particularly heroic, probably because engineers' competence is not risky, and entertainers' warmth is not usually motivated by helping people. More generally, the stronger relationship to heroism of actual helpfulness rather than selfless motivation further distances this dimension of heroism from similar theories tracking warm or even moral character.

Conclusion

Occupational heroism has been recently criticized as a concept with negative consequences for workers, calling the label into question (Cameron et al., 2022; Hennekam et al., 2020; Pangborn et al., 2023). In this article, we investigated systematically how occupational heroism relates to public sentiment toward workers along multiple criteria. We confirmed a structure of occupational heroism attributes (danger and helping) applying to virtually all occupations studied, beyond mere positive evaluation. Study 2 further confirmed a variety of societal consequences associated with heroizing workers, also mostly independent of general evaluation. In contrast with findings that heroism might bolster public support for exploitation, we found that perception of occupational heroism was associated with increased gratitude, support for the workers, and acknowledgment of workers' suffering. In addition, perceived occupational heroism was associated with reduced criticism acceptability and increased support for protecting workers from consequences following rule breaking. These latter findings, in fact, suggest a dark side to heroism, in which support given to the heroic occupation extends to benefits that could harm other sectors of society.

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