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Each is to count for one and none for more than one: Predictors of support for economic redistribution

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Abstract: While theory predicts fairness motivates support for redistribution, tests have yielded near-zero effects. Here we propose the relevant evolved fairness motive operates within the community sharing relation, experienced as a unity motive to treat "all as one and none as more than one". Study 1 (N = 403) supported this model, with a moderate (β = .15 CI[.06, .23]) significant effect of a communal fairness measure on support for redistribution, incremental to effects of compassion, envy, and self-interest. Study 2 (N=402) replicated with larger effect (β = .25 CI[.17, .33]). As distribution involves means as well as ends, we tested support for redistribution by coercive means. In both study 1 and 2, support for coercion was predicted by "ends justify the means" intuitions (instrumental harm: β = .21 CI[.12, .31)] and .16 CI[.08, .25]). Communal fairness also predicted willingness to coerce (β = .15 CI[.05 .24] and .32 CI[.23 .41]). These five psychological motives accounted for 45% of support for redistribution, suggesting considerable value for political, economic, evolutionary, and ethical theory.

Keywords: redistribution, compassion, envy, self-interest, fairness, altruism, relationship regulation, utilitarianism.

Running Head: communal fairness as an evolved fairness motivation

Statement of Relevance:

There is strong pressure for economic redistribution, often linked to "unfairness". Despite these arguments, research has found zero effects. We provide evidence for a fairness objective in which each person in the group is to count for one and none for more than one. This is linked to relationship regulation and three-person two situation theory. Using this, we account for over 40% of variance in support for redistribution—more than any previous account. All hypotheses are tested and replicated in well-powered pre-registered studies. The results intersect with fields from economics to philosophy and should be of broad interest.

Introduction

Praxagora: "Good. Now, I suggest that all things be owned by everyone in common and everyone should be able to draw a pay and have an equal standard of living. They should all draw pay from the same funds. Let's have no more of this rich man-poor man stuff" (Aristophanes, 396 BC/2010)

Support for economic redistribution is a major fault line in society (McCaffery & Baron, 2004). Understanding in this field has been transformed by psychological models, notably the "three-person two-situation" evolutionary motivational model for studying redistribution (Cosmides & Tooby, 2013; Sznycer et al., 2017). This

model includes motives of self-interest, envy, and compassion and accounts for over 1/3rd of variance in support for redistribution (Lin & Bates, 2021; Sznycer et al., 2017). A fourth motivation—a taste for fairness—is widely predicted to underly support for redistribution, however measures of procedural and distributional fairness reveal "little or no effect on support for redistribution" (Sznycer et al., 2017). This research noted that other forms of fairness may well shape redistribution. Indeed, dozens of forms of fairness exist, optimizing wildly varying outcomes (Corbett-Davies & Goel, 2018) . Here we approached fairness from the context of relationship regulation theory (Rai & Fiske, 2011) , testing if communal fairness—treating all members of one's moral circle including the self and family—as one fills the role predicted within the three-person evolutionary motivational model. We next briefly summarise this model followed by two empirical studies.

Cosmides and Tooby (2013) and Sznycer et al. (2017) suggested a valuable abstraction for considering adaptations for redistribution in terms of a "three-person two-situation model". This proposes that the mind is adapted to process resource relations between three possible persons: The self, the less well-off other, and the better-off other. Self-interest motivates individuals to support redistribution when this advantages themselves or their kin (Halpern, 2001; Weeden & Kurzban, 2016). Bycontrast, the less well-off evoke a motivation to help, provided it has a low marginal cost (Kaplan, Gurven, Hill, & Hurtado, 2005). Experienced as compassion, this motive to help can evolve both by increasing attention to the welfare of the helper by those who are dependent on them (Jaeggi & Gurven, 2013) and by increasing the value of the group to the helper through increasing group size and

success in inter-group competition (Bernhard, Fischbacher, & Fehr, 2006). Finally, better-off individuals are predicted to evoke the unpleasant motive of malicious envy (Smith &Kim, 2007; Smith et al., 1996). This motivates harming the better off and evolves where competition for positional goods such as status incentivise improvement of one's relative position even at cost to oneself —"evolved spite"—as famously described by Hamilton (1964).

This model has proven highly productive. Predicted effects of self-interest, compassion and dispositional envy on support for redistribution have been found across multiple countries (Sznycer et al., 2017) and independently replicated (Lin & Bates, 2021) with reliable effects found for self-interest (β= 0.18 to 0.30), compassion (β= 0.25 to 0.48) and malicious envy (β = 0.06 to 0.17), jointly accounting for a remarkable 1/3rd of variance in support for redistribution (Lin & Bates, 2021). Yet this suggests still other motives are in action, the leading candidate for which is fairness, and we turn to this next.

Fairness has considerable standing as a psychological motive (Starmans, Sheskin, & Bloom, 2017) and within the three-person model is well placed to process need integrated across persons. As such it has potential to predict incremental variance in support for redistribution within the three-person model. In primate studies, an evolved motivation for fair treatment (Brosnan & de Waal, 2014; Fehr & Schmidt, 1999) has been suggested to play a potent role in human redistribution behavior. de Waal (2010, p. 200) went as far as to say "Robin Hood had it right, humanity's deepest wish is to spread the wealth".

Despite this favourable theoretical position, as noted above research to date has found near-zero effects of concern for fairness on support for redistribution (Sznycer et al., 2017). New research, for example in machine learning, highlights the ambiguity of "fairness" indicating the umbrella term covers over two dozen sometimes contradictory objective functions (Corbett-Davies & Goel, 2018). Experimental approaches to the topic also reveal a multitude of fairness ideals (Cappelen, Hole, Sørensen, & Tungodden, 2007) spanning fairness as mutualism (dividing outputs proportional to inputs: Baumard, André, & Sperber, 2013) through to demographic fairness (equalising outcomes for individuals or groups: Dawes, Fowler, Johnson, McElreath, & Smirnov, 2007) and dynamic models coupling "luck versus effort" worldviews to increased redistribution in self-fulfilling cycles (Alesina & Angeletos, 2005).

The stepping off point for the present study was to propose a candidate form of fairness accounting for variance in support for redistribution within the three-person model. To do this we turned to relationship-regulation model of morality (Rai & Fiske, 2011). Specifically community sharing relations and the associated motivation to treat members of a moral circle as equivalent, termed "Unity" by Rai and Fiske (2011). This maps to the dictionary definition of fairness emphasising treating people impartially, in the sense of being treated as equivalent (Press, 1989). In relationship regulation theory, this communal motive is computed using a categorical metric (one is categorically either inside the moral circle or not) leading people to treat the group as a unity). The theory is also contextual, with surprising implications such as predicting honour killings. Here, we term the community fairness motive "communal

fairness". Empirically, partiality accounts for opposition to unfairness (Fehr &Schmidt, 1999; Shaw, 2013), such that in some contexts impartial choices are preferred even when they are inefficient and reduce overall outcomes (Choshen-Hillel, Shaw, & Caruso, 2015; Shaw & Knobe, 2013).

To test whether this communal form of fairness can account for additional variance in support for redistribution in the three-person model two situation model, a measure of this form of fairness is required. Haslam and Fiske (1999) have demonstrated that Unity is an independent component of variance in the 4-relationship model, but this is not in the form of an individual difference questionnaire for sensitivity to Unity as a motive. Rai and Fiske (2011) do not provide measures of sensitivity to the four moral motives. We therefore examined other sources. Recent work prompted by reflection on "trolley-ology" accounts of morality has broken what were considered unitary moral responses into two independent psychological motivations based on means-justify-the-ends "instrumental harm" and, importantly for us, a moral objective function based on impartial consideration weighting all person's pleasure and wellbeing equally to one's own or one's family (Kahane et al., 2018). They term the latter scale "impartial beneficence". Here, for conceptual clarity, we refer to it what it measures as communal fairness. If this scale captures the unity ethic of impartial community sharing, then based on the three-person model, it should predict increased support for redistribution, over and above compassion, malicious envy, and self-interest.

We first explored this idea in a pilot study (n= 251) assessing communal fairness and instrumental harm along with support for redistribution indicated a significant and

moderately strongly relationship of communal fairness to support for redistribution($t(247) = 3.76$, $p < .001$, beta = 0.21, CI95% [0.10, 0.32]) even controlling for compassion and self-interest (malicious envy was not assessed in the pilot).Instrumental harm was unrelated to support for redistribution ($p = .93$, see Table S1 in Supplemental Material). Based on this, we pre-registered and conducted a study to confirm these findings.

Study 1

For study 1, we pre-registered five hypotheses as follows: 1) Communal fairness would predict support for redistribution (controlling for compassion, envy, and self-interest), 2) The known effects of envy, compassion, and self-interest on support for redistribution would replicate. 3) Unlike envy, communal fairness would be associated with maximizing outcomes for the poor rather than with harming the rich.4) Preference for harming the rich without commensurate benefit to the poor would be associated with malicious envy. 5) Communal fairness would be unrelated to envy. In addition, we wished to explore the origins of willingness to forcibly redistribute. To test if instrumental harm or communal fairness increase willingness to force compliance with redistributive goals, we created a scale to measure this also.

Method

Participants

A total of 403 participants were recruited using Prolific Academic (268 females, mean age 37 years, SD = 12.19). We pre-registered a criterion that subjects who completed the questionnaire less than 20 seconds would be excluded. No subjects

met this criterion. The racial mix of the sample was representative, with participants identifying as White (n = 366; 90.8%), Black (n = 14; 3.5%), Mixed (n = 14; 3.5%), Asian (n = 6; 1.5%) and other (n = 1; 0.2%), 2 participants (0.5%) chose not to answer. The study was approved by the Psychology Research Ethics Committee at the School of Philosophy, Psychology & Language Sciences in the University of Edinburgh. All participants gave informed consent.

Measures and Procedure

Attitudes toward redistribution were measured with the 11-item support for economic redistribution scale Sznycer et al. (2017). An example reverse-scored item is *"Wealthy people should not be taxed more heavily than others".* Each item used a Likert response scale from 1 (strongly disagree) to 5 (strongly agree). The Cronbach Alpha of economic redistribution in our sample was 0.90.

Communal fairness and instrumental harm were measured using the Oxford Utilitarianism Scale (Kahane et al., 2018). This 9-item instrument consists of two subscales: Impartial Beneficence, which we use to assess communal fairness; An example item is *"It is just as wrong to fail to help someone as it is to actively harm them yourself"*) and Instrumental Harm (example item: *"It is morally right to harm an innocent person if harming them is a necessary means to helping several other innocent people"*). Scores were on a Likert scale from 1 (strongly disagree) to 7 (strongly agree). In our sample, Cronbach Alphas were 0.63 and 0.69 for Communal fairness and Instrumental Harm. Compassion, envy, and self-interest were measured as in Lin and Bates (2021).8

The 10-item dispositional compassion scale Goldberg (1999); Sznycer et al. (2017) reliably (Cronbach Alpha = 0.80 in our sample) assesses compassion based on Likert responses from 1 (very inaccurate) to 5 (very accurate) to content such as “I suffer from others' sorrows”. Self-interest used a single item: “Imagine that a policy of higher taxes on the wealthy is implemented. What overall impact do you think the higher taxes on the wealthy would have on you?” with responses on a 1 to 5 scale: My own economic situation would 1: significantly worsen; slightly worsen; stay the same; slightly improve; 5 significantly improve. The 5-item Malicious Envy Scale (Lange & Crusius, 2015) scores items from 1 (strongly disagree) to 6 (strongly agree) with example content including “If other people have something that I want for myself, I wish to take it away from them”. The Cronbach Alpha of Malicious Envy was 0.80 in our sample.

Wealthy-harming preference was measured using a scenario choice Sznycer et al.(2017). Scenario one (wealth harming) was “The top 1% wealthiest individuals pay an extra 50% of their income in additional taxes, and as a consequence of that the poor get an additional £100 million per year (the extra 50% in taxes paid in former fiscal years leaving the wealthiest with relatively less taxable income)”. Scenario two(helping the poor) was “The top 1% wealthiest individuals pay an extra 10% of their income in additional taxes, and as a consequence of that the poor get an additional£200 million per year (the extra 10% in taxes paid in former fiscal years leaving the wealthiest with relatively more taxable income)”.

Finally, support for coercive redistribution was measured with a 19-item coercive redistribution scale generated for this study (see supplementary material detailing

development of this scale and the refined, 5-item short version used in study 2). Example items include “People questioning redistribution of wealth should be punished” and “If the wealthy try to avoid tax, it would be permissible to use mild torture to reveal the money they are hiding from the poor”. Responses were on a Likert scale from 1 (strongly disagree) to 5 (strongly agree). In study, factor scores on the first component of a factor analysis of the 19-item coercive redistribution scale were used to score subjects.

Subjects consented online to participate in the study, and then completed items presented through Qualtrics, an online survey system. The order of scales was as the same as we presented in this section. Subjects were paid £0.55.

Results

We first tested the prediction that communal fairness would be associated with increased support for redistribution (controlling for compassion, envy, and self-interest). This effect was significant ($t(395) = 3.65$, $p < .001$) and in the predicted direction ($\beta = 0.14$, CI95% [0.07, 0.22]). Effects of the other motives also replicated with significant ($p < .001$) effects on support for redistribution for compassion, malicious envy, and self-interest (effects sizes $\beta = 0.56$, CI95% [0.48, 0.64] ; $\beta = 0.22$, CI95% [0.14, 0.30]; and $\beta = 0.17$, CI95% [0.09, 0.24] respectively). Thus, both hypotheses 1 and 2 were supported, with effects of all four motives on support for redistribution

Hypothesis 3, that communal fairness would be associated with maximizing outcomes for the poor rather than with harming the rich was tested using binary logistic regression to predict support for wealth-harming taxes lacking commensurate

benefit to the poor with communal fairness and instrumental harm as predictors, controlling for age and gender, compassion, envy, self-interest, and support for redistribution. The association of communal fairness with maximizing outcomes for the poor was in the predicted direction, with a 1-unit increase in communal fairness associated with 27% decreased odds of choosing the wealth-harming tax) but was not significant ($z = -1.79$, $p = .072$, odds ratio = 0.73, CI95% [0.52, 1.03]). By contrast, hypothesis 4, predicting an association of malicious envy with wealth-harming taxation was supported ($z = 2.56$, $p = .010$), with a one-unit increase in envy associated with a 64% increased preference for the wealth-destroying option (odds ratio = 1.64, CI95% [1.12, 2.40]). Finally, we tested the independence of communal fairness from envy (hypothesis 5). As shown in Table S2 and S3 in Supplemental Material, although communal fairness was correlated with envy ($r = .12$, CI95% [0.02,0.21], $t(401) = 2.48$, $p = .013$), the effect of communal fairness on support for redistribution was robust to controlling for envy, supporting the role of communal fairness as an independent motive.

Next, we turned to the exploratory hypotheses (see Table 1). We expected that instrumental harm would be associated with scores on our new coercive redistribution scale. This was the case, with a significant, association in the predicted direction (beta= 0.21, CI95% [0.12, 0.31], $t(394) = 4.26$, $p < .001$). Also as predicted, support for redistribution correlated with support for coercion ($r = 0.37$, CI95% [0.27, 0.44],$t(401) = 7.89$, $p < .001$). Interestingly, malicious envy also predicte4d support for coercive redistribution (beta = 0.26). Given the desire of the envious to harm those better-off than themselves this association was perhaps predictable. Self-

interest was also significantly linked to coercion (beta = 0.19). Compassion—which one might expect to be associated with reduced support for violent or coercive acts—showed no association with support for coercive redistribution (beta = 0.04)

Table 1. Prediction of support for coercive redistribution by Malicious Envy, Self-interest, Communal fairness, and Instrumental Harm motives.

Variable	Effect (Beta)	t value (n=403)
Age	-0.10 CI95% [-0.18, -0.01]	-2.14, $p = .033$
Sex	-0.08 CI95% [-0.17, 0.01]	-1.85, $p = .065$
Compassion	0.04 CI95% [-0.06, 0.14]	0.85, $p = .396$
Malicious Envy	0.26 CI95% [0.16, 0.35]	5.45, $p < .001$
Self-interest	0.19 CI95% [0.10, 0.28]	4.31, $p < .001$
Communal fairness	0.15 CI95% [0.05, 0.24]	3.08, $p = .002$
Instrumental Harm	0.21 CI95% [0.12, 0.31]	4.26, $p < .001$
Adjusted $R^2 = .265$		

Four of the five pre-registered hypotheses were thus supported, including the key prediction of an incremental role of communal fairness in explaining support for redistribution. Jointly, the motivational model accounted for 44% of variance in support for redistribution (see Figure 1). The model also accounted for 26% of variance in willingness to coerce compliance with redistributive policy, with strong effects of envy, and with instrumental harm also playing its predicted role based on ends-justify-the-means reasoning (Kahane et al., 2018).

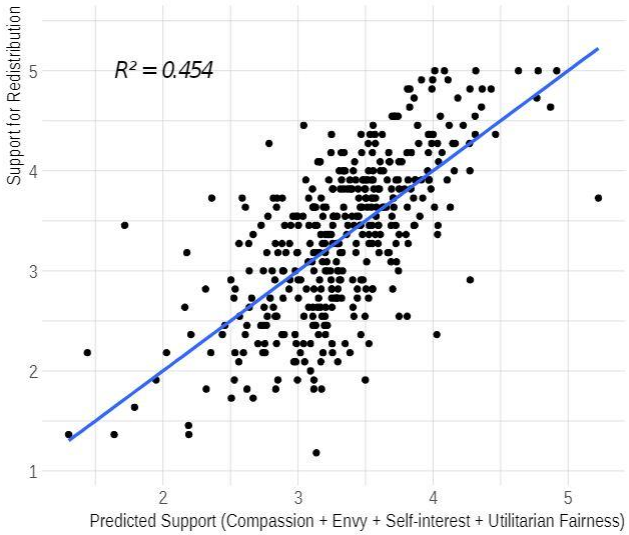

Figure 1: Support for redistribution predicted from compassion, envy, self-interest, and communal fairness, controlling for age and gender (Study 1).

Study 2

Study 1 confirmed the role of communal fairness on support for redistribution. In Study 2, we wished to replicate this finding. We also wished to confirm the lack of association of alternative fairness constructs: specifically procedural fairness and distributional fairness. Procedural fairness refers to support for neutral and common procedural standards and enforcement for all individuals and groups (Shaw & Olson,2014; Thibaut, Walker, LaTour, & Houlden, 1973). This is perhaps the most common fairness ideal and research shows that procedurally fair outcomes are more likely to be complied with (Gibson, 1989; Tyler, Boeckmann, Smith, & Huo, 2019), even if fairness leads to unequal outcomes (Gibson, 1989; Ku & Salmon, 2013). Procedural fairness, however, is unrelated to support for redistribution (Lin & Bates,

2021;Sznycer et al., 2017). The second form of fairness we tested is "distributional fairness"—preference for low variance options when choosing among distributional outcomes: for instance, people are more likely to reject divisions with a wide variance(Fehr & Schmidt, 1999). However, prior studies reported null association of distributional fairness and support for redistribution in (Sznycer et al., 2017).

Our hypotheses for Study 2 were as follows: We predicted that the associations of communal fairness with support for redistribution and with coercive redistribution would replicate. We further predicted that procedural and distributional fairness would again be estimated as near-zero non-significant effects. We pre-registered these two main hypotheses and 8 related predictions described below in the results and recorded on AsPredicted.org.

Methods

Participants. A total of N= 402 UK participants were recruited using Prolific Academic (254 females, mean age 36 years, SD = 12.40). We pre-registered a criterion that subjects who completed the questionnaire less than 1 minute would be excluded. No subjects met this criterion. The racial mix of the sample was representative, with participants identifying as White (n = 356; 88.6%), Asian (n = 28; 7.0%), Mixed (n = 12; 3.0%)and Black (n = 6; 1.5%). The study procedures were approved by the Psychology Research Ethics Committee at the School of Philosophy, Psychology & Language Sciences in the University of Edinburgh, and participants gave informed consent.

Measures and Procedure

Support for redistribution, compassion, malicious envy, communal fairness, and instrumental harm were all measured as in study 1. Self-interest was measured with two items; the first item was as the same as in Study 1; the second was *"Imagine that a policy of higher taxes on the wealthy is implemented. What do you think the impact on your ability to earn a living would be?"*, with responses on a 1 to 5 scale from "My work and investment prospects would be significantly reduced" (1); slightly reduced (2); stay the same (3); slightly increased (4); significantly increased (5). In our sample the Cronbach Alpha and correlation of these items was 0.70 was 0.53 (CI95% [0.45,0.59]) respectively.

Procedural fairness was measured with the 7-item procedural fairness scale (Sznycer et al., 2017). An example item is "Every group should be judged with the same yardstick". Each item used a Likert response scale from 1 (strongly disagree) to7 (strongly agree). The Cronbach Alpha of this scale in our sample was 0.61. Distributional fairness was measured with the 7-item income distribution selection task (Sznycer et al., 2017). Participants were asked to make several decisions each with two options of distribution of incomes among themselves, the rich (top 5%income earners) and the poor (bottom 5% income earners). Participants were told to treat the distribution of incomes as fixed now and for the indefinite future and asked them to choose the option they preferred. The option which has a lower variance reflects endorsement of distributional fairness. Cronbach Alpha in our sample was 0.83. Support for coercive redistribution was measured with the 5-item coercive redistribution scale (see supplementary material for scale development). The full scale is shown in Table 2. Cronbach Alpha in our sample was 0.89.

Table 2. Items of support for coercive redistribution scale

Item
(1) The government should impose a brief period of oppression to carry out a transfer of wealth from the better off to the less well off.
(2) The government should, using force where needed, control the economy in order to redistribute wealth from the rich to the poor.
(3) The wealthy must understand that harm done to them is morally necessary as collateral damage in redistributing wealth.
(4)The government should forcibly redistribute wealth from those who have more resources to those who have fewer resources.
(5) If the wealthy try to avoid tax, it would be permissible to use mild torture to reveal the money they are hiding from the poor.

Subjects consented online to participate in the study, and then completed items presented through Qualtrics, an online survey system. The order of scales was as the same as we presented in this section. Subjects were paid £0.55.

Results

The prediction that the effect of communal fairness on support for redistribution would replicate was supported: A regression of communal fairness on support for redistribution (controlling for compassion, envy, and self-interest)showed a

significant (t(395) = 5.95, p <.001) effect in the predicted direction and larger than was found in study 1 (beta = 0.25, CI95% [0.17, 0.33]). Communal fairness thus significantly improved prediction of support for redistribution, explaining an additional 5% of variance. As shown in Table 3, effects of compassion envy and self-interest also replicated (t(396) =11.14, p <.001, t(396) =6.82, p < .001) and t(396)=5.50, p < .001 respectively).

Table 3. Communal fairness incremental prediction of support for redistribution beyond Compassion, Envy, and Self-interest.

Variable	Model 1	Model 2
Age	-.09 [-.17 -.01]*	-.09 [-.17 -.01]*
Sex	-.09 [-.17 .00] *	-.09 [-.16 -.01]*
Compassion	.48 [.39 .56] ***	.39 [.31 .48] ***
Envy	.29 [.21 .38] ***	.26 [.18 .34] ***
Self-interest	.22 [.14 .31] ***	.19 [.12 .27] ***
Communal fairness		**.25 [.17 .33] ***
R^2	.350	.402

Note. Effects are standardized regression coefficients [followed by 95% CI].
*** = $p < .001$, ** = <.01, *= <.05.

Both instrumental harm and communal fairness increased support for coercive redistribution, replicating study 1 (for instrumental harm, beta = 0.16, CI95% [0.08,0.25], (t(394) = 3.77, p <.001, and for communal fairness beta = 0.31, CI95% [0.22,0.40], t(394) = 6.87, p <.001). These effects were stable to inclusion of differing control variables (see Supplemental Material). Both envy (t(394) =6.22, p < .001) and self-interest (t(394) = 4.08, p < .001) had significant effects on support for coercive redistribution (See Table 4, Model 2). As in study 1, compassion was

unrelated to coercive redistribution (t(394) = 0.31, p = .757). Scores on the coercive redistribution scale were strongly correlated with support for economic redistribution (r = 0.51(CI95% [0.43, 0.58], t(400) = 11.92, p < .001). Jointly, the final motivational model accounted for 35% of variance in willingness to coerce compliance with redistribution(see Figure 2).

Table 4. Prediction of support for coercive redistribution by communal fairness and instrumental harm.

Variable	Model 1	Model 2
Age	-.14 [-.23 -.05]**	-.14 [-.23 -.06] ***
Sex	-.05 [-.14 .04]	-.03 [-.11 .05] NS
Compassion	.10 [.01 .19] *	.01 [-.08 .10] NS
Envy	.34 [.25 .43] ***	.27 [.19 .36] ***
Self-interest	.21 [.12 .30] ***	.17 [.09 .25] ***
Communal fairness		.31 [.22 .40] ***
Instrumental Harm		.16 [.08 .25] ***
R^2	.221	.349

Note. Effects are standardized regression coefficients [followed by 95% CI].
*** = $p < .001$, ** = <.01, *= <.05.

We next tested the hypotheses that procedural and distributional fairness would not be associated with support for redistribution when envy, compassion and self-interest are controlled. As predicted, procedural fairness was not significantly linked to support for redistribution (β= 0.08, CI95% [0.00, 0.16], t(395) = 1.9, p =.058) or support for coercive redistribution (β= -0.05, CI95% [-0.14, 0.04], t(395) =-1.01, p = .315).Distributional fairness showed a significant positive relationship with support for redistribution (β= 0.13, CI95% [0.05, 0.21], t(395) = 3.07, p =.002) but had no relationship to support for coercive redistribution (β= 0.00, CI95% [-0.09, 0.09],t(395) =-0.05, p = .960). To explore this further, we examined the items of the distributional fairness scale (Sznycer et al., 2017). As expected, when changing the

variance of income distribution, this contains items which map onto malicious envy: For instance the distribution [rich = £80k, self = £60k, poor = £40] has lower variance than [rich = £90k, self = £60k, poor = £50k], but also corresponds to harming the rich, raising one's own relative status, and harming the poor. Confirming this malicious envy and distributional fairness correlated r = -0.18 [-0.27, -0.08], p = < 0.001 —about the level found in study 1 for the validation task for envy. Combining the envious distributions with malicious envy increased the R^2 of the model to 0.448.

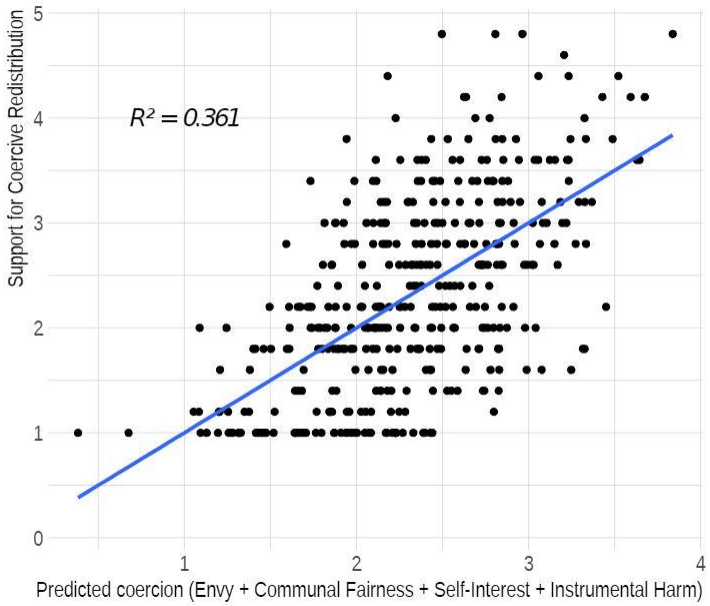

Figure 2: Support for coercive redistribution predicted from envy, self-interest, communal fairness, and instrumental harm, controlling for age and gender.

Discussion

This research had three main findings. First, in two pre-registered studies it supported and replicated a role for communal fairness on support for distribution.

Second, it confirmed the effects of envy, compassion, and self-interest on support for redistribution. Third, it extended understanding of these motives to account for support for coercive enforcement of redistribution. Jointly, the final motivational model accounted for over 40% of variance in support for redistribution and over 30%of variance in willingness to coerce compliance with redistribution. These results support the three-person model of evolved motives and expand it to include a motive to process distribution goals when all players are treated as equivalent as specified for communal sharing and unity relations within relationship regulation theory (Rai &Fiske, 2011). Below we discuss these findings further.

Our main aim was to find a form of fairness which is strongly and reliably linked to support for redistribution. Here, we found communal fairness, the impartial attitude toward all person's pleasure and wellbeing, had significant effects on support for redistribution. This finding supports Rai and Fiske (2011)'s model of regulating community sharing relations via a motive supporting the group by treating others as a unity via impartial/indifferent choices. Second, while most resource re-allocation requires willingness to coerce, this has received less attention. Here, we found reliable evidence for effects of instrumental harm, but also of communal fairness, envy, and self-interest enhancing willingness to coerce. We also found that, unlike these motives, compassion, while strongly motivating support for redistribution, neither motivated nor protected against coercion.

Jointly, these findings expand the network of psychological motives underlying support for redistribution, showing that redistribution emerges from at least four motivational systems grounded in the evolutionary three-person model and relation

regulation. The studies also reiterate the lack of relationship to redistribution of other valid metrics of fairness, such as procedural fairness. Distributional fairness appears to act as an alternative measure of envy via low variance choices reducing the wealth of the better off even at no benefit to the worse off. Though common in redistribution research, these fairness concepts have, as reported initially by Sznycer et al. (2017), no unique relationship with support for redistribution. The area of fairness objectives is active, with practical as well as theoretical consequences for emphasising different forms of fairness (Corbett-Davies & Goel, 2018) and these should continue to be examined for correspondence to human fairness motives. Finally, the findings have implications for experimental philosophy. for instance, philosophical debates can usefully be framed by their alignment to these motives. To take one example of many, Popper (1945) supported the moral call of a suffering person (compassion) but railed against hedonic maximization (communal fairness) and coercion (harm), linking the former as in part causal of the latter, with both open to use in defending lying, suppressing truth, on to violence.

To conclude, the present studies support a significant role of communal fairness. The data support expanding the motivational three-person model of support for redistribution to include this impartial fairness motive alongside compassion, malicious envy, and self-interest, as well as instrumental harm underpinning consequentialist justification of coercion in redistribution.

Pre-registrations and 21-word statement

We report how we determined our sample size, all data exclusions (if any), all manipulations, and all measures in the study. All studies reported in this article were formally pre-registered at AsPredictedPre-test: https://aspredicted.org/blind.php?x=6kb74z Study 1: AsPredicted url: https://aspredicted.org/blind.php?x=x3ix8n Study 2: AsPredicted url: https://aspredicted.org/blind.php?x=pz8by2

All questionnaires and all data are available at https://osf.io/9ctnj/.

Author Contributions: Both authors contributed to the study design, data analysis and interpretation. Data collection was performed by Chien-An Lin. All authors approved the final version of the manuscript for submission.

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