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Who Sees What as Fair? Mapping Individual Differences in Valuation of Reciprocity, Charity, and Impartiality

Laura Niemi[1] · **Liane Young**[2]

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Abstract When scarce resources are allocated, different criteria may be considered: impersonal allocation (impartiality), the needs of specific individuals (charity), or the relational ties between individuals (reciprocity). In the present research, we investigated how people's perspectives on fairness relate to individual differences in interpersonal orientations. Participants evaluated the fairness of allocations based on (a) impartiality, (b) charity, and (c) reciprocity. To assess interpersonal orientations, we administered measures of dispositional empathy (i.e., empathic concern and perspective taking) and Machiavellianism. Across two studies, Machiavellianism correlated with higher ratings of reciprocity as fair, whereas empathic concern and perspective taking correlated with higher ratings of charity as fair. We discuss these findings in relation to recent neuroscientific research on empathy, fairness, and moral evaluations of resource allocations.

Keywords Fairness · Reciprocity · Charity · Impartiality · Empathy · Machiavellianism

Principles that guide scarce resource allocation often conflict: *reciprocity*—returning favors, *charity*—helping those in need, and *impartiality*—remaining blind to personal attributes (Rasinski, 1987; Wolff, 2007). These competing principles can lead to dilemmas when people aim to be fair across public and private

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✉ Laura Niemi
lauraniemi@fas.harvard.edu

[1] Department of Psychology, Harvard University, 33 Kirkland Street, Cambridge, MA 02138, USA

[2] Department of Psychology, Boston College, Chestnut Hill, MA, USA

situations. Reciprocity and charity involve personal considerations—the attributes of specific individuals—and as such can be thought of as "person-based" forms of fairness (Deutsch, 1975; Tyler, 1994). By contrast, impartial allocations rely on standardized impersonal criteria (e.g., use of a lottery); impartiality constitutes "person-blind" fairness.

In one striking illustration of the conflict between "person-based" and "person-blind" fairness, Dr. Harvey Bahnson, chief of surgery at Presbyterian-University Hospital in Pittsburgh in the early 1980s, responded to allegations that surgeons bypassed standard organ transplant policy: "I'd hope Tom […the leading transplant surgeon at Presbyterian-University Hospital] would take care of my daughter and vice versa" … "That's a natural inclination." Dr. Bahnson deemed it "appropriate" to follow the social norm of reciprocity in a professional context, i.e., surgical practice, but he also conceded that his view might not be "universally accepted" (Schneider & Flaherty, 1985, p. 1). In line with his concession, we have found in prior work that people consider reciprocity-based allocations to be less fair than charity-based allocations and substantially less fair than impartial allocations (Niemi, Wasserman, & Young, 2017). The current research examines how individual differences in interpersonal orientations correspond to people's evaluations of the fairness of allocations based on reciprocity, charity, and impartiality. In particular, the present work focuses on individual differences in tendencies toward Machiavellianism—ruthless, self-interested pursuit of personal goals (Dahling, Whitaker, & Levy, 2009; Wilson, Near, & Miller, 1996), and dispositional empathy, including both perspective taking and empathic concern (Davis, 1980).

While the present study assesses these interpersonal orientations independently, past research has, unsurprisingly, found links between them. For example, Machiavellian individuals have been found to have deficits in dispositional empathy (i.e., difficulty in perspective taking and reduced concern about suffering), signaled by reduced responsiveness in a network of brain regions involved in processing other people's mental states, a cognitive capacity known as theory of mind (ToM), including the temporo-parietal junction and medial prefrontal cortex (reviewed in Bereczkei, 2015). On the flip side, Machiavellian individuals are hyper-concerned about violating social norms and highly responsive to punishment cues (Czibor & Bereczkei, 2012; Spitzer, Fischbacher, Herrnberger, Grön, & Fehr, 2007). In one study, more Machiavellian individuals achieved better results in an economic task because of their sensitivity to punishment: Machiavellianism scores correlated with activation in brain areas associated with evaluation of aversive stimuli (including lateral orbitofrontal cortex), and conscious awareness of threat and negative affect (including the insula; Spitzer et al., 2007).

Given the "person-based" nature of *reciprocity*, a form of fairness that can protect close social ties and thus confer benefits to the self, we expected more Machiavellian, self-interested, individuals to be especially likely to endorse *reciprocity* as fair. Indeed, our previous research has revealed links between Machiavellianism and enhanced valuation of deference to authority as well as reduced valuation of universal caring (Niemi & Young, 2013). "Binding" values such as deference to authority function to protect close social ties in the service of group-level order and welfare, and contrast with impartiality and universal caring

values—which explicitly forbid partiality and harm—to protect individual-level well-being (e.g., Graham et al., 2011). Other work has found that decreased valuation of impartiality and universal caring values is associated with increased willingness to inflict harm on another (Zeigler-Hill, Noser, Roof, Vonk, & Marcus, 2015) and heightened antagonism and disinhibition (Noser et al., 2015). Therefore, individuals high in Machiavellian may endorse reciprocity as fair because of an interest in protecting *close* personal relationships (Dahling et al., 2009; Niemi & Young, 2013; Wilson et al., 1996).

By contrast, we expected people scoring higher in dispositional empathy and lower in Machiavellianism to be more likely to endorse *charity* as fair. Charity, notably, represents another form of "person-based" fairness. Like reciprocity, charity requires allocators to individuate recipients. The recipient of the allocation, however, is identified by need, not by relationship to the allocator. Thus, charity's benefits to another, not the self, might lead to a view of charity as fair to correlate with dispositional empathy, not Machiavellianism.

Finally, "person-blind" fairness, *impartiality*, favors no recipients—not close others and not those in need. Therefore, we cautiously expected to find no significant relationship between views of impartiality as fair and interpersonal orientations of Machiavellianism (associated with favoring close personal ties) or dispositional empathy (associated with concern for the suffering). However, it has been proposed by some that people may engage in impartial behavior in order to *signal* impartiality for reputational benefit at an ultimate level (Shaw, 2013). Thus, it is also possible that people high in Machiavellianism may infer that appearing impartial could benefit the self. A less positive view of charity has also been suggested: charity as "drawn-out reciprocity" (Trivers, 1971). For the same reason, people high in Machiavellianism may infer the benefits of charity and flexibly invoke charity as fair.

In the current research, using a series of vignettes about everyday situations drawn from prior work (Niemi et al., 2017), we examined the relationship between participants' ratings of the fairness of allocators operating based on (a) reciprocity, (b) impartiality, and (c) charity, and interpersonal orientations: Machiavellianism and dispositional empathy (i.e., perspective taking and empathic concern). We measured Machiavellianism with the Machiavellian Personality Scale (MPS; Dahling et al., 2009) and dispositional empathy with the Interpersonal Reactivity Index (IRI; Davis, 1980).

Study 1

Study 1: Method

Participants were 96 individuals on Amazon Mechanical Turk (*M*(SD)age 37.55(12.90); 54 females, 43 males, 1 chose other) who read 24 vignettes drawn from 96 total stories (see Fig. 1 and Supplementary Material for full text of vignettes; and Niemi et al., 2017). The vignettes featured protagonists who allocated resources in range of contexts based on (1) reciprocity, (2) impartiality, (3)

(A) Sasha is a manager at a large factory. She is in charge of scheduling shifts for all the managers to complete safety trainings.

(B) Today Sasha has to assigns shifts, and she knows afternoon shifts are always preferred to morning shifts.

(C) *i. Reciprocity*: Sasha thinks about some managers who recently were a great help to her during the planning of the safety training curriculum.

ii. Impartiality: Sasha thinks about which managers had the morning shifts last week, since she trades off shifts week to week.

iii. Charity: Sasha thinks about a couple managers who were struggling to adjust to having newborns at home.

iv. Unspecified: Sasha thinks about the managers and the available shifts. She opens the scheduling document and selects some managers' names.

(D) Sasha assigns those managers the better afternoon shifts.

Fig. 1 Composition of a sample scenario. See Appendix for full text of scenarios

charity, or (4) unspecified criteria (6 per condition; in one of eight counterbalanced orders). The condition in which allocation criteria were unspecified was intended as a control condition that would not elicit strong inferences about allocators. However, the results are consistent with the possibility that participants inferred impartiality in this condition (As in Niemi et al., 2017; the allocators in the unspecified condition received relatively high fairness ratings; e.g., in Study 1: $M = 5.37$, $SD = .92$). Given this ambiguity, the unspecified condition is not featured in the crucial comparison between conditions.

After each vignette,[1] participants were asked: "Did [*protagonist*] act fairly?" on a scale from 1 = "Not At All" to 7 = "Very Much." Participants then completed measures of Machiavellianism (MPS: Machiavellian Personality Scale; Dahling et al., 2009) and dispositional empathy (IRI: Interpersonal Reactivity Index; Davis, 1980) in randomized order.

Machiavellianism The Machiavellianism Personality Scale (MPS; Dahling et al., 2009) contains four subscales: (1) amorality (endorsement of lying, cheating, e.g., "I believe that lying is necessary to maintain a competitive advantage over others"), (2) control (e.g., "I enjoy having control over other people"), (3) status (e.g., "I want to be rich and powerful someday"), and (4) distrust (e.g., "Other people are always planning ways to take advantage of the situation at my expense"). Participants responded using a scale with anchors: 1 = "Strongly Disagree," 2 = "Disagree," 3 = "Neither Agree nor Disagree," 4 = Agree," 5 = "Strongly Agree." An overall Machiavellianism score for each participant was created by averaging subscale scores.

Dispositional empathy The Interpersonal Reactivity Index (IRI; Davis, 1980, 1983) contains four subscales related to dispositional empathy, two of which

[1] Two participants were excluded for answering "1 = Strongly Disagree" or "2 = Disagree" on a Scale from 1 to 5 (3 = "Neither Agree nor Disagree," 4 = "Agree," 5 = "Strongly Agree") in response to an attention check question embedded in the Machiavellian scale: "I dislike forgetting to bring money when I go out to buy something." We also administered items assessing how much participants judged the action of the protagonist to be morally blameworthy or praiseworthy, liked the protagonist, wanted to be friends with the protagonist, thought they'd get along with the protagonist, and would make the same decision as the protagonist, not discussed here. Additionally, we administered the Autism Quotient and the Social Values Orientation task (Van Lange, Otten, De Bruin & Joireman, 1997; see Supplementary Material "Allocation Task").

are relevant to perceptions of fairness: (1) empathic concern (e.g., "I often have tender, concerned feelings for people less fortunate than me.") and (2) perspective taking (e.g., "I try to look at everybody's side of a disagreement before I make a decision."). Participants responded using a scale from 1 = "This does not describe me well" to 5 = "This describes me very well."

The dimensions of empathic concern and perspective taking have been linked to higher levels of sensitivity to and awareness of other people without particular concern about implications for the self, and lower endorsement of interpersonal attributes including dictatorialness and arrogance (Davis, 1983). Men and women higher in empathic concern report being more emotionally sensitive—they disagree more with statements like "never cries" and "feelings not easily hurt," compared to men and women lower in this dimension (Davis, 1983).

Study 1: Results

First, replicating our prior work (Niemi et al., 2017), fairness ratings significantly differed across conditions ($F(2, 190) = 130.74$, $p < .001$; see means in Fig. 2; error bars indicate standard deviation). Participants rated the allocators in the *impartiality* vignettes to be the most fair, significantly more so than allocators in the *charity* vignettes ($F(1, 95) = 94.46$, $p < .001$) and *reciprocity* vignettes ($F(1, 95) = 311.18$, $p < .001$), which also significantly differed from each other ($F(1, 95) = 33.28$, $p < .001$).

In Table 1, we report correlations among fairness ratings for *impartiality, reciprocity*, and *charity* and Machiavellianism (Mach) (M(SD) = 2.39(.67), Cronbach's alpha = .89) and the IRI dimensions of empathic concern (EC) (M(SD) = 3.70(68), Cronbach's alpha = .74) and perspective taking (PT) (M(SD) = 3.71(.81), Cronbach's alpha = .88) (* $p < .05$, ** $p < .01$, *** $p < 001$).

First, and, unsurprisingly, as given in Table 1, Machiavellianism was strongly negatively correlated with dispositional empathy: both empathic concern ($r = -.499$, $p < .001$) and perspective taking ($r = -.409$, $p < .001$). Second, crucial to the present research, the more that participants rated reciprocity as fair, the higher they scored in Machiavellianism ($r = .281$, $p = .006$). By contrast, the more that participants rated charity as fair, the higher they scored in both empathic concern ($r = .276$, $p = .006$) and perspective taking ($r = .234$, $p = .02$). A negative relationship was also observed between perspective taking and ratings of reciprocity as fair ($r = -.209$, $p = .04$), though this relationship was reduced to nonsignificant when controlling for Machiavellianism. Importantly, Machiavellianism remained correlated with rating reciprocity as fair when controlling for perspective taking ($r = .219$, $p < .03$). These results therefore suggest an independent relationship between Machiavellianism and rating reciprocity as fair. By contrast, low perspective-taking scores relate to rating reciprocity as fair only to the extent that low perspective-taking scores relate to Machiavellianism. The primary results of Studies 1–2 are illustrated in Fig. 3.

We also explored correlations among fairness ratings. Rating reciprocity as fair correlated with rating charity as fair ($r = .259$, $p = .01$). In addition, rating charity

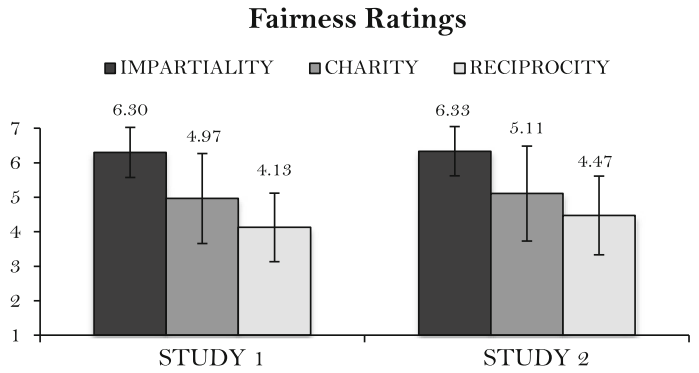

Fig. 2 Fairness ratings for allocators in the impartiality, charity, reciprocity vignettes

Table 1 Zero-order correlations among fairness ratings for impartiality, reciprocity, and charity and Machiavellianism, empathic concern and perspective taking in Studies 1–2

	1. Recip	2. Impart	3. Charity	4. Mach	Dispositional empathy	
					5. EC	6. PT
1. Recip						
Study 1		.039	.259*	.281**	−.084	−.209*
Study 2		.130*	.238***	.185**	−.004	−.094
2. Impart						
Study 1			.220*	.036	−.029	.017
Study 2			.088	−.075	.144*	.072
3. Charity						
Study 1				−.019	.276**	.234*
Study 2				−.004	.175**	.174**
4. Mach						
Study 1					−.499***	−.409***
Study 2					−.387***	−.258***
Dispositional empathy						
5. EC						
Study 1						.574***
Study 2						.517***

1. Zero-order correlations uncorrected for multiple comparisons; top line: Study 1; bottom line: Study 2. *Recip* fairness of reciprocity

2. *Impart* fairness of impartiality

3. *Charity* fairness of charity

4. *Mach* Machiavellianism scale score

5. *EC* empathic concern

6. *PT* perspective taking

*** $p < .001$, ** $p < .01$, $p < .05$

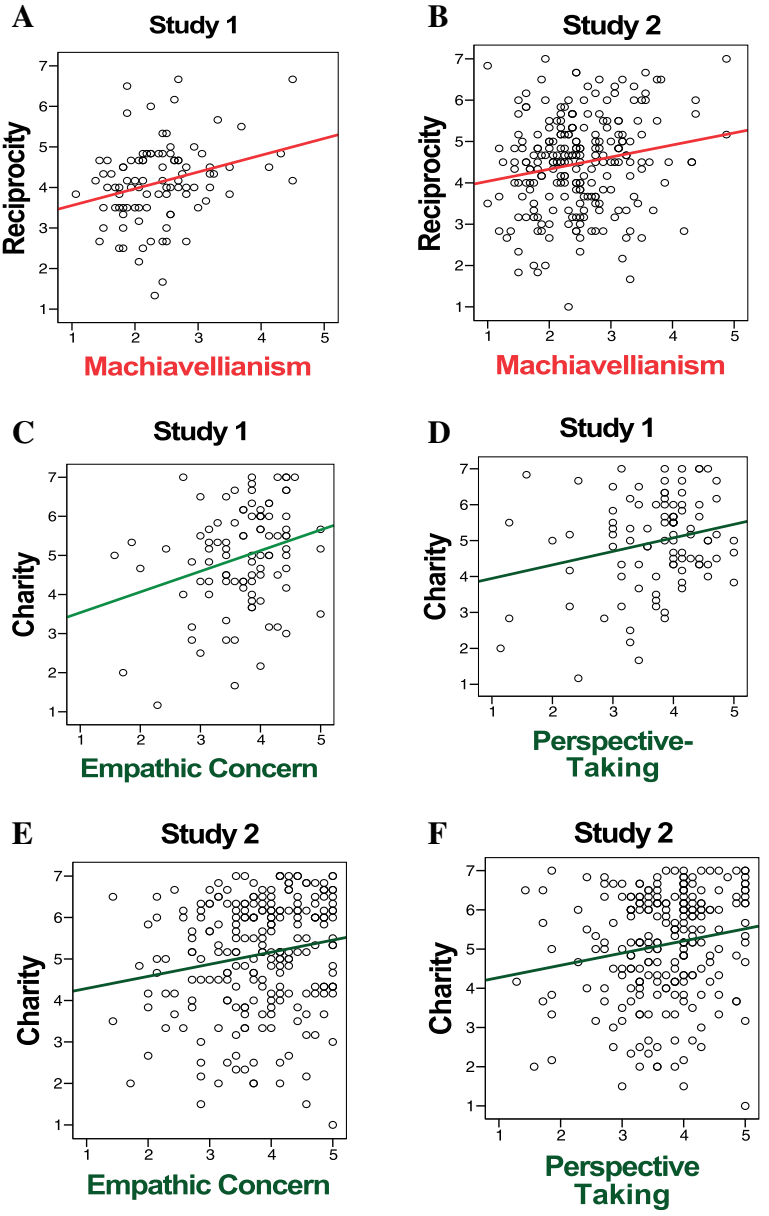

Fig. 3 Across Studies 1–2, rating reciprocity as fair correlated with Machiavellianism (**a**, **b**); rating charity as fair correlated with empathic concern and perspective taking (**c**–**f**)

as fair correlated with rating impartiality as fair ($r = .22$, $p = .03$), and ratings of reciprocity and impartiality did not correlate with each other ($r = .039$), though both of these results did not replicate in Study 2. These exploratory analyses are

consistent with the idea that the same individuals may be sensitive to the person-based nature of charity and reciprocity when evaluating their fairness.

Study 2: Method

Study 2 provides a direct replication of Study 1. We tested 251 participants on Amazon Mechanical Turk, with a final sample of 233 participants[2] (M(SD)age = 37.58 (11.94); 144 females, 87 males, 2 chose other). We relied on a larger sample to determine whether order of tasks (i.e., completing fairness ratings before the individual differences measures) affected results; it did not.

Study 2: Results

First, as in Study 1 and prior work (Niemi et al., 2017), fairness ratings significantly differed across conditions ($F(2, 464) = 199.61$, $p < .001$; see means in Fig. 1; error bars indicate standard deviation). Participants rated the allocators in the *impartiality* vignettes to be the most fair, significantly more so than the allocators in the *charity* vignettes ($F(1, 232) = 157.12$, $p < .001$) and *reciprocity* vignettes ($F(1, 232) = 506.39$, $p < .001$), which also significantly differed from each other ($F(1, 232) = 38.43$, $p < .001$). Correlations among fairness ratings for *impartiality, reciprocity*, and *charity* and Machiavellianism (Mach) (M(SD) = 2.49(.72), Cronbach's alpha = .89) and the IRI dimensions of empathic concern (EC) (M(SD) = 3.81(.81), Cronbach's alpha = .89) and perspective taking (PT) (M(SD) = 3.68(.77), Cronbach's alpha = .86) are reported in Table 1.

First, Machiavellianism was strongly negatively correlated with empathic concern ($r = -.387$, $p < .001$) and perspective taking ($r = -.258$, $p < .001$). Second, the more that participants rated reciprocity as fair, the higher they scored in Machiavellianism ($r = .185$, $p < .01$). By contrast, the more that participants rated charity as fair, the higher they scored in empathic concern ($r = .175$, $p < .01$) and perspective taking ($r = .174$, $p < .01$). These results replicate Study 1. However, in contrast to Study 1, rating reciprocity as fair was not negatively correlated with perspective taking.

As in Study 1, rating reciprocity as fair was correlated with rating charity as fair ($r = .238$, $p < .001$). This time, however, charity and impartiality ratings were not correlated, whereas reciprocity and impartiality ratings were weakly positively correlated ($r = .130$, $p < .05$).

[2] Exclusions were based on participants' failure on either of two catch questions embedded in the MPS (answering "1 = Completely Disagree" or "2" on a Scale from 1–5 (3 = "Neither agree nor disagree," 4, 5 = "Completely agree") to "Humans need food and water in order to survive," or "4" or "5" (same scale) to "I believe the human race has only existed for about 100 years total"), or completion of the MPS in under 30 s.

Discussion

Controversy about what is fair abounds. Here, we investigated whether and how people's interpersonal orientations (Machiavellianism and dispositional empathy) related to their views of "person-based" allocations—*reciprocity* and *charity*—versus "person-blind" allocations—*impartiality*. Across both studies, we found Machiavellianism, an interpersonal orientation involving ruthless pursuit of one's own personal goals (Dahling et al., 2009), to be associated with rating reciprocity as more fair and dispositional empathy to be associated with rating charity as more fair. We do not mean to claim that highly Machiavellian individuals will always and only see reciprocity as fair or that highly empathic individuals will always and only see charity as fair. Nevertheless, our findings suggest that individuals with different interpersonal orientations and perhaps even organizations promoting associated tendencies may take systematically different perspectives on fairness. Importantly, these results help clarify the moral landscape by underscoring distinctions between "person-based" forms of fairness, such as reciprocity and charity, and how each differs from "person-blind" impartiality.

In our neuroimaging work, evaluation of the allocators in the same reciprocity and charity vignettes, compared to the impartiality vignettes, elicited greater activity in regions for social cognition and theory of mind (Niemi et al., 2017). These findings suggest that, when participants evaluated allocators operating based on reciprocity and charity, they may have attended to allocators' mental states, i.e., internal motivations, to a greater extent. Consistent with this neural pattern, reciprocity and charity were rated more motivated by allocators' emotions and the unique states of individuals, and less by standard procedures, compared to impartiality. Furthermore, across both studies in the present work, ratings of charity and reciprocity as fair were correlated, whereas other correlations with impartiality were inconsistent across studies. Interestingly, in our neuroimaging work, although reciprocity and charity alike elicited greater activity in brain regions for theory of mind, i.e., precuneus, dorsal and ventral medial prefrontal cortex (MPFC) and left temporo-parietal junction (LTPJ), compared to impartiality, reciprocity and charity also elicited distinct neural and behavioral patterns. Reciprocity alone elicited consistently greater activation in these brain regions compared to impartiality. Furthermore, participants rated reciprocity as even more motivated by allocators' personal goals, less fair, and less morally praiseworthy, compared to both charity and impartiality. Overall these findings suggest that evaluating different kinds of allocations recruits ToM to varying extents, with charity and reciprocity eliciting greater attention to mental states. On average people may consider "true" fairness to be a matter of maintaining a "person-blind" approach; thus, the extent to which allocations do not trigger ToM might indicate fairness.

The current work affords a number of additional neural predictions. Machiavellian individuals who consider reciprocity to be more fair might show reduced or disrupted representations of others' pain, reflected in reduced activity in anterior insula (AI), posterior anterior and anterior medial cingulate cortex (pACC/aMCC) (Engen & Singer, 2012). Conversely, we might expect people who rate charity to be

more fair and who are higher in empathic concern and perspective taking to exhibit enhanced activation in core empathy-related regions in response to others' distress.

In our prior work (Niemi et al., 2017) and here, impartiality stands out as prototypically fair—yet, in the current work, we demonstrate robust individual differences in *who sees what as fair*. These novel results suggest that people interested in gaining support for their arguments about how to allocate resources (e.g., lawmakers, policy proposers, and protesters) may find that appeals to impartiality are not always the best strategy, depending on the audience. Arguments that reciprocity-based allocations are "fair" may be more convincing to an audience high in Machiavellianism who may see such proposals as missions of "loyalty in action."

The present results also reveal the boundary lines between the "person-based" forms of fairness, such as reciprocity and charity, and how each differs from "person-blind" impartiality. Prior research has underscored the crucial role of reciprocity for many different relationships (e.g., Axelrod & Hamilton, 1981; Baumard, Andre, & Sperber, 2013; Gurven, 2006; Hill & Kaplan, 1993; Rand & Nowak, 2013; Trivers, 1971; Wedekind & Milinski, 2000). Returning favors is not only expected in typical social dyads (e.g., friendships and partnerships), but built into many major religious tenets (e.g., The Golden Rule: "Do unto other as you would have them do unto you") as well as criminal justice programs (e.g., victim compensation). However, when multiple recipients may have a stake in resources, allocations guided by the tenet "you scratch my back, I scratch yours" may strike some as unfair (Elster, 2006; Gurven, 2006). Indeed, in our past work, participants rated allocators in the reciprocity vignettes as significantly more motivated by their own personal goals, compared to allocators in the charity and impartiality vignettes (Niemi et al., 2017). We speculate that including reciprocity in one's definition of "fairness" may be part of a Machiavellian moral worldview aimed at securing close relationships to have people nearby available either to exploit or to aid in the exploitation of third parties (Cf. Niemi & Young, 2013).

Charity shares features with both reciprocity and impartiality. Like impartiality, charity may be derived from and ultimately serve preferences for equality (Shaw, DeScioli, & Olson, 2012). All else being equal, charity provides a means to equality without triggering loss aversion (i.e., appealing to the *do-no-harm* principle; Baron, 1994; Kahneman & Tversky, 1979; Van Beest, Van Dijk, De Dreu, & Wilke, 2005). However, charitable allocations meant to "level the playing field" in service of social justice (e.g., to correct for historical exploitation as in the case of affirmative action) may be deemed by some to be unfair to the extent that they are viewed as involving "preferential treatment." According to Trivers (1971), giving specifically to the recipient most in need may in some cases be the *most* personally advantageous: The recipient, in this case, is maximally grateful to the allocator and therefore most tightly bound to reciprocity norms that favor the allocator in the future. The implication is that charitable allocations do not necessarily stem from a preference for equality, as is the case for "person-blind" impartiality, but instead derive from a desire to build long-standing ties with exchange partners, as is the case for "person-based" reciprocity. In addition to some neural evidence for differences between charity and reciprocity, described above (Niemi et al., 2017),

the two present studies revealed that charity and reciprocity are associated with divergent stable interpersonal orientations, suggesting interesting nuances in how the evolutionary advantages of charity may play out at an interpersonal and group level. Participants who rated charity as more fair were higher in empathic concern and perspective taking, which are both conspicuously low in people high in Machiavellianism, who in turn rated reciprocity as more fair.

According to Hume, questions of justice are less likely to arise at the tails of a normal distribution of resources: extreme plenty or extreme scarcity (Wolff, 2007). In conditions of plenty, allocation concerns are less pressing. In conditions of scarcity, it is hard to fault someone for doing what they can to survive. When people face life or death circumstances (e.g., due to genocide, enslavement), adopting a definition of fairness that prioritizes close relationships might be crucial to developing and preserving coalitions necessary for escaping exploitation and abuse. Indeed, other research has shown that even young children favor reciprocity in explicitly competitive contexts (Shaw et al., 2012; Shaw, 2013). We have examined fairness values as if they should be expected to be relevant to humans in the same way across the life span and across many different sizes of groups; however, we might expect, for example, that charity becomes more salient when we consider humans at the beginning or end of their lives. In spite of differences, highlighted in the present work, both "person-blind" and "person-based" forms of fairness likely allow people to manage the problem of resource allocation as it presents itself across diverse relationships—from friendships and partnerships to child and elder care to the community and global economy.

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Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflicts of interest.

Ethical Approval All procedures performed in these studies were in accordance with the ethical standards of the institutional research review committee.

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