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Inequality averse and compassionate blood donor: implication for interventions

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Vox Sanguinis

Background and objectives Blood donors, compared to non-donors, are more likely to show a preference to help others either by sharing resources to *directly* compensate those in need or *indirectly* by punishing those who act unfairly. Knowing the dominant cooperative preference for blood donors will inform the development of targeted interventions. We test which preference dominates and an initial intervention based on these findings.

Materials and methods We report two studies. The first compares compensation and punishment preferences in blood donors and non-donors (N = 372) using a third-party-compensation-and-punishment game. Based on the results of Study 1, Study 2 (N = 151) is a feasibility experiment of an intervention based on advantageous inequality aversion ('As a healthy person, you can give blood and help those less healthy than you'.).

Results Blood donors, compared to non-donors, have a preference for compensation. Organ donors have a preference for punishment. Those exposed to the advantageous inequality aversion intervention, compared to control conditions, show a greater behavioural propensity to donate blood (this was especially the case for non-donors).

Conclusion Blood donors have a clear preference for direct helping through compensation that can be translated into a simple effective intervention to enhance blood donor recruitment and retention.

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Key words: donor motivation, donor recruitment, donors.

Introduction

Cooperation within a society can be sustained either by giving resources (e.g. time, money) to help someone in need or by *punishing* those who act unfairly [1–3]. The former offers *direct* help to an individual, signals compassion and initiates reciprocity [1–4]. The later *indirectly* helps individuals, in general, by enforcing wider societal norms of fairness and dissuading selfishness [1–3]. Both direct-cooperation and punishment are theorized to operate by reducing inequality and re-establishing fairness [5, 6]. While blood donors, compared to non-donors, are more likely to show both direct-cooperation and punishment [7–10], no study has compared donor's preferences for either direct-cooperation or punishment when both options are simultaneously available. Thus, we ask for the first time: 'Are blood donors primarily motivated to care for an individual or to ensure wider societal fairness?' Knowing donors' dominant preferences will indicate how best to target interventions to recruit donors: 'Do blood donors donate to help individuals in need or to ensure there is sufficient blood?' This paper explores, for the first time, which preference dominates for blood donors and provides some initial data on translating this into an intervention.

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Inequality aversion and preferences to compensate or punishment

A Third-Party-Punishment-and-Compensation (3PPC) game [11, 12] can be used to explore preferences for direct-cooperation and punishment simultaneously. In a 3PPC game, a third-party witnesses someone being treated unfairly by a perpetrator and can choose, to either: (1) compensate the victim, (2) punish the perpetrator or (3) both compensate and punish, all at a personal cost or can also choose to do nothing and incur no cost [6, 11, 12]. It is argued that people cooperate or punish, partly because, they are motivated to *reduce inequality* between themselves and others: they are *inequality averse* [5]. There are two forms of inequality aversion. First, there is *advantageous inequality aversion* [AIA] which occurs when a person is relatively better-off than another, and *guilt* motivates them to reduce this inequality [5]. Second, there is disadvantageous inequality aversion [DIA] which occurs when one person is relatively worse off than another. Here, *envy* motivates them to find strategies to reduce inequality [5]. In this third-party context, inequality aversion suggests that the third-party would increase the victim's resources to a fair level and not over-compensate, and reduced the perpetrator's resources to a fair level and not be overly punitive [6, 13]. Indeed, being overly punitive creates an inequality that can be viewed as *spiteful* and may be counter-productive as the perpetrator may feel unjustly treated and subsequently not act fairly [13].

Philanthropic choice space

People's choice of a philanthropic act (blood donation, organ donation, volunteering or donating money) are personal, specific and differentially motivated [10, 14, 15]. For example, blood donors are motivated by feelings of warm-glow and compassion [7–10] both of which underlie c*ompensation* in a 3PPC [4]. Therefore, it is hypothesized that compensation will be the dominant preferences for blood donors. Those who sign on the organ donor register are motivated by civic duty and solidarity to provide resources for all [16–18]. As 3rd party punishment is linked to enforcing fairness norm [1–3], those who have signed on the organ register, compared to those who have not, should have a preference for punishment. No clear preference emerges for non-health-based helping.

Clinical trials approach

It has been argued that a clinical trials approach is needed when developing interventions to recruit blood donors [10, 19, 20]. Behavioural interventions, like pharmaceutical ones, contain active ingredients that can have side-effects as well a benefits [20]. Therefore, national campaigns (Phase IV trials) need to be developed via phase I (modelling), II (exploratory) and III (RCT) trials [19]. In phase I, information is gathered on the potential components of an intervention, and phase II provides initial evidence on an interventions effectiveness and any unforeseen consequences. Set within this approach the first study (akin to phase I) reported here explores the cooperative preference of donors and non-donors. Study 2 reports a small scale laboratory-based experiment (akin to phase II) to explore the benefits and unforeseen consequence of an intervention based on findings from Study1.

Study 1: Compensation and punishment in blood donors

Materials and methods

The sample

As women, in general, are more prosocial then men [21] a non-probability purposive convenience sampling strategy was used to ensure an equal number of male and female participants. We did not recruit participants who were specifically involved in any philanthropy to avoid bias [10]. The final sample consisted of 372 participants (52% female, mean age 22·12 years, SD 4·05 years).

Measures

Third-Party-Punishment-and-Compensation (3PPC) game: Participants played a standard one-shot 3PPC game [12]. There is evidence that exposure to repeated fairness leads to more free-riding and repeated unfairness to increased punishment and compensation in 3PPC games [11]. However, revealed altruism shows that initial allocations are more likely to reflect the person's underlying cooperative preference and as such we use a one-shot game [22, 23]. Participants read the instructions to the game and were told that the game involved three players (A, B & C) (File S1). They were informed that player-A has been *given* £10 ($13 US, 11 Euro) and told that they can share some, none or all of it with player-B. Player-B has £0. Player-B has to accept Player-A's decision. Player-C (the 3rd party) has £5 ($6·68 US, 5·57 Euro) and can choose to spend some of this to either (1) *compensate Player-B*, (2) *punish Player-A*, (3) *do a mixture of compensation and punishment* or (4) *do nothing* and keep the money. The decision was made efficient as every £1 Player-C spends to compensate increases Player-B's allocation by £2, and every £1 Player-C spends to punish reduces Player-A's allocation by £2. Thus, the participants were indicated to spend in £1 units.

The game was played in private and decisions were made anonymously. Participants were told that they

would be Player-C and faced a scenario where Player-A had given £2 of their £10 to Player-B. The participant then made a decision to either (1) punish Player-A (*punish-only*), (2) compensate Player-B (*compensate-only*), (3) both punish and compensate or (4) to do nothing. They could choose only one option. Participants were informed that the game between A and B was hypothetical but that they were playing for *real money* and the choice they made would constitute their final pay-off. Participants were told that a random number of participants would be selected and paid based on the decision they had made. Evidence shows that this payment procedure has no effects on the pattern of results compared to paying all participants [24, 25]. Thus, decisions made by the participant will affect their pay-off but not Players-A and -B. Therefore, the participant's decision signals their *intent* to punish or compensate which is an important external-signal and self-signal about their reputation [26, 27]. Furthermore, if participants were only concerned about the actual direct effects of their actions on Players-A and -B, rather than what their decisions signal, they would keep the money and do nothing.

Assessments of Philanthropy: We assessed blood donor status by asking participants if they have ever donated blood (Yes, No). This question is a reliable and accurate assessment of whether or not someone has donated blood [28] and has been widely used to assess blood donor behaviour [8–10]. We assessed other philanthropic acts as follows: (1) volunteering (have you ever volunteered? Yes or No), (2) financial helping (have you ever donate money to charity? Yes or No), (3) organ donor registration (have you registered to be an organ donor? Yes or No).

3PPC pay-offs, equality and fairness

The discussion below is represented in Fig. 1. The 'Start State' has Player-A with £10 and Player-B with £0. As the monetary allocation is unearned house-money a 50:50 share would be considered a 'Fair Offer' (=£5:£5) [29, 30]. However, Player-A makes an 'Actual Offer' that is 80:20 (=£8:£2), which is known to be perceived as unfair [4]. Player-C can act selfishly and 'Do Nothing'. However, Player-C can restore a fair outcome to the victim (Player-B) by choosing the compensate-only option and, on average, 'Compensate-B' by spending £1·5 to raises their outcome to £5 (the £2 received by player-A plus £1·5 × 2 from Player-C). This leaves Player-B with a fair outcome [4]. Player-C can restore a fair outcome by choosing the punish-only option and, on average, 'Punishing-A' by £1·5 decreasing their outcome to £5 (the £2 given away by Player-A plus £1·5 × 2 deducted). While this leaves Player-B (the victim) with a less than fair outcome it signals a wider socially orientated strategy to enforce norms of fairness. Being overly punitive of Player-A would be spiteful, and potentially counter-productive as the transgressor may feel hard-done-by and may act unfairly in future interactions [6, 13]. The most equitable and fair strategy is to choose the 'Compensate-B and Punish-B' option and spend £1·5 on each (£3 in total) so that the transgressor and victim both have £5. However, this is the most costly strategy to Player-C, thus fairness can be restored more economically by choosing to either the compensate-only or punish-only options.

Ethical approval

This study was approved following the ethical procedures of the school of psychology University of Nottingham (references codes: 534, 554 & 654).

Power Analysis

With respect to blood donor behaviour in economic games, a medium effect size (Cohen's d = 0·62; r = 0·28) is reported for generosity in dictator games [8] and punishment (Cohen's d = 0·67, r = 0·32) in an ultimatum game [10]. To attain a power of 0·80, with an alpha of 0·05 this indicates that for compensation 41 blood donors need to be compared 41 non-donor and for punishment 36 donors to 36 non-donors.

Results & discussion

Effects of sex and age on preferences

Preference choice did not vary by sex ($\chi^2_{(3)}$ 0·757, P = 0·860) or age ($F_{(3,\ 367)}$ = 0·448, P = 0·719). So there is no evidence for bias by sex or age of participants.

3PPC preferences and payments

Consistent with the literature the majority of participants chose compensation-only (n = 156, 41·9%) or kept the money (n = 136, 36·6%) with punishment-only used the least (n = 30, 8·1%) and 'compensation and punishment' chosen by 50 (13·4%) [11, 29].

Those who chose to 'compensation-only' spent on average £1·63 (SD = 1·07) giving the victim £5·26 on average. When 'compensation and punishment' was chosen participants spent on average £1·45 (SD = 0·62) to 'compensate' (on average the victim's outcome is £4·90) and £1·50 (SD = 0·73) to 'punish' (on average the transgressor's outcome is £5). Those choosing the 'punish-only' option spent £2·43 (SD = 1·04) to reduce the transgressor's outcome to £3·14. Thus, those choosing a preference to 'compensate' or both 'compensate and punish' show unfairness and inequality aversion and those choosing 'punishment-only' are more spiteful (Texts S2 and Table S1 for more details).

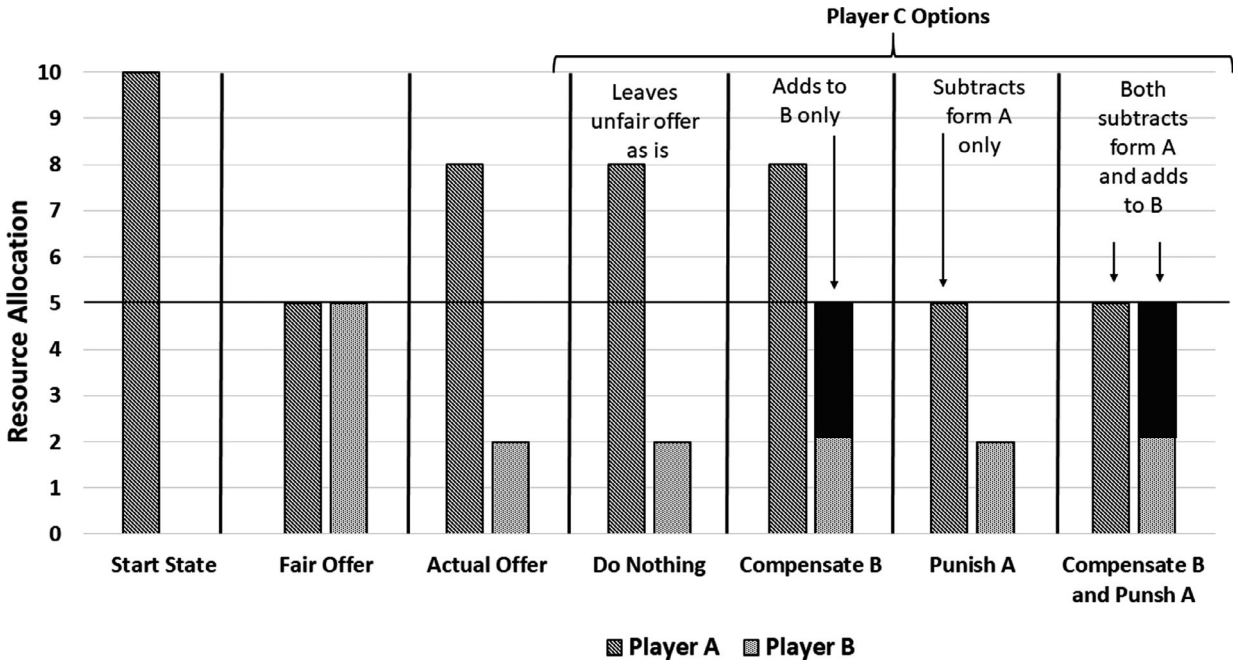

Fig. 1 Payoff patterns for the 3PPC.

Philanthropic behaviours

Of the participants 25·7% had donated blood at some time (N = 95), 42·2% had registered as an organ donor 42·3% (N = 155), 82·6% had donated money (N = 304) and 90·3% volunteered (334).

Predicting preferences to cooperate

A multinomial regression model examined if a specific preference to either compensate-only, punish-only, or do both, relative to doing nothing was observed for blood donors, registered organ donors, having donated money or volunteered. The results (Table 1: Panel A) showed that blood donors are twice as likely to choose to compensate-only compared to do nothing. Those on the organ donor register are twice as likely to choose to punish-only compared to do nothing. Thus, those who have donated blood show a preference for *direct* helping, resulting in a more equal allocation to the victim and those on the organ donor register for *indirect* punishment-only. There was no specific preference observed for donating time or money (File S3, Table S2 for robustness checks).

The options to 'compensate-only' and to both 'compensate and punish' produced average allocation patterns that resulted in more equal/fair splits of resources. Therefore, the choices to 'compensate-only' and both 'compensate and punish' were collapsed into a single category that reflected 'fairness and equality'. A second multinomial regression (Table 1: Panel B) compared 'fairness and equality' and 'punish-only', relative to doing-nothing. The results show that blood donors were significantly more likely to choose a 'fairness and equality' option and organ donor's punishment-only.

This suggests that for blood donation, interventions that emphasize *a fair direct sharing of personal resources* to minimize any difference between themselves and others in need would be effective. Study 2 reports on a feasibility study to explore this possibility.

Study 2: Inequality Aversion: Transferring the Resource of Health Through Blood Donation

The theoretical basis of the intervention strategy suggested by study 1 is inequality aversion [5]. Indeed, motivations based on *advantageous inequality aversion* (AIA) have been reported as part of blood donor motivations [31]. Here, the healthier donor is motivated to donate to help those less healthy [7, 31]. Furthermore, models of AIA suggest that guilt motivates this desire to reduce inequality [5] and indeed, guilt has been shown to be a motivator for blood donation [32]. Thus, a message based on AIA should be an effective motivator to donate blood. However, manipulating guilt may be disadvantageous if it is perceived as manipulative [33, 34]. Thus, a message that highlights inequality and enacts guilt without engendering feelings of manipulation is desirable. It has been proposed that this can be achieved using massages such as 'As a healthy person, you can give blood and help those less healthy than you'. [7, 31]. This experiment

Table 1 Multi-nominal regression predicting specific cooperative preferences

					OR 95% CI	
Preference	**Predictor**	**Coef (SE)**	***P* =**	**OR**	**Lower**	**Upper**
	Panel A: Comparison Across all Choices					
Compensate only						
	Blood Donor	**0·667 (0·306)**	**0·029**	**1·94**	**1·07**	**3·54**
	Organ Donor	0·246 (0·263)	0·349	1·28	0·76	2·14
	Donated Money	−0·184 (0·346)	0·596	0·83	0·42	1·64
	Volunteered	0·830 (0·448)	0·073	2·23	0·83	5·67
Punish only						
	Blood Donor	0·231 (0·518)	0·655	1·26	0·46	3·47
	Organ Donor	**0·897 (0·451)**	**0·047**	**2·45**	**1·01**	**5·94**
	Donated Money	−0·401 (0·563)	0·476	0·67	0·22	2·02
	Volunteered	−0·596 (0·555)	0·283	0·55	0·18	1·63
Both 'Compensate and Punish'						
	Blood Donor	0·730 (0·410)	0·075	2·07	0·93	4·64
	Organ Donor	0·192 (0·369)	0·603	1·21	0·59	2·50
	Donated Money	−0·734 (0·435)	0·091	0·48	0·20	1·12
	Volunteered	0·678 (0·609)	0·265	1·97	0·59	6·50
R^2 (Nagelkerke)	0·062					
	Panel B: Comparison of Inequality Averse vs Punishment Choices					
'Compensate only' Plus 'compensate and punish' ('Fairness and Equality')						
	Blood Donor	**0·682 (0·291)**	**0·019**	**1·98**	**1·18**	**3·50**
	Organ Donor	0·233 (0·248)	0·349	1·26	0·77	2·05
	Donated Money	−0·340 (0·320)	0·287	0·71	0·38	1·33
	Volunteered	0·767 (0·405)	0·058	2·15	0·97	4·76
Punish only						
	Blood Donor	0·231 (0·518)	0·655	1·26	0·46	3·47
	Organ Donor	**0·897 (0·451)**	**0·047**	**2·45**	**1·01**	**5·94**
	Donated Money	−0·401 (0·563)	0·476	0·67	0·22	2·02
	Volunteered	−0·596 (0·555)	0·283	0·55	0·18	1·63
R^2 (Nagelkerke)	Blood Donor	0·231 (0·518)	0·655	1·26	0·46	3·47

Reference category is a preference to do nothing.
Significant values are highlighted in bold.

explores the effectiveness of this message against both an anticipatory guilt message and a pure control (no message) condition.

Materials and methods

Participants, design & power

A one-way between-groups design with 3-levels (anticipatory guilt [AG], advantageous inequality aversion [AIA] or pure control [PC]) was used. As there are no studies comparing AIA messages, the association between guilt and pro-sociality was used as the basis of the power calculation, as the underlying mechanism for AIA. This is a medium effect, with an r of 0·30 equating to a $d_{cohen's}$ of 0·629 [35]. To achieve 80% power with an α of 0·05 this requires 40 participants per condition. We oversampled to allow for some exploratory analysis with 151 participants recruited using a non-directive convenience sample (M_{age} = 20·9, SD_{age} = 2·019; 50·3% female). These were randomly allocated to one of the three conditions, with 50 participants in the AG and AIA conditions and 51 in the PC condition. Forty-nine participants described themselves as blood donors, with 28% in the AG, 32% in the AIA and 35% in the PC conditions.

Messages

All participants were provided with an image depicting a cartoon drop of blood followed by 'Donate Blood…Save Life'. Underneath the image, participants in the AG condition were presented with the slogan: 'If people like you do not donate blood, there will be continuing shortages in the future'. [34]. The AIA appeal was as follows: 'As a healthy person, you can give blood and help those less healthy than you' [31] (File S4).

Reactions to the messages

After reading the appeal participants rated 'to what extent the recruitment advert made them feel…' (1) 'Guilty for not donating blood' ('Guilt'), (2) 'Healthier than others' ('Healthier') and (3) 'Like you can donate blood in the future to improve the lives of others' ('Future Donation'). They also indicated the degree to which they felt manipulated: 'Did you find the recruitment advert was manipulative?' ('Manipulative'). All questions were answered on a seven-point scale (1 = not at all, 7 completely).

Behavioural proxy

To assess if any of the appeals increased the desire to donate, participants could take, at end of the study, information on how to become a donor and/or make a donation if already a donor.

Ethical approval

This study was approved following the ethical procedures of the school of psychology University of Nottingham (reference: 738R).

Results & discussion

Predicting behavioural proxy

The specific focus is on exploring any unforeseen consequences of the intervention for donors and non-donors. To do this it is necessary to compare, for donors and non-donors, separately, variation in behaviour across messages relative to the PC condition. Specifically, when donors and non-donors are considered separately is one of the messages more or less effective. A moderated logistic regression predicting the behavioural proxy was specified (Table 2). Compared to the PC, this model showed, that those in the AG and AIA conditions were significantly more likely to take the information. The nature of the significant interaction (Table 2 and Fig. 2), between conditions and blood donor status, was explored used Stata's *margins* routines (Table 3). The margins analyses (Panel A) shows that, compared to non-donors in the PC condition, non-donors in the AG and AIA conditions are more likely to take the leaflet. However, compared to donors in the PC condition, donors exposed to the AG condition were less likely to take information (Panel A). For completeness donors, compared to non-donors, were more likely to take the information under the PC condition only (Panel B). Thus, an AG intervention had potential detrimental effects on donors.

Evaluation of campaign appeals

A 3 (*Intervention*: AG vs AIA vs PC) by 2 (*donors-status*: donated vs non-donor) between-groups MANOVA was used to explore how the interventions were evaluated. The overall model showed significant main effects for intervention ($F_{(8,\ 286)\ \text{Pillia's trace}} = 10{\cdot}565$. $P = 0{\cdot}000$, $\eta p^2 = 0{\cdot}226$), donor status ($F_{(4,\ 142)\ \text{Pillia's trace}} = 4{\cdot}565$, $P = 0{\cdot}002$, $\eta p^2 = 0{\cdot}114$) and the interaction between intervention and donor status ($F_{(8,\ 284)\ \text{Pillia's trace}} = 2{\cdot}189$. $P = 0{\cdot}028$, $\eta p^2 = 0{\cdot}058$).

For the intervention, there were significant main effects for all four evaluations: (1) 'Guilt' ($F_{(2,\ 145)} = 20{\cdot}061$. $P = 0{\cdot}000$, $\eta p^2 = 0{\cdot}217$); (2) 'Healthier' ($F_{(2,\ 145)} = 14{\cdot}865$. $P = 0{\cdot}000$, $\eta p^2 = 0{\cdot}170$), (3); 'Future Donation' ($F_{(2,\ 145)} = 10{\cdot}636$. $P = 0{\cdot}000$, $\eta p^2 = 0{\cdot}128$) and (4); 'Manipulative' ($F_{(2,\ 145)} = 15{\cdot}190$. $P = 0{\cdot}000$, $\eta p^2 = 0{\cdot}173$). Such that, guilt was significantly higher in the AIA condition (mean 3·971, 95% CI 3·551, 4·392) compared to the AG (mean 2·776, 95% CI 2·332, 3·220) and PC (mean 2·101, 95% CI 1·668, 2·514) conditions. Those in the AIA condition rated themselves as healthier (mean 4·547, 95% CI 4·005, 5·039) compared to the AG (mean 3·472, 95% CI 2·953 3·991) and PC (mean 2·649, 95% CI 2·166, 3·132)

Table 2 Logistic regression models predicting quasi-blood-donation-behaviour

			OR 95% CI	
	***P* =**	**OR**	**Lower**	**Upper**
Condition	**0·048**			
Anticipated Guilt	**0·026**	**3·120**	**1·147**	**8·487**
Advantageous Inequality Aversion	**0·049**	**2·760**	**1·005**	**7·580**
Donor Status	**0·006**	**9·600**	**1·896**	**48·599**
Condition X Donor Status	**0·009**			
Anticipated Guilt X Donor	**0·002**	**0·040**	**0·005**	**0·315**
Advantageous Inequality Aversion X Donor	0·075	0·147	0·018	1·209
R^2 (Nagelkerke)	0·073			

Reference category for condition is the 'pure control' and for donor status it is non-donor (N = 151).
Significant values are highlighted in bold.

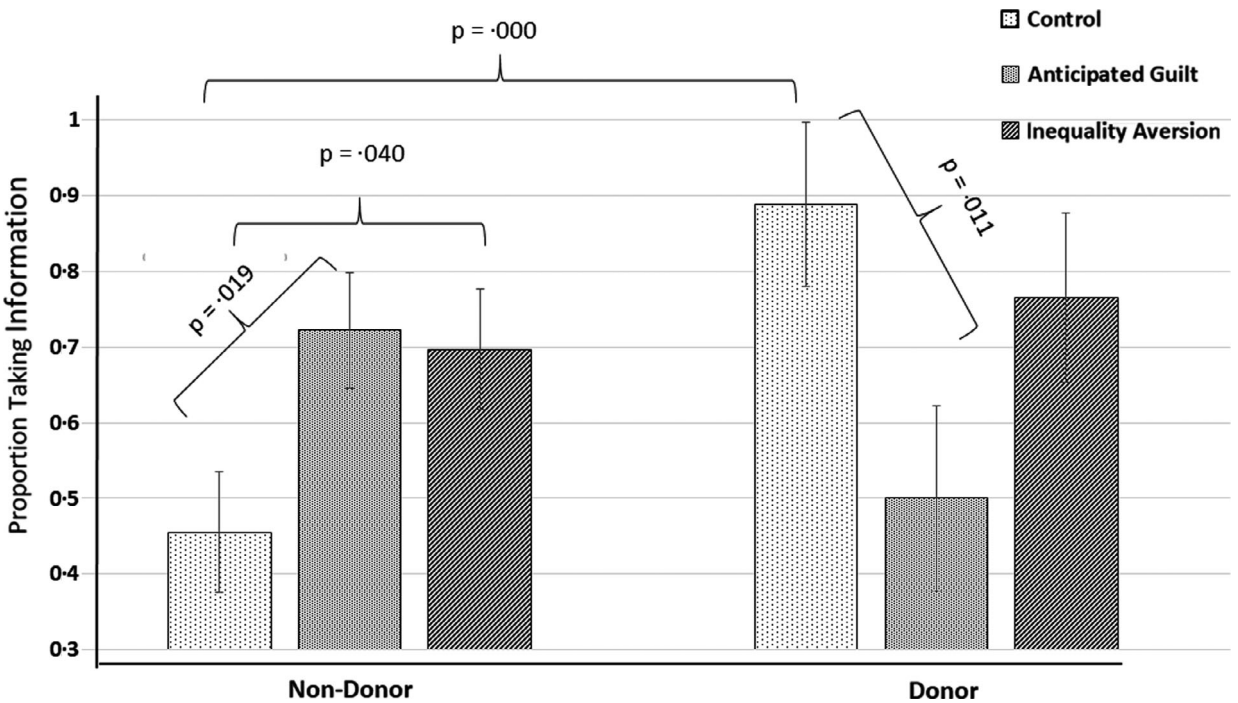

Fig. 2 Blood donor status by condition on behavioural proxy (Error bars = 95% C.I.s).

Table 3 Margin effects for intervention by donor-status interaction

	dy/dx (SE)	*P*	95% CI	
			Lower	Upper
Base: pure control				
Anticipated Guilt				
Non-donor	**0·268 (0·114)**	**0·019**	**0·043**	**0·491**
Donor	**−0·389 (0·153)**	**0·011**	**−0·688**	**−0·089**
Panel A: comparison across condition				
Advantageous Inequality Aversion				
Non-donor	**0·242 (0·118)**	**0·040**	**0·011**	**0·474**
Donor	0·124 (0·127)	0·327	−0·327	0·124
Panel B: comparison across donor status				
Base: non-donor				
Pure control	**0·434 (0·114)**	**0·000**	**0·211**	**0·657**
Anticipated Guilt	−0·222 (0·153)	0·147	−0·522	0·078
Advantageous Inequality Aversion	0·068 (0·130)	0·603	−0·188	0·323

Significant values are highlighted in bold.

conditions. Those in the AIA (mean 5·390, 95% CI 4·865, 5·915) and AG (mean 4·796, 95% CI 4·242, 5·349) conditions stated that they were significantly more likely to donate in the future than those in the PC (mean 3·699 95% CI 3·184, 4·215) condition. Those in the AG (mean 3·571, 95% CI 3·086, 4·0571) and the AIA (mean 2·710, 95% CI 2·250, 3·171) conditions, rated feeling manipulated significant more than those in the PC (mean 1·727, 95% CI 1·275, 2·179) conditions. A Bonferroni corrected post hoc comparison showed that AG was rated as more manipulative than AIA (P = 0·036: mean difference 0·861, 95% CI = 0·041, 1·681). Thus, the AIA was rated as less manipulative than AG, as more likely to encourage future donations and engenders a sense of health, with

guilt as a motivation. Thus, the AIA condition is one of low-manipulative guilt, energizing donation intentions.

Donor status was significant for 'Healthier' only ($F_{(1, 145)} = 10{\cdot}817$. $P = 0{\cdot}001$, $\eta p^2 = 0{\cdot}069$), with donors rating themselves as feeling healthier (mean 4·035, 95% CI 3·561, 5·509) than non-donors (mean 3·077, 95% CI 2·751, 3·404).

The intervention by donor-status interaction (Fig. 3) was significant for: (1) 'Guilt' ($F_{(2, 145)} = 3{\cdot}310$. $P = 0{\cdot}047$, $\eta p^2 = 0{\cdot}0410$, (2) 'Healthier'(2) $F_{(2, 145)} = 4{\cdot}587$. $P = 0{\cdot}012$, $\eta p^2 = 0{\cdot}060$ and (3) 'Future donation' ($F_{(2, 145)} = 4{\cdot}809$. $P = 0{\cdot}01$, $\eta p^2 = 0{\cdot}062$). Examining Fig. 3 shows that for 'Healthier' and 'Future donation' donors, compared to non-donors, in the control condition, felt both healthier and were more likely to donate in the future, with this difference disappearing in both the AIA and the AG conditions. Also 'Healthier' and 'Future Donation' increase for the non-donors, compared to the PC, for both the AIA and the AG conditions. Thus, the AIA and AG intervention encouraged non-donors to respond more like donors. For guilt, compared to the PC, both the AIA and AG conditions resulted in greater feelings of guilt for non-donors and the AIA for donors. There was not significant different between donors and non-donors, however, non-donors in the PC had lower guilt than donors in AIA.

General discussion

These studies show, for the first time, that inequality aversion is a potential key determinant of donors cooperative motivation and this is directed at a person in need rather than considering the wider societal need [5]. We also show, for the first time, that an intervention focusing on advantageous inequality aversion with respect to health between the donor and recipients is potentially a successful intervention to recruit non-donors. The findings and implications are discussed below.

Blood donors cooperative profile

Blood donors and organ donors (both examples of health-based philanthropy) have distinct cooperative profiles. Blood donors, compared to non-donors, have a stronger preference to *directly* help an individual in need to reduce their inequality [5]. Those registered as organ donors, however, had a preference for punishment which is consistent with their concern for societal solidarity [16–18]. However, the level of punishment seen by organ donors was overly punitive. This could be counter-productive if the person punished perceives this as unfairly draconian and reacts against this by continuing to act unfairly [13]. Finally, no specific preference was identified for non-

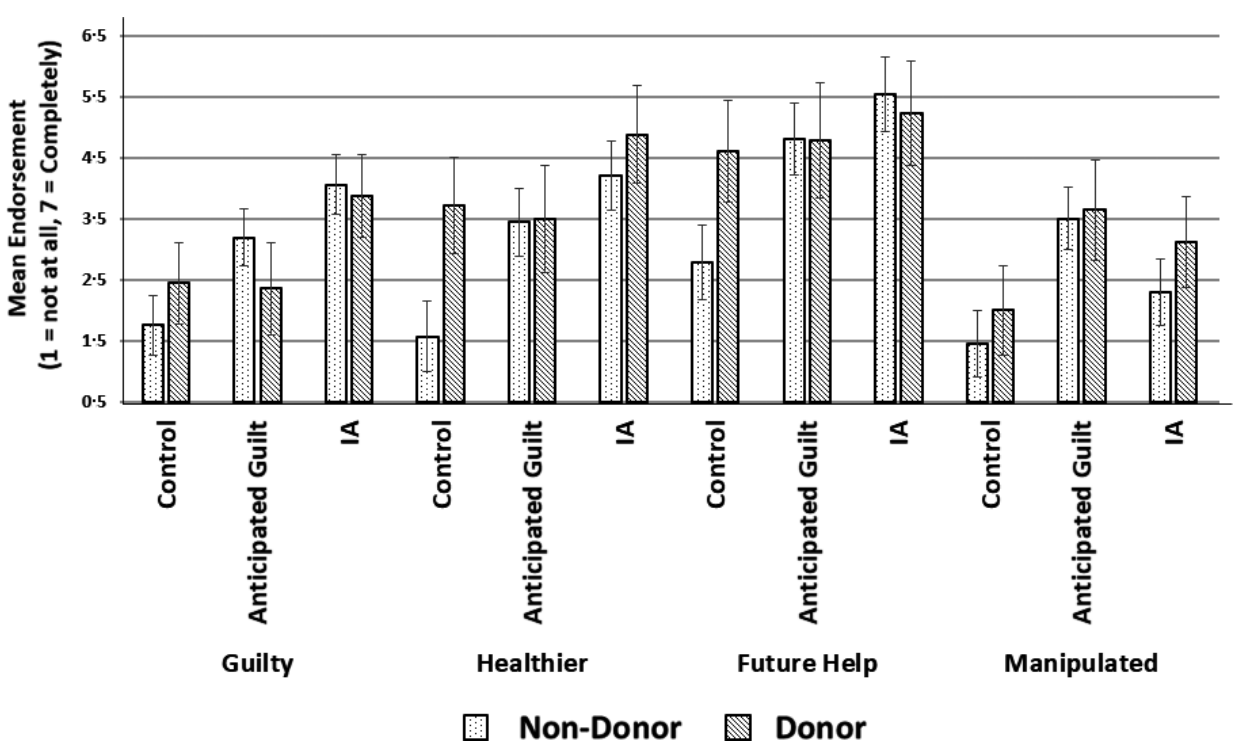

Fig. 3 Blood donor status by condition on message evaluations (AIA = Advantageous Inequality Aversion; Error bars = 95% C.I.s).

health-based philanthropy for those who either volunteer time or donate money.

Implications for Practice: 'I'm Healthy, I can Help'

The motivational pattern for blood donors was to help a relatively disadvantaged individual rather than ensure wider societal fairness. This motivation to reduce inequality is the likely causal mechanism for this preference. This translates into interventions that focus on reducing inequality in health between the donor and the recipient, rather than focusing on ensuring sufficient supply of blood. As such, transfusion services should not just focus interventions on helping the recipient but emphasize *both* the relative difference in health between donor and recipient, as well as how the healthy donor can improve the relative health of the recipient. We show, for the first time, that campaigns with a slogan that encompasses this idea (i.e. 'As a healthy person, you can give blood and help those less healthy than you'.) are a simple technique transfusion services can consider implementing to recruit non-donors. It is certainly an intervention worthy of future consideration and development within a clinical trials model.

Limitations

While behavioural willingness and behavioural proxies are not perfect predictors of actual behaviour they are good indicators [36], and a useful analogue within a clinical trials approach to identify any potential detrimental effects. Furthermore, it should be acknowledged that we explored preferences in a one-shot game, and future research may wish to explore any potential leaning effects. For example, do donors compared to non-donors start to express preferences for punishment with repeated exposure to unfairness in a 3PPC game, or if their underlying preference for compassion raisins unaltered [11].

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Conflict of interests

None Declared.

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Supporting Information

Additional Supporting Information may be found in the online version of this article:

Text S1 Third-Party Punishment-Compensation Economic Game.
Text S2 Identifying Preferences that are Fair and Equality restoring.
Text S3 Sensitivity Analysis for Health and Non-Health Based Philanthropy.
Text S4 Study 2: Inequality Aversion: Transferring the Resource of Health Through Blood Donation.
Table S1 One sample *t*-test for the amount spent to compensate and punish within preferences.
Table S2 Multi-Nominal Regression Predicting Specific Cooperative Preferences.