Group identity in fairness decisions: discrimination or inequality aversion?

Carolyn Chisadza, Nicky Nicholls, Eleni Yitbarek

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Carolyn Chisadza[*], Nicky Nicholls[†], Eleni Yitbarek[‡]

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Abstract

This paper investigates issues of decision time and race in distributive fairness decisions in South Africa. We conduct a dictator game where we gather data on transfer amounts and time taken for decisions, where dictators are paired with a series of partners with whom they either share or do not share race. Our results are not in line with the empirical evidence that suggests that impulsive decisions are fair: transfers increase with decision time, with fairer decisions taking longer than more selfish decisions. We note significantly higher transfers to black receivers from black decision-makers. White dictators give more to white receivers in very short (<15 second) decisions, but when they take more time to decide on a transfer, more is given to black versus white receivers. This race-based discrimination in transfers appears to be motivated largely by inequality aversion: black receivers are (correctly) assumed to have lower income than their white peers. This willingness to reduce perceived race-based inequality has encouraging implications for redistributive policies in the country.

Key words: Dictator game; fairness; discrimination experiment; Africa
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[*]University of Pretoria

[†]Corresponding Author: Nicky Nicholls, Department of Economics, Tukkiewerf Building, University of Pretoria, Lynnwood Road, Pretoria, 0002, RSA, email: nicky.nicholls@up.ac.za. We gratefully acknowledge funding from the University of Pretoria Research Development Program

[‡]University of Pretoria

1 Introduction

The importance of understanding preferences beyond self-interest in economic decision making is well-established in the economics literature. Without an understanding of what motivates people's decisions, predicting or influencing those decisions is impossible. Deviations from self-interest equilibria have been widely documented, with altruism, fairness and reciprocity proposed as important motivators for behavior (consider, for example, the seminal works Kahneman et al. 1986; Rabin 1993; Berg et al. 1995). Many of the biggest challenges facing society require us to leverage these motivators. Many of the biggest challenges facing society require the leveraging of these motivators. For example, reducing inequality and addressing racial injustice require willingness on the part of several players (the wealthy, or the advantaged race groups) to sacrifice some self-interest in favour of furthering the interest of others (those living in poverty and the marginalised race groups).

Attempts to investigate altruism, fairness and reciprocity experimentally began with Kahneman et al. (1986), followed by a simplification to the now very widely used Dictator game by Forsythe et al. (1994).[1] In the Dictator game, decision makers (dictators) receive a monetary endowment, and have to make a decision about the amount of the endowment to retain and the amount to share with a fellow participant (the receiver). The magnitude of the transferred amount indicates preference for altruism or fairness.

Related to preferences for fairness, a number of recent studies have investigated whether fair distribution decisions are made intuitively (quickly) or whether fairer decisions require longer decision times (e.g. Rand et al. 2012; Lotito et al. 2013; Cappelen et al. 2016). These studies have made use of a range of experimental methods, including the Dictator game, valued for ease of understanding by participants. However, different studies have reached opposing conclusions, with some finding that faster, more intuitive decisions are linked to greater fairness (e.g. Cappelen et al. 2016; Rand et al. 2012; Lotito et al. 2013); and others noting greater fairness in slower decisions, where more deliberation takes place (e.g. Piovesan

[1] see Engel (2011) for a meta-analysis of Dictator game studies.

& Wengström 2009; Ubeda 2014).

A separate body of literature has considered issues of bias in decision making, including bias in favour of those in the same group (for example, race, gender, nationality) as the decision maker. The continued widespread prevalence of racial bias in many countries, and the costs that such bias imposes on society, has become particularly clear with the rise in the Black Lives Matter movement in recent months.

We are interested in how preferences for fairness interact with racial bias. Specifically, we investigate three research questions: Does the time taken for an allocation decision predict the fairness of the resulting allocation? Is racial bias evident in allocation decisions (particularly bias in favour of those sharing a race with the decision maker)? Is the relationship between decision time and fairness impacted by racial bias? To investigate these questions, we consider Dictator game decisions in South Africa, where the lasting effects of apartheid legislation are still visible in the inequality between racial groups.

Our results show higher transfers where dictators take more time to deliberate. Although average transfers are higher when the receiver is black than when the receiver is white; this difference is only significant for black dictators, suggesting own race bias in this group. Notably, however, when we account for perceived income of the receiver, where white receivers are perceived as having higher incomes, the magnitude of this bias reduces considerably. White dictators give more to white receivers in very short (<15 second) decisions, but when they take more time to decide on a transfer, more is given to black versus white receivers. The mitigating effect of income perceptions on bias towards own race receivers is a reassuring finding, as it suggests a significant role of preferences for reduced inequality in distribution decisions. We note that the bias against black partners seen in two earlier Dictator game studies in South Africa does not persist in our experiment.

The remainder of the paper proceeds as follows: Section 2 briefly reviews the two relevant branches of literature, Section 3 describes the experiment, Section 4 sets out our results, including the conceptual framework used, and Section 5 concludes.

2 Literature Review

2.1 Decision time and fairness

A consensus in the literature is yet to be found on the link between decision speed and fairness. According to the Social Heuristics Hypothesis (Rand et al. 2012; Rand & Kraft-Todd 2014), fair behavior is intuitive in social dilemma experiments because cooperation is viewed as a successful strategy by people in most social interactions outside the lab. Haidt (2001) argues that moral decisions are quick and require limited thought process. "Intuitive" decision making has been contrasted with more "deliberative" decision-making: several experimental studies have considered shorter response times as an indication of intuitive decision-making, while longer response times indicate decisions requiring deliberation (Rubinstein 2007; Cappelen et al. 2016). Intuitive decisions have been found to demonstrate greater fairness or cooperativeness; while deliberative decision-making has been associated with self-interest. Cappelen et al. (2016) find a negative association between response time and fair behavior in Dictator games, while Rand et al. (2012) find that subjects who reach their decisions more quickly are more cooperative. Moreover, in the Ultimatum Game, when under time pressure to decide quickly, proposers tend to increase their contributions, whereas delaying the decision decreases contributions (Cappelletti et al. 2011). Similar behavior is observed in Rand et al. (2012); Rand & Kraft-Todd (2014); and Rand et al. (2014). Using data on response times from a public goods experiment, Lotito et al. (2013) also observes that cooperation is instinctive.

While the aforementioned studies conclude that fair behavior is intuitive, others find the opposite (Piovesan & Wengström 2009; Grimm & Mengel 2011; Tinghög et al. 2013; Evans et al. 2015). These authors find that faster response times do not necessarily indicate fairness or cooperativeness. Rather, they argue that when people are under time pressure or experience conflict around a decision, they become more self-interested. Piovesan & Wengström (2009) finds that selfish payoff maximizing choices are reached quicker than

choices expressing social preferences. On the other hand, Evans et al. (2015) argues that response times are driven by conflictedness. Therefore, people who feel conflicted about the decision to cooperate take longer to reach a decision and are less likely to select an extreme response. Ubeda (2014) finds that decisions requiring a moral trade-off take longer than self-interested decisions. Grimm & Mengel (2011) observes that when responders are given more time to think over a social dilemma, they are more likely to accept low offers from proposers, implying higher cooperation.

Some researchers point to the role of errors and cognitive differences in response time measures. Recalde et al. (2018) and Goeschl & Lohse (2018) find that higher contributions by fast decision-makers may not result from greater generosity, but rather from making mistakes. Cappelen et al. (2016) argue that a concern with much of the earlier research on response times is that the games used tend to be complex: Almost all use strategic games, such that the decision maker has to consider the likely behavior of other participant(s) in assessing the outcomes of different decisions. Since response times cannot distinguish between time needed to understand the game versus time needed to make a decision (fair or not), they argue that this is a significant confounding factor. They therefore use the Dictator game, since it lacks the complexity of strategic games, and it is easy to see what would be a (relatively) fair versus unfair decision. As such, the variation in cognitive ability that might impact understanding the game prior to making a decision is removed from the analysis.

2.2 In-group bias

Social identity theory (Tajfel 1970; Tajfel & Turner 1979; Tajfel 1982) has been widely studied in the social psychology literature to understand bias or favoritism towards one's own "in-group". Tajfel & Turner (1979) argues that self-esteem is derived from the status of the group into which an individual categorizes herself. Increased status for the group improves self-esteem, and the individual therefore derives utility from favoring the in-group over the out-group. Numerous studies have found bias in favor of in-group members including

minimal groups (where groups are assigned based on criteria such as color preference or random assignment (e.g. Ahmed 2007; Daskalova 2018); country of origin (e.g. Glaeser et al. 2000); ethnicity (e.g. Fershtman & Gneezy 2001; Friesen et al. 2012) and gender (e.g. Rudman & Goodwin 2004). Group-based discrimination is not universally found, however: in a recent meta-analysis of discrimination experiments, Lane (2016) finds evidence of group-based discrimination in approximately a third of the studies analyzed.

Race-based inequality continues to be prominent in South Africa: white-headed households (<10% of households in South Africa) have an average income that is 4.5 times larger than that of black-headed households.[2] Racial bias also continues to be found in experimental work in South Africa, including trust games (Burns 2006; Haile et al. 2008; Hamann & Nicholls 2018) and even student evaluations of lecturers (Chisadza et al. 2019).

Considering racial bias in Dictator game decisions, we note 2 experiments conducted in South Africa: Van Der Merwe & Burns (2008) considered university students, where race was cued using surnames. This study found significantly higher offers from white dictators to white partners than to black partners. Similar bias was not noted among black dictators. Pecenka & Kundhlande (2013) conducted a modified Dictator game in South Africa, where the dictator had the option of stealing from a partner's endowment. Here again black partners were the object of bias, this time by black dictators (all dictators in this experiment were black): dictators stole more from a black partner than from a white partner.

We contribute to the literature on fairness first by seeing whether our data supports an increase or a decrease in amount transferred with longer decision times. We follow Cappelen et al. (2016) in using the simple Dictator game to avoid potential confounds from difficulty understanding the game. Second, we ask whether racial bias against black partners, as noted by Van Der Merwe & Burns (2008) and Pecenka & Kundhlande (2013), persists in our study. Given that a number of years have passed since the time when these studies were conducted, our hope is that racial bias against black South Africans will have decreased.

[2]Living Conditions of Households in South Africa 2014/2015, Statistics South Africa 2019.

Finally, we consider how racial bias might interact with decision time: decisions about altruism towards an out-group player might, for example, take longer than decisions with an in-group partner. Rather than attempting to make decision time exogenous (through time pressure and forced delay treatments), we are interested in how decision time varies endogenously when respondents have to make decisions where they are paired with partners of their own or a different race. By pairing each respondent with multiple partners where partner race varies, we can see how variations in response time relate to transfer amounts.

3 Experiment Design

3.1 Dictator game

We make use of a Dictator game. This game originated with work by Kahneman et al. (1986) and was later simplified by Forsythe et al. (1994). The common version of the game has 2 players, where one player (the Dictator, or decision maker) is endowed with an amount of money, and can choose how much (if any) of the endowment to transfer to another player (the receiver). The simple one-shot Dictator game is a non-strategic one: the dictator does not need to consider the possible responses of the receiver in deciding on the amount to transfer, since the receiver has no opportunity to reciprocate or retaliate. Because of the non-strategic setting, transfers in the game are seen as indicative of altruism or of the fairness preference of the dictator, as a willingness to redistribute income.

3.2 Participants

Our experiment was conducted with first year students at the University of Pretoria. Students were invited to participate in a decision making experiment through an announcement email sent via the Blackboard communication tool (the university's day to day communication tool) to all students registered for first year economics (n$\sim$2000). Students were asked in the email to register their interest in participating via a Qualtrics link, where they were

asked to provide a contact email as well as limited demographic details.[3] Five session times (all sessions were conducted on one day in May 2019) were listed, and students were asked to indicate all session times when they would be available to participate. We invited students to specific session times based on their availability.[4] We invited a total of 137 students to specific sessions, of whom 91 participated in the experiment.

The Dictator game set-up of our experiment also required us to appoint receivers from those who signed up for the experiment. While racial bias was our primary focus, we also wanted to control for potential gender bias in our results. We therefore wanted to include receivers from demographic groups with 4 combinations of race and gender (black male, black female, white male, white female). Receivers were randomly selected from each of these groups.[5] The receivers were contacted by email and asked to meet at a given location to receive their payment.

3.3 Experiment Protocol

Five sessions with between 11 and 24 participants per session were conducted. Decision making participants arrived at the experiment lab at the time of their designated sessions, and were seated at prepared computer terminals. The experiment was programmed in Qualtrics, which records responses as well as measuring the time taken for each response. Participants had to select a pseudonym that they would enter into the Qualtrics program and then give to the experimenters at the end of the session to receive their payment. In this way responses could be both anonymously recorded and accessed for payment purposes to ensure incentive compatibility of the experiment.

[3] Contact details were needed to invite students to specific sessions, but students were assured at this time as well as in the experiment that their responses in the experiment would be anonymous. To this end, no personal identifiers were captured with the experiment data.

[4] 5 sessions with different times were made available so as to allow students with different schedules to participate, thereby minimizing selection bias. Students whose availability did not match with available session spaces received an email thanking them for their interest and apologizing for our inability to accommodate them in a session.

[5] To avoid introducing additional confounds, all decision makers (unknowingly) faced the same 5 receivers in randomized order.

Receivers attended a session after the experiment to receive their payment. Receivers were only notified of their role after the experiment had been conducted to avoid any possible discussion of roles which could bias allocation decisions. Receivers' payments were determined by a dice roll to select one of the transfers made to each receiver for payment.

Each decision making session started with the corresponding author reading the instructions aloud to participants. Participants also received a printed copy of instructions, and the instructions appeared on their computer screens as well.

Participants received a R20 (approximately $1.30) show-up fee for participating in the experiment.[6] They were asked to make a series of five Dictator game decisions where the participant had to allocate R100[7] (approximately $6.50) between themselves and a fellow student who had signed up for the experiment. To ensure that all decisions were salient, participants were informed that one of these five allocation decisions would be paid to them in real money at the end of the experiment, and that each participant would randomly select the decision to be paid to them by rolling a die. It was emphasized that because of the random nature of the selection process for the paid decision, participants should make each choice as if it would be paid in real money. Participants were also informed that the receivers whose demographic details were shown for each of the five decisions were fellow students, and that these people's payments would depend on the decisions made in the experiment. To minimize any order effects, and to control for the possibility that response times might decrease with repetition, the order of receivers each decision maker faced was randomized.[8]

To further reduce any issues with understanding the (already cognitively simple) game, a detailed example was given in the instructions to explain how the allocation decisions would work, listing the total payments (including the participation fee of R20) resulting from a

[6] On campus, students can purchase, for example, coffee and a muffin with this show-up fee.

[7] For reference, assistant lecturers (post-graduate students helping with tutoring) at the University of Pretoria were paid R100 per hour at the time of the experiment.

[8] In order not to decrease the salience of decision makers' allocations to receivers, decision makers were not made aware that all participants were facing the same five receivers, nor were they made aware of the details of the payment mechanism for the receivers: they were simply informed that the receivers were randomly selected from those who had signed up for the experiment, and that the receivers would be paid in real money based on a randomly selected decision in which their demographic details were used.

hypothetical division for both the decision maker and the receiver. Finally, participants played 2 practice rounds without any demographic details to ensure that they understood the game structure and that they were familiar with the decision problem by the time they reached the first real receiver decision. After any questions had been answered, participants were asked to commence with the real decisions.

Participants faced one black male receiver, one white female receiver, two black female receivers and one white male receiver. Gender information was included so that racial bias could be separated from possible gender bias as a test for the robustness of our findings.[9] We provided the race and gender demographic information using an approach first used with nationality by Bornhorst et al. (2010), and later for testing racial bias in Hamann & Nicholls (2018): The demographic characteristics of interest were provided along with three other apparently relevant demographic details, which are either non-varying within the sample (age group and year of study were homogeneous for our sample, but participants were not aware of this fact), or which would not plausibly impact decisions (whether receivers had an odd or even number of siblings[10]). By not making our interest in racial bias transparent we hoped to reduce any experimenter demand effects that might arise if participants were aware that their biases were under investigation. We included two representatives (with varying odd versus even numbers of siblings) from one of the demographic groups of interest (black females) to further reduce transparency about our specific interest in race. Having all decision makers make five choices, facing partners of their own and other race and gender, created a within-subject experiment design, allowing us to control for individual differences in time taken to respond.

Given the race-based inequalities in average incomes in South africa, we wanted to understand the impact of any assumptions about fellow students' incomes which might affect

[9]We anticipated that receiver gender might impact transfers, but this was found not to be the case. Transfers do not differ significantly by gender and dummy variables indicating interactions between dictator and receiver gender were not significant in any of our regressions. These results are shown in the Appendix.

[10]To confirm that the siblings variable did not impact transfers, we used a Wilcoxon rank sum test to compare transfers to the black female receiver with an odd number of siblings against transfers to the black female receiver with an even number of siblings: no significant differences were found (p=0.92).

transfer decisions. We therefore asked students to report their assumptions about each receiver's financial position (this is asked after the dictator questions so as not to cue income as a variable in making dictator decisions).[11] Finally, we asked students to provide some demographic details, including their own perceived financial position.[12]

Once all questions had been answered, participants were invited to an adjacent office, one at a time, to roll a dice to determine the decision to be paid to them in real money.

3.4 Data

In total, 91 dictators (i.e. 455 decisions) participated in the experiment. Table 1 presents the demographic breakdown of the decision makers that participated in the experiment. About 79% of dictators are black. The majority black racial composition of our sample in Table 1 reflects the racial demographics of South Africa, where 80.7% of the current population is black.[13] Most participants, 57%, declared that they have an average income while 37% think that their income is below average compared to other students. Only 7% of the participants believe that their income is above the average.

4 Results

4.1 Response time and transfers

In line with the existing literature, we measure the response time as the time elapsed from opening the experiment's decision screen until submitting the amount transferred to the receiver on the screen. The average time in our sample is 25.8 seconds, the fastest dictator

[11] Significant disparities in average incomes between black and white South Africans persist more than 20 years after the end of apartheid. For each of the 5 receivers, the following question was asked: "Consider the person you were paired with who is [under the age of 25, female, first year of study, black and has an odd number of siblings (1 or 3 or 5 etc.)] How do you think their income compares to other UP students?" Answer options were "below average", "average" and "above average".

[12] As most students are not aware of the details of their family earnings, and since the most relevant variable to our research question is perceived relative financial position, participants were asked to rate their financial position as above average, average or below average relative to other UP students.

[13] Mid-year population estimates, Statistics South Africa, 2019.

Table 1 – Dictator Summary Statistics

Variable	Mean	Std. Dev.
Black	0.7912	0.4087
Female	0.5604	0.4991
Own perceived income		
Above average	0.0659	0.2495
Average	0.5714	0.4976
Below average	0.3626	0.4834
Transfer (in Rand)	33.0363	19.1090
Time (in second)	25.6084	16.8635

N= 91 dictators and 455 decisions

spent less than 3.3 seconds on a decision, while the median decision time is around 20.1 seconds. Panel (a) of Figure 1 shows the time distribution of decisions: 99% of the dictators decide within 82s, yet there are outliers that spend less than 5s at the bottom of the distribution and a single decision taking 178.7s at the top of the distribution. These outliers likely result from dictators who did not read the receiver demographic details in the instructions for each decision (very short outliers); or who left the screen during the experiment (long outlier). Such outliers are not informative about the length of the decision process and potentially bias statistical results. Thus, for the analysis we exclude dictators that spent less than 6s and more than 100s, eight and one observations, respectively. The resulting time distribution is presented in Panel (b) of Figure 1.

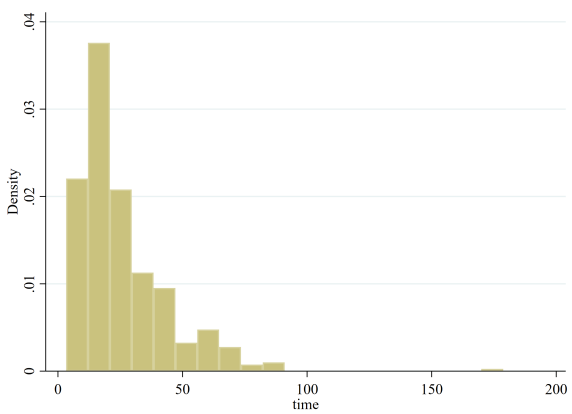
Looking at the amount transferred, on average decision makers transfer about 33 percent of the endowment, 33 Rand. Only 1 decision maker gave nothing in any of the 5 decisions[14], 9% shared the endowment equally and none gave away the full endowment. In a recent meta-analysis of Dictator games, Engel (2011) noted an average donation amount of 28.3% across 129 studies. Accordingly, we use this average transfer of 28 Rand to classify transfers into fair and selfish decisions: a fair decision is defined as a transfer of at least 28 Rand to the receiver while a selfish decision is a transfer of less than 28 Rand.[15]

Fair decisions in our sample take more time than their selfish counterparts. The average

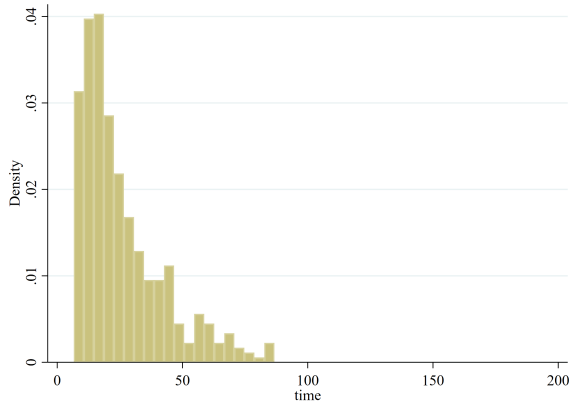
[14]In total we have 25 decisions with zero transfer.

[15]Our results are robust to using our median transfer of R33.

Figure 1 – Distribution of response time



(a) Decision time histogram, full sample

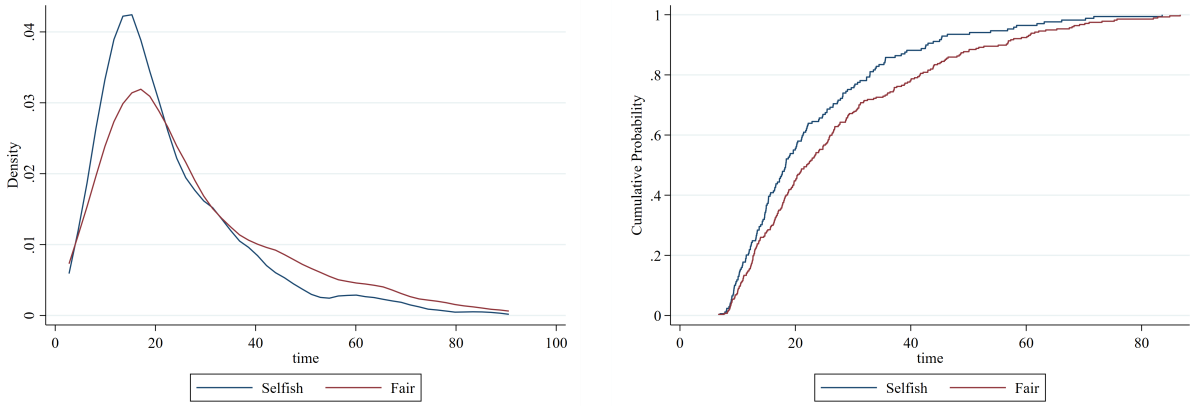


(b) Decision time histogram, decision time between 6.6s and 86.7s

decision time for selfish decisions is about 23.1 seconds, while for fair decisions this is about 27.9 seconds. Panel (a) of Figure 2 plots the distribution of decision time for selfish and fair decisions. The figure shows that the decision time distribution for fair decisions is tilted toward the right and has a lower peak in comparison to the distribution for selfish decisions. Panel (b) of Figure 2 presents two cumulative distribution functions (CDF) of deciding within t seconds, one for selfish and one for fair decisions. The CDF for fair decisions is consistently to the right of selfish decisions over the range of observed response times. This first-order stochastic dominance suggests that it takes longer for individuals to share fairly than to behave selfishly.

Formally, we test the mean difference in decision time between fair and selfish decisions. The mean difference test (t-test) shows that fair decisions took more time than selfish decisions (difference= 4.49s, p-value= 0.005). To investigate the extent of the size of the difference in decision time in means of fair and selfish decisions in a way that takes into account both within-dictator variability and the possibility of overlap between distributions of the two groups, we estimate effect sizes (Cohen 1988; McGraw & Wong 1992). Both Cohen's d-test and Hedges's g-test indicate that the average decision time differs by approximately 0.3 standard deviations and that this difference is statistically significant with a 95% confi-

Figure 2 – Kernel density and Cumulative distribution of response time



(a) Kernel density

(b) Cumulative distribution

dence interval. This indicates that the difference in time taken by fair and selfish dictators is meaningful.[16] This finding supports prior literature that suggests that impulsive responses might not be more fair than deliberated responses (e.g., Martinsson et al. 2012; Achtziger et al. 2015).

4.2 Racial bias and race-time interactions

We next wish to understand whether respondents behave more or less fairly when dealing with partners who share race, and whether this varies with how quickly they make decisions. We start this part of our analysis by comparing the response time and average transfer amount by the race interactions of decision makers and receivers. We do not find significant differences in response time across dictator/receiver race. Looking at transfers we note that dictators transfer more to black receivers. The difference is more pronounced from black decision makers (Table 2; see also Figure 5 in the Appendix).

[16]Both Cohen's d-test and Hedges's g-test are measures of effect size that asses the extent to which one group mean differs from another. Cohen's d and Hedges' g are interpreted in a similar way. As a rule of thumb, means differing by more than 0.2 standard deviations are considered as different (Cohen 1988).

Table 2 – Mean response time and transfer, by dictator and receiver race

Mean response time			
Dictator	Receiver		
	Black	White	Difference (White-Black)
Black	27.411	26.345	-0.686
(n)	216	144	
White	20.959	21.177	0.217
(n)	57	38	
Mean transfer			
Dictator	Receiver		
	Black	White	Difference (White-Black)
Black	34.051	27.532	-6.519**
(n)	216	144	
White	39.196	36.447	-2.749
(n)	57	38	

Significance levels: $*$: 10% $**$: 5% $***$: 1%

4.2.1 Conceptual framework

To further investigate racial bias in transfer amounts or in time taken for decisions, we start with a simple version of individual utility taking into account fairness (altruism) in a two-player setup:

$$U_x(x, y) = U_x(x) - \alpha_x Max(0, x - y) - \beta_x Max(0, y - x) \tag{1}$$

where x is person x's income and y is the person y's income. $U_x(x)$ is the utility of person x independent of the income of person y, and $U_x(x; y)$ is the utility of person x incorporating the income of person y. α_x measures the level of person x's aversion to inequality that favors person x over person y. This could also be interpreted as economic altruism of person x towards person y, representing person x's desire for redistribution that arises from fairness. Across different settings α_x is found to be greater than 0 (that is, inequality aversion is found to impact decision making) and it varies based on the characteristics of person x and y, such as race, gender, etc. (e.g. Bouckaert & Dhaene 2004; Camerer 2011). β_x measures person x's aversion to (disadvantageous) inequality that favors person y over person x.

In this study, we are interested in understanding whether the intuitive response to distributive behavior is to behave more selfishly or more fairly when dealing with partners who share race. Thus, we consider the following model to determine α_x:

$$\alpha_x = f(R_y, O_y, X) \tag{2}$$

R_y is the race of a person y, the receiver. O_y is a set of all characteristics of the receiver that are known by the dictators outside of the information provided in the experiment.[17] X is a matrix of observable and unobservable characteristics of decision makers (dictators) that might affect their level of altruism (including the receiver demographic details shown to dictators). Since we control the amount of information a decision maker has on the characteristics of a receiver we assume :

$$O_y = \emptyset \tag{3}$$

Based on this assumption we start with the following empirical model for testing the true value of altruism (α_x) for an individual x :

$$E(\alpha_x|O_y : X) = E(\alpha_x) = \beta_0 + \beta_1(R_y * R_x) + \beta_2 Time \tag{4}$$

α_x is proxied by the share of the total endowment redistributed by dictator x to a receiver y. β_1 measures the marginal expected payout for receivers who share race with decision makers. β_2 represents the difference in the predicted value of the transfer for each additional unit of time taken to respond.

With the objective of investigating the interaction between the value of transfer for each additional unit of time taken in the decision and any racial bias, we introduce an interaction

[17]It is important to mention that in our experiment the observable characteristics of receiver that are provided to the dictators are not enough to personally identify the receivers.

term of response time and the race interaction variables in Equation 4:

$$E(\alpha_x|O_y : X) = E(\alpha_x) = \beta_0 + \beta_1(R_y * R_x) + \beta_2 Time + \beta_3 Time * (R_y * R_x) \quad (5)$$

Given our experiment setup we use OLS regressions to estimate our empirical models (Equation 4 and Equation 5).[18]

4.2.2 Regressions

Table 3 presents our main regressions based on equations 4 and 5: we start by regressing the amount transferred on our main variables of interest indicating whether or not the receiver has the same race as a dictator. Next, we include response time. We then interact race interaction with decision time. All regressions use individual fixed effects. Results suggest that decision makers do condition their transfer decisions on race parity with the receiver. Black dictators transfer significantly less to white receivers compared to black dictators paired with a black receiver (the reference group). This finding is different from those in previous Dictator games in South Africa (Van Der Merwe & Burns 2008; Pecenka & Kundhlande 2013), where black receivers received lower transfers or lost more of their endowments than white receivers. In contrast to Cappelen et al. (2016), but in line with our earlier findings in Figure 2, we find that response time has a positive and significant effect on transfers, suggesting that longer response times are associated with higher transfers (that is, more fair decisions are made by those taking more time to make a decision). Looking at the interactions between time and race, dictators' behavior does not vary according to the speed of the decision at the mean.

Figure 3, investigates in more detail whether there is a difference in transfer from black and white dictators for different values of time (time varying between 6 and 90 seconds in increments of 5 seconds). We note that while white dictators making decisions very quickly

[18] Considering the truncated nature of the transfer data, which varies from 0 to 100 in our Dictator games, we re-estimate the regressions using Tobit. The qualitative results remain the same (results are available on request).

Table 3 – Transfer across race, OLS regressions

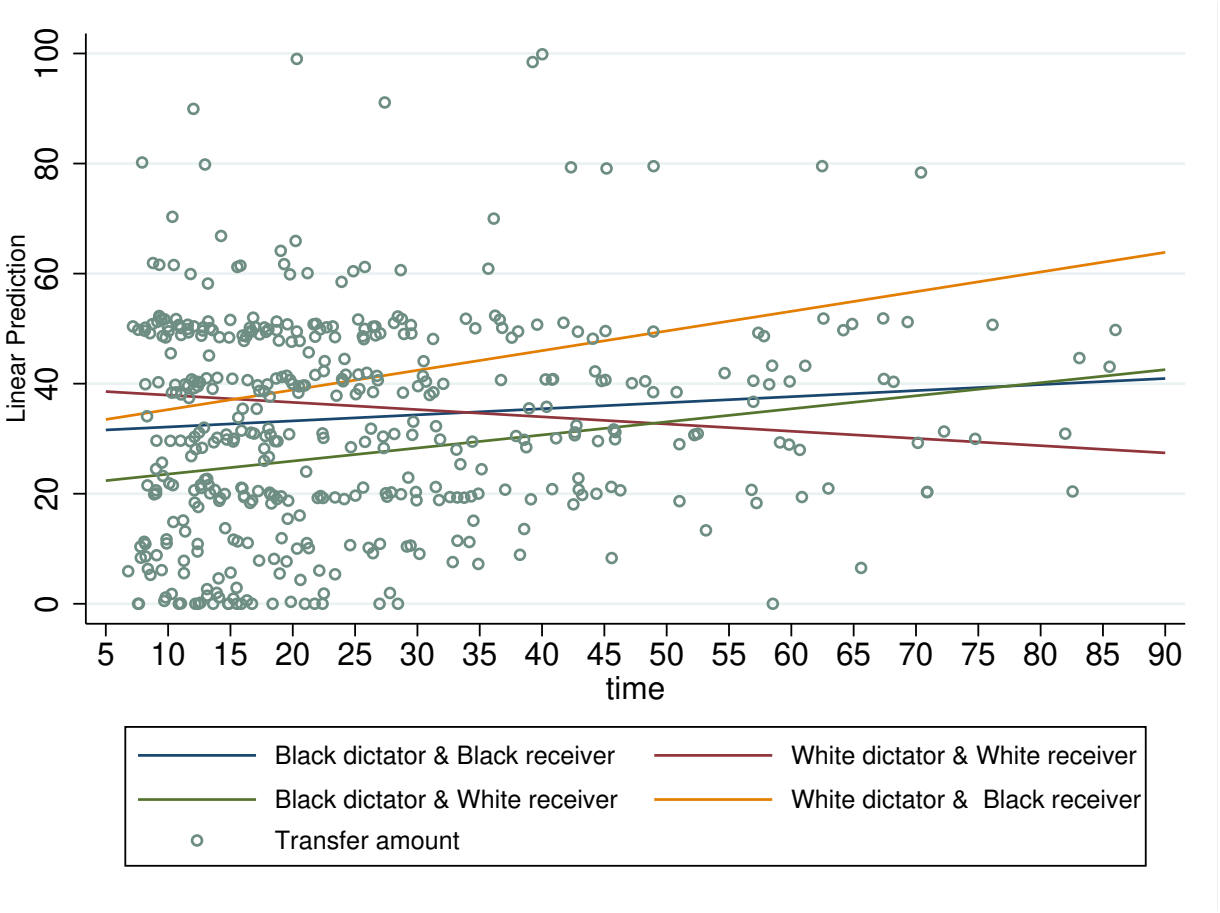
Dependent variable: Transfer amount			
	[1]	[2]	[3]
Race interaction: (Reference group: Black dictator & Black receiver)			
White dictator & White receiver	2.396	3.390	8.189
	(3.629)	(3.872)	(7.309)
Black dictator & White receiver	-6.519***	-6.409***	-9.843***
	(1.426)	(1.460)	(3.193)
White dictator & Black receiver	5.145	6.174	0.672
	(4.603)	(4.720)	(7.982)
Response time		0.159**	0.110
		(0.0722)	(0.0792)
Race interaction and time (Reference group: Black dictator & Black receiver)			
White dictator & White receiver * time			-0.241
			(0.283)
Black dictator & White receiver * time			0.127
			(0.0927)
White dictator & Black receiver * time			0.247
			(0.386)
Constant	34.05***	29.68***	31.04***
	(2.050)	(3.305)	(3.661)
Adj. R-sq	0.036	0.053	0.054
N	446	446	446

Standard errors in parentheses.
Significance levels: *: 10% **: 5% ***: 1%

(less than 15 seconds) transfer more to own-group (white) receivers than to out-group (black) receivers; white dictators who take more time to consider their decisions transfer more to black receivers than to white receivers, with the gap in transfer amounts increasing as decision time increases. For black dictators, faster decisions also see higher transfers towards own-group (black) receivers. Transfers to own- and out-group receivers converge at far longer decision times for black dictators ($\sim$75 seconds). These findings suggest that while white dictators might have some own-group bias when they make very short, impulsive decisions, taking time to consider their decisions leads, on average, to reducing this bias and even giving more to black receivers.

We next investigate income as a possible reason for the differences noted in Figure 3 and

Figure 3 – Adjusted Predictions of transfer by race interaction of dictators and receivers



for the apparent bias in favour of black receivers.[19] Given race-based inequality in South Africa, white dictators who take time to consider their decisions might consider the likelihood that a black receiver has greater financial need than a white receiver. For black dictators, inequality reduction motives and own-group bias motives would both lead to favoring the black receiver. Since transfers to black receivers account for much of the racial bias, we control for dictators' beliefs about receiver income in Table 4. The inclusion of the income variable reduces the racial bias that we observe in Table 3: once perceived receiver income is controlled for, we see far lower coefficients on the race variables. It seems, then, that inequality aversion appears as race-based bias because of perceptions of racial disparities

[19]Following the history of systematic discrimination against black South Africans under apartheid, income differences between races persist in South Africa: According to Statistics South Africa, white-headed households have an average income that is 4.5 times larger than that of black-headed households.

in income. Since white receivers are expected to have above average incomes, they receive lower transfers on average.

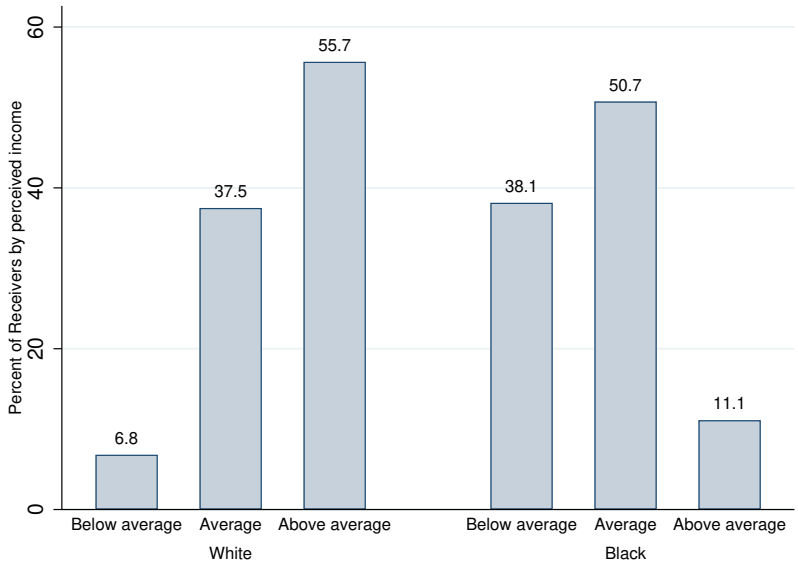
Table 4 – Heterogeneity of transfer across race and income, OLS regressions

Dependent variable: Transfer amount			
	[1]	[2]	[3]
Perceived income dictator (1=above average)	11.54**	10.89**	11.46**
	(5.657)	(5.266)	(4.826)
Perceived income receiver (1=above average)	-6.303***	-6.433***	-5.927***
	(2.051)	(2.095)	(2.175)
Race interaction (Reference group: Black dictator & Black receiver)			
White dictator & White receiver	1.362	2.520	7.129
	(4.298)	(4.494)	(7.351)
Black dictator & White receiver	-3.381**	-3.211*	-7.053**
	(1.568)	(1.627)	(3.146)
White dictator & Black receiver	2.675	3.826	-0.201
	(4.415)	(4.613)	(7.529)
Response time		0.154**	0.108
		(0.0656)	(0.0792)
Race interaction and time (Reference group: Black dictator & Black receiver)			
White dictator & White receiver * time			-0.245
			(0.255)
Black dictator & White receiver * time			0.133
			(0.0926)
White dictator & Black receiver * time			0.171
			(0.312)
Constant	34.54***	30.34***	31.55***
	(2.057)	(3.157)	(3.663)
Adj. R-sq	446	446	446
N	0.067	0.082	0.083

Significance levels: $*$: 10% $**$: 5% $***$: 1%

Figure 4 plots the perceived distribution of receiver income by receiver race. We observe that black respondents are perceived as far more likely to have below average incomes, while white respondents are perceived as far more likely to have above average incomes.

Figure 4 – Perceived income of receiver, by race



5 Discussion

In contrast to much of the literature on fairness and response time, our Dictator game found higher transfers where more time was taken to make decisions. This finding is suggestive of greater cooperation in deliberate decisions than in shorter, more impulsive decisions. While we do see evidence of higher transfers to own-race receivers from black dictators, we also note higher transfers from white dictators to black receivers where more time is taken to make decisions. Further investigation of this bias in favor of black receivers points to a perceived income inequality-based mechanism. Taking beliefs about receiver income into account, we note that the difference between transfers to black and white receivers is reduced. This suggests that perceptions of lower income among black versus white receivers explains much of the apparent bias from black dictators towards black receivers. This is in line with intersectionality theory (Crenshaw 1989), which suggests that multiple aspects of identity, such as class, race or gender, can become interconnected. Persistent race-based inequality in South Africa results in perceived intersectionality between race and income, where black receivers are assumed to have lower income. Indeed, inequality aversion in decision making is

well-established in the literature on Dictator games (e.g. Bouckaert & Dhaene 2004; Camerer 2011).

Our student sample's behavior is encouraging, given the inequality challenges facing South Africa. Decision makers appear to have conditioned their decisions on the need to reduce inequality, giving less to students perceived as more wealthy. This finding suggests that where inequality is understood, people act intuitively to reduce it. Better awareness of the persistance of race-based inequality, even many years after the end of apartheid, might help to explain the difference between our results (bias in favour of black respondents, mitigated by perceptions of lower income) and the results in previous Dictator games in South Africa (bias against black respondents, see Burns 2006; Pecenka & Kundhlande 2013). Policies designed to increase awareness of the persistence of inequalities might therefore stimulate voluntary inequality reduction in South Africa.

A Appendix

A.1 Experiment instructions

Thank you for participating in this experiment.

You will receive R20 just for being here and participating, and you will be able to earn additional money based on the choices you make. There are no right or wrong answers: we are interested in your preferences.

Please remember also that your decisions are anonymous: we will at no point ask for any information that can identify you personally.

You will be asked to make a series of decisions about how to divide R100 between yourself and one of the other people who signed up for the experiment. For each decision, R100 must be divided between yourself and the other person.

From the people who signed up, some people were randomly selected to be decision makers and others were selected to be receivers (if you are in this room, you were randomly selected to be a decision maker. The people who were selected to be receivers will receive emails inviting them to a session tomorrow where they will be paid based on the decisions made by the decision makers today).

For each decision, you will be given some limited demographic information about the person you have been paired with for that decision. This will never allow you to identify a specific individual, but it will give you a bit of information about the person. Note that for each decision, you will be paired with a different person.

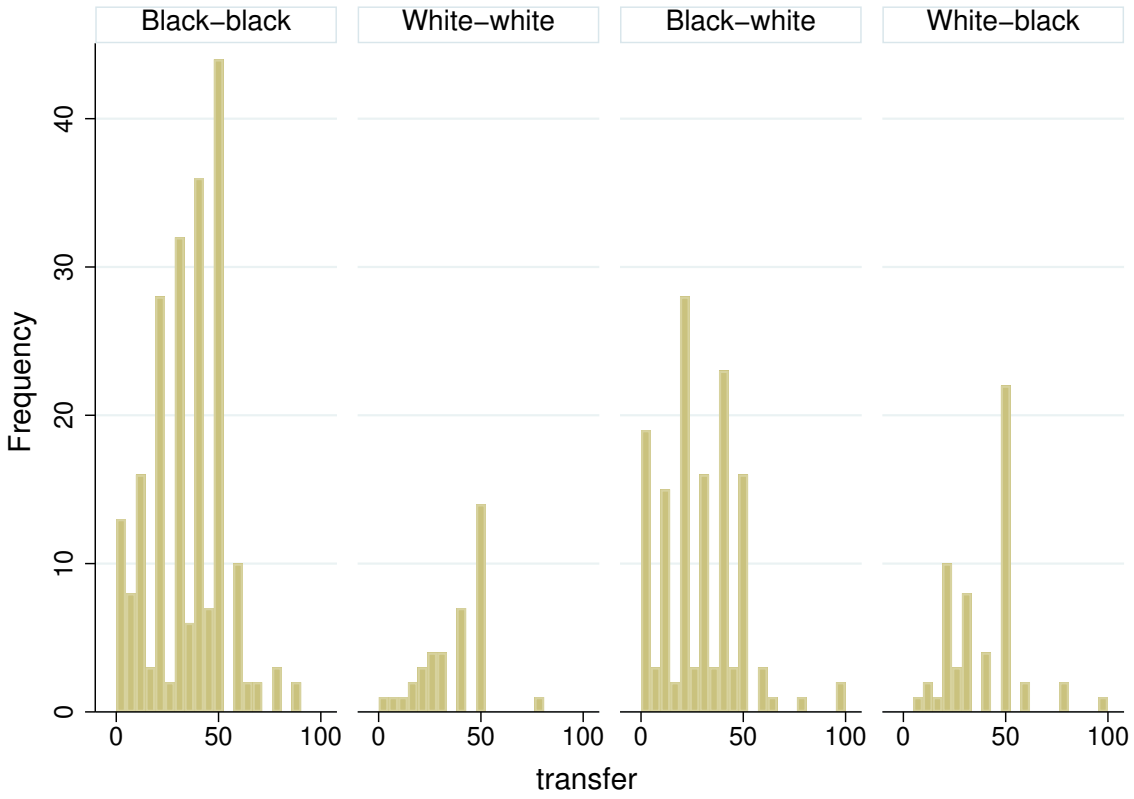
All you have to do is to decide how much of the R100 you want to keep for yourself and how much you want to give to the person whose details are shown on the screen.

Before we start with your real decisions, we will play two practice rounds to make sure you understand how the decisions work. We will then have an opportunity for you to ask any questions you might have before we continue to the real decisions. You will make 5 real decisions.

Note that at the end of the experiment, one of your real decisions will be randomly selected to be paid in real money. You will roll a 10-sided dice to select one of the decisions, and we will then pull up your actual decisions, and you will be paid in cash based on the amount you decided to keep. Similarly, the receivers will attend a session tomorrow in which they will be paid for one of the decisions in which their demographic details were used. For this reason, please make sure you make each decision as if it is the one with real monetary consequences, as all decisions have an equal chance of being selected for payment.

A.2 Transfer by race interaction

Figure 5 – Distribution of transfer by race interaction



A.3 Gender controls

Table 5 – Mean response time

Mean response time, by receiver gender & race						
Dictator	Receiver					
	Female	Male	Difference (Female-Male)	Black	White	Difference (White-Black)
Female	23.590	23.073	0.518	23.850	22.670	-1.179
Male	29.577	28.382	1.195	28.980	29.285	0.305
Black	27.535	26.547	0.988	27.411	26.725	-0.686
White	21.059	21.031	0.028	20.959	21.177	0.217
Mean transfer						
Dictator	Receiver					
	Female	Male	Difference (Female-Male)	Black	White	Difference (White-Black)
Female	32.684	30.598	2.090	33.934	28.660	-5.275**
Male	35.707	32.032	3.675	36.667	30.507	-6.159 **
Black	32.405	30.118	2.288	34.051	27.532	-6.519**
White	40.000	35.263	4.737	39.196	36.447	-2.749

Significance levels: $*$: 10% $**$: 5% $***$: 1%

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Table 6 – Transfer across race and gender, OLS regressions

Dependent variable: Transfer amount			
	[1]	[2]	[3]
Race interaction: (Reference group: Black dictator & Black receiver)			
White dictator & White receiver	3.179	3.964	9.220
	(3.663)	(3.874)	(7.304)
Black dictator & White receiver	-6.177***	-6.097***	-9.216***
	(1.395)	(1.426)	(3.131)
White dictator & Black receiver	5.697	6.519	1.588
	(4.643)	(4.734)	(8.067)
Gender interaction: (Reference group: Female dictator & Male receiver)			
Female dictator & Female receiver	1.227	1.160	1.157
	(0.992)	(1.020)	(1.025)
Male dictator & Male receiver	2.193	1.490	1.528
	(3.596)	(3.489)	(3.565)
Male dictator & Female receiver	4.992	4.131	3.984
	(3.783)	(3.638)	(3.635)
Response time		0.147**	0.105
		(0.0664)	(0.0768)
White dictator & White receiver * time			-0.262
			(0.274)
Black dictator & White receiver * time			0.115
			(0.0919)
White dictator & Black receiver * time			0.222
			(0.389)
Constant	31.71***	28.09***	29.27***
	(2.760)	(3.779)	(4.129)
Adj. R-sq	0.039	0.052	0.053
N	446	446	446

Standard errors in parentheses.
Significance levels: *: 10% **: 5% ***: 1%

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