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ARTICLE

Beautiful inside and out? The role of physical attractiveness in predicting altruistic behaviour

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Abstract

Physical attractiveness has been found to influence labour market outcomes, including employment and remuneration. Researchers have also found links between attractiveness and dimensions that are likely to impact career or academic success, such as trust and cooperation. There is less research on physical attractiveness in interactions that are not inherently reciprocal in nature. We are interested in whether altruistic decisions are impacted by perceptions of physical attractiveness in South Africa, a country with significant racial and cultural diversity. We use a dictator game (n = 338, for 1689 decisions) to experimentally investigate whether people perceived as more attractive are treated with more altruism and whether attractive people behave more altruistically. We find more altruism shown towards attractive respondents, particularly from decision-makers who see themselves as less attractive. Less attractive decision-makers also show more altruism than decision-makers who rate themselves as more attractive.

1 | INTRODUCTION

Deviations from the pure self-interest in decision-making that is predicted in traditional economic theory have been widely observed. Widespread altruism, defined as the willingness to sacrifice some self-interest in order to improve the well-being of others, is one of the encouraging findings in this research area (Engel, 2011). Indeed, altruism has been sufficiently widely observed that concerns for fairness and the well-being of others are now widely incorporated in economic models of decision-making (e.g. Camerer, 2011; Fehr and Schmidt, 1999; Rabin, 1993).

However, other deviations from economic 'rationality' in decision-making are less positive, such as the impact that physical attractiveness has on the way decision-makers treat others. Physical attractiveness has been shown to impact social integration (Gordon et al., 2013) and social status among men (Anderson et al., 2001), as well as trust (Dilger et al., 2017; Wilson & Eckel, 2006), cooperation (Stirrat and Perrett, 2010; Takahashi et al., 2006), employment and remuneration (Deryugina and Shurchkov, 2013; Hamermesh and Biddle, 1994) and even politics (Verhulst et al., 2010). Hamermesh and Biddle (1994) coined the term 'beauty premium' to describe the benefits due to positive discrimination enjoyed by people who are considered more attractive.

Less work has considered the impact of attractiveness on altruism. The research that does exist largely includes other characteristics in addition to attractiveness (such as voice sound in Rosenblat, 2008; and behaviour in Bhogal et al., 2016) or focuses specifically on mate selection (Bhogal et al., 2019; De Jong and Collins, 2017; Maestripieri et al., 2017). Further, most of the existing research on attractiveness and altruism has been conducted in the United States or Europe, with very little research considering whether these findings generalise to other cultures.

We are interested in altruism and physical attractiveness outside of questions of mate selection. Consider, for example, labour market applications: Physical attractiveness has already been found to be linked to employment and remuneration and to be associated with trust and cooperation. Being on the receiving end of altruistic behaviour in the workplace has implications for career progression: Newly appointed employees frequently find themselves needing advice or assistance while learning a new role. Similarly, in an academic context, receiving help and support from lecturers or fellow students can impact a student's likelihood of success.

Further, we are interested in how attractiveness predicts altruism outside of the United States/European context. Our research takes place in South Africa, where similar research has not been conducted.[1] South Africa is characterised by racial and cultural diversity, with possible implications both for perceptions of physical attractiveness and for the role of physical attractiveness in decision-making. Mchiza and Parker (2020) argue that the perception of physical attractiveness varies by culture. We are therefore interested in how perceived attractiveness might impact altruism in South Africa's multicultural environment. Research in South Africa has considered the impact of racial bias on altruism in decision-making (e.g. Chisadza et al., 2021; Pecenka and Kundhlande, 2013; Van Der Merwe and Burns, 2008) but has not yet considered the link between physical attractiveness and altruism.

We conducted an online experiment where respondents participated in a series of dictator games (Forsythe et al., 1994). In these games, respondents ('decision-makers') made a series of choices in which they had to decide how to allocate a cash endowment between themselves and another player, represented by a photograph. As a purely self-interested player would keep the full endowment, amounts allocated to the receiver player in dictator games are widely interpreted as indicative of altruism. Variation in these amounts with variation in characteristics of decision-makers and receivers can be used to infer predictors of greater or lesser altruism. We included both more and less attractive receivers representing different race groups and genders in the pictures shown to decision-makers. Given the subjectivity of attractiveness perceptions, likely exacerbated in a culturally diverse society, we asked decision-makers to rank the receivers' attractiveness in order to investigate the impact of receiver attractiveness on altruism. In addition, we asked decision-makers to rate their own attractiveness relative to that of the pictured receivers to study the impact of decision-maker attractiveness on altruism. Having each respondent make five decisions gives us a robust sample size of 1689 decisions for our analysis.

2 | LITERATURE

A significant body of literature has examined the impact of physical attractiveness on various forms of prosocial behaviour (see Maestripieri et al., 2017 for an overview). More attractive people have been found to reap benefits related to their attractiveness in a variety of different contexts, including examples ranging from politics (Todorov et al., 2015; Verhulst et al., 2010) to employment and remuneration (Deryugina and Shurchkov, 2013; Hamermesh and Biddle, 1994). A dominant theory in economics literature explaining bias in favour of more physically attractive people is taste-based discrimination (Becker, 1957). For example, employers and customers are assumed to have a preference for dealing with more attractive people, such that these people are valued more highly and paid more (e.g. Deryugina and Shurchkov, 2013; Zhu et al., 2011). Others have argued that physical attractiveness is associated with stereotypical expectations of greater competence, confidence and social

skills (e.g. Langlois et al., 2000; Mobius and Rosenblat, 2006). This idea that beauty is associated with other positive attributes has been referred to as a 'halo effect' of beauty (Palmer and Peterson, 2016). Yet another explanation offered in some existing literature comes from evolutionary psychology, where favourable treatment shown to more attractive people is driven by the search for a mate (e.g. Bhogal et al., 2019; Maestripieri et al., 2017).

Research on the impact of physical attractiveness has included a number of studies leveraging economic games to identify specific aspects of this apparent bias towards more attractive people, including trust (e.g. Wilson and Eckel, 2006), cooperation in public goods games and prisoners' dilemma games (e.g. Andreoni and Petrie, 2008; Mulford et al., 1998) and altruism in ultimatum games (e.g. Solnick and Schweitzer, 1999). Camerer (2011) noted that dictator games are a more direct measure of altruism than ultimatum games, as ultimatum game offers are also strategic in nature. The receiver in an ultimatum game can reject a low offer, leaving the decision-maker with nothing. This option is not available in a dictator game, where the receiver has no decision-making power.

To date, fewer studies have used dictator games to examine the impact of physical attractiveness. Rosenblat (2008) used a dictator game to investigate the role of non-resume characteristics in explaining labour market outcomes. This experiment had receivers give a pre-recorded speech aimed at persuading the decision-maker to share a greater proportion of the endowment. Rosenblat (2008) found that more attractive receivers experienced greater altruism only when both their physical appearance and voice were rated as attractive. Where only the picture of the receiver was shown, attractiveness did not impact the amount received. Interestingly, the attractiveness effect was stronger when the listener was female. Further, Rosenblat (2008) noted that more attractive receivers had higher expectations for the share that they would receive.

Altruism as a costly signal of quality (Gintis et al., 2001) in the context of courtship displays has also been investigated in dictator games (e.g. Bhogal et al., 2016; Farrelly et al., 2007). The Farrelly et al. (2007) dictator game experiment found higher giving to more attractive members of the opposite gender, but no significant effect of attractiveness on giving to same gender receivers. In the Bhogal et al. (2016) experiment, decision-makers could see both the appearance and behaviour of the receiver (through a one-way mirror). Where behaviour and appearance were shown together, no significant relationship was found between altruism and the receiver's physical attractiveness.

Research has also considered differences in cooperation based on the attractiveness of the decision-maker. Some evolutionary psychology literature examines cooperation and altruism as part of courtship rituals, where these behaviours are used to demonstrate one's potential as a mate. Stirrat et al. (2011) considered willingness to pay for meals for a person of the opposite sex and found that less attractive participants were more willing to pay for meals. Shinada and Yamagishi (2014) used a prisoners' dilemma game and found that men who saw themselves as less attractive were more cooperative than those who saw themselves as more attractive. Bhogal et al. (2019) reviewed literature on attractiveness and altruism in the context of mate selection decisions, noting that men frequently use altruism as a costly signal of their desirability as a partner. However, in the context of dictator games, Bhogal et al. (2016) found no relationship between decision-makers' self-rated attractiveness and their altruism. In a public goods game, Andreoni and Petrie (2008) found that although attractiveness is rewarded initially, this appears to be based on expectations that more attractive people will be more cooperative. These authors note that actual contributions of attractive people are not higher, and that the beauty premium is reversed after these actual contributions are revealed. Similarly, in a trust game, Wilson and Eckel (2006) reported that trustees anticipate higher transfers from attractive decision-makers, but that these expectations are not met.

We add to the literature on physical attractiveness and altruism by considering this question in South Africa, a culturally diverse developing country very different from the typical countries considered in existing research on attractiveness (the United States and Europe). We conduct a simple dictator game, where receivers are identified using pictures. In this way, physical attributes of the receiver are the only information the decision-maker has about the receiver, and we are able to see whether decision-makers condition their decisions around altruism on either the perceived attractiveness of the receiver or their own perceived attractiveness.

TABLE 1 Demographic data

Variable	Sample Proportion (%)	University population	South Africa population
Gender			
Male	32	43	49
Female	67	57	51
Reported other gender/prefer not to say	1		
Race			
Black	43	51	81
White	45	38	8
Other races/prefer not to say	12	11	11
Age			
18	28		
19	63		
20	6		
21 or older	3		
$N = 338$ dictators			

In-line with findings in the literature, we test two hypotheses. First, because beauty premiums have been found in numerous contexts, we hypothesise that more attractive receivers will experience a beauty premium in the form of greater altruism (higher average transfers) from dictators. Second, given that expectations of higher transfers from attractive decision-makers have often not been met, we hypothesise that attractive and less attractive decision-makers will, on average, give similar transfers to receivers.

3 | METHODOLOGY

3.1 | Participants

Data were gathered through an online experiment in August 2020. The experiment was conducted online because all in-person teaching was suspended in South Africa due to a national lockdown related to the Covid-19 pandemic. First-year undergraduate economics students from a South African University were invited to participate in an online decision-making experiment through an announcement on the course site in the BlackBoard learning management system. Students who wished to participate simply followed a link to participate in the game. The link was open for 7 days, and participation was voluntary and anonymous. In total, 338 respondents completed the experiment task, for a total of 1689 decisions. Details of dictator demographics, as well as race and gender splits for the University in 2020 (https://www.up.ac.za/department-of-institutional-planning/article/2834454/core-students-statistics) and for the country (www.statssa.gov.za), are reported in Table 1.[2]

3.2 | Experiment set-up

The dictator game (Forsythe et al., 1994; Kahneman et al., 1986), used widely in experimental economics to investigate altruism, was employed to explore differences in amounts given based on physical attractiveness. In this game, decision-makers ('dictators') are endowed with an amount of

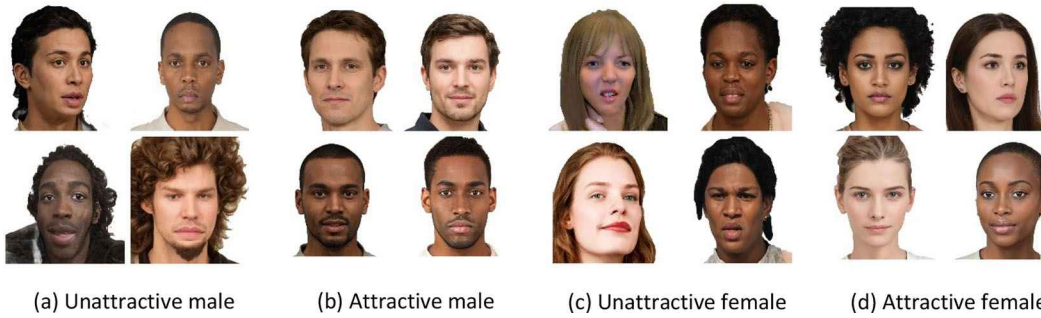

FIGURE 1 Receiver pictures by gender and attractiveness. [Colour figure can be viewed at wileyonlinelibrary.com]

money from the experimenter, from which they have the option to send some amount to another player (a 'receiver'). The receiver has no decision-making power and simply receives the amount sent by the dictator. There is no strategic incentive for the dictator to send any money: A purely self-interested decision-maker would retain the whole endowment. Positive sent amounts are therefore seen as indicative of altruism.

Students in our experiment played five rounds of the dictator game, facing five different receivers. In each round, students had to decide how much of a ZAR100 (approximately 6 US Dollars at the time of the experiment) endowment to share with the person pictured in that dictator game. For each of the five decisions, the students simply had to enter in a text box the amount they wished to give to the person shown in the picture. All participants played the role of decision-makers. To isolate the impact of physical appearance on decision-making, the only information the students had about the receiver was the picture they saw. To ensure anonymity, the receiver pictures used were computer-generated images created using a programme called 'Generated Photos' (https://generated.photos/). We selected young-looking pictures with white backgrounds and unsmiling facial expressions, since facial expressions such as smiles have been found to impact cooperation (e.g. Scharlemann et al., 2001).[3] We also selected pictures representing both Black and White people, with an equal mix of male and female faces. Our aim was to include more and less attractive faces so that faces represented a range of attractiveness. We used a set of 16 pictures, including 8 females and 8 males, where 4 of the photographs of each gender seemed more attractive, and the other 4 seemed less attractive. However, because perceptions of attractiveness are subjective, it was the subjective ranking by the participants that was used to see whether these individuals' perceptions of attractiveness were associated with their money allocation decisions. We elected to use a variety of computer-generated images instead of an existing face database as we wanted to ensure that these faces could reasonably be considered possible South African faces: The faces we chose included a mix of races, with most faces representing either a Black African or a White student, in-line with the composition of the student population at the university. These groups are shown in Figure 1.

We included a variety of attractive and less attractive faces in our experiment, to ensure that any measured impact of receiver attractiveness on altruism could not be an artifact of a single particularly attractive or unattractive pictured receiver. However, we also did not want to ask respondents to make so many decisions that we would risk respondent fatigue and possibly reduced engagement with the experiment task. We therefore showed each respondent a subset of five faces, where respondents were randomly assigned to see one of the blocks of five faces pictured in Figure 2.

Although computer-generated pictures allowed us to have what appeared to the authors as some obviously more and less attractive receivers, ratings of attractiveness are necessarily subjective. Any bias in favour of or against attractive receivers would be based on the decision-maker's assessment of the receivers' attractiveness. We therefore used an approach widely leveraged in research on physical attractiveness (Benenson et al., 2007; Bhogal et al., 2016; Dilger et al., 2017; Li and Zhou, 2014; Norman and Fleming, 2019; Smith et al., 2009;): After making their dictator game decisions,

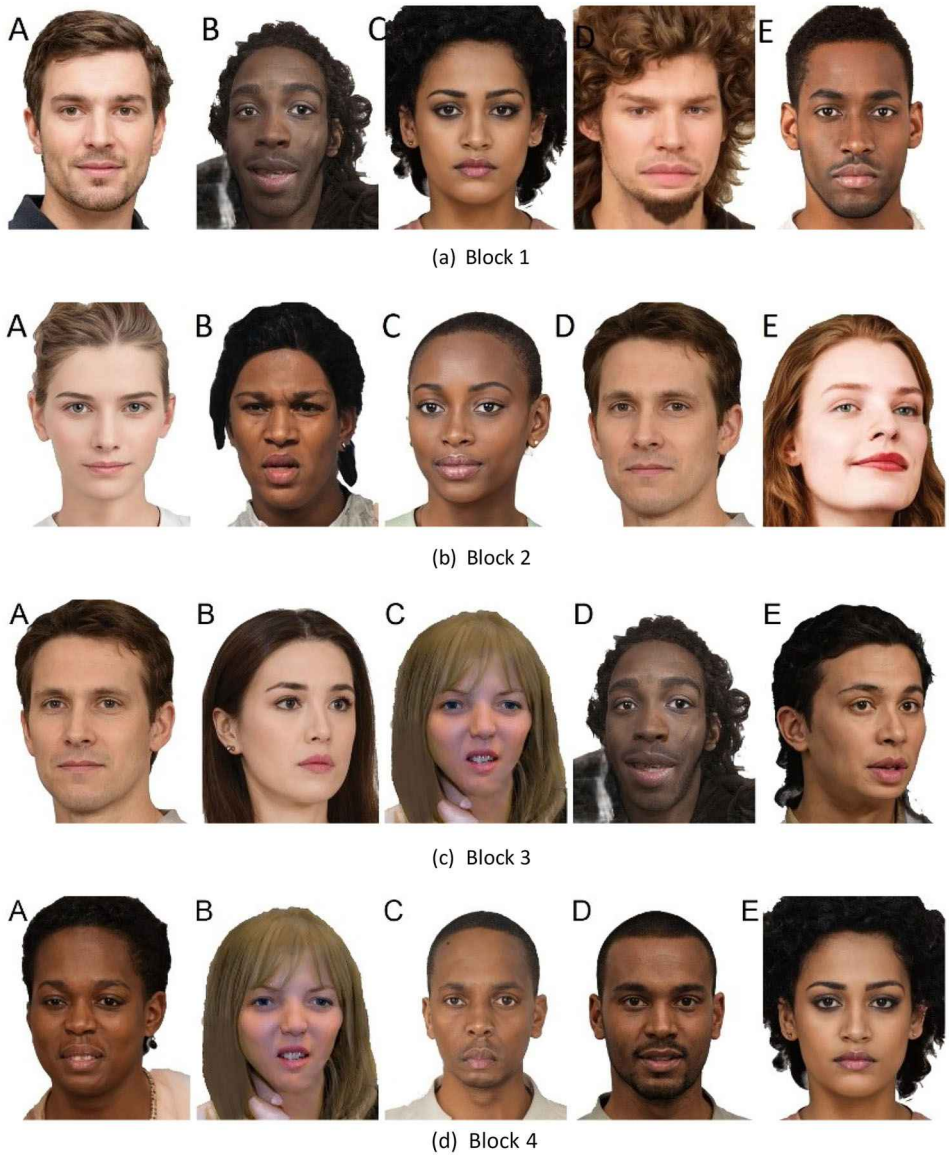

FIGURE 2 Receiver pictures by block as shown to respondents. [Colour figure can be viewed at wileyonlinelibrary.com]

participants were asked to rank the five photographs presented in their dictator games from most to least attractive. Ratings suggested fairly consistent perceived relative attractiveness: On average 77% of respondents placed a face in two consecutive ranks. For example, in Block 1, A was ranked second or third by 72% of respondents; B was ranked fourth or fifth by 79% of respondents, C was ranked first or second by 81% of respondents, D was ranked fourth or fifth by 88% of respondents and E was ranked second or third by 83% of respondents. Further, our intended attractive faces all had modal ranks in the top three, while our intended unattractive faces all had modal ranks in the bottom three. This distinction was very clear for the female pictures: 'Attractive' women all had modal ranks of one or two, with 'unattractive' women all having modal ranks of four or five. Both 'attractive' and 'unattractive' men had some modal ranks of three, suggesting a less clear distinction between attractive and unattractive pictures.

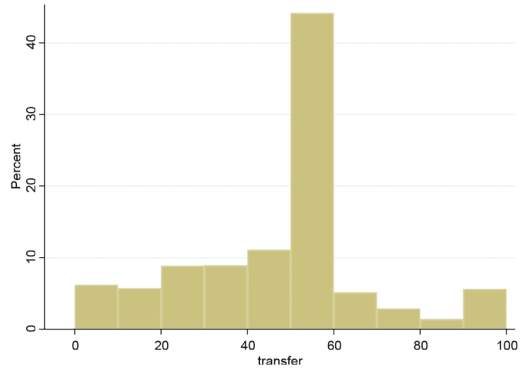

FIGURE 3 Histogram of transfers: 1689 decisions. [Colour figure can be viewed at wileyonlinelibrary.com]

Because we were also interested in our decision-makers' perceptions of their own attractiveness, we asked decision-makers to include themselves in a ranking of the photographs. For this task, they were asked to give themselves a rank from 1 (most attractive) to 6 (least attractive) to show where they felt they would be placed in the ranking of themselves and the five pictured receivers.

A significant body of economic research shows that responses reflecting true preferences are elicited with real incentive payments (Bowman and Turnbull, 2003; Read, 2005). To pay incentives based on decisions without deceiving students, we associated each picture with a randomly selected student in the second-year economics class, such that each picture represents a fellow student, in-line with the phrasing used in the experiment instructions. The representatives for the pictures in the games randomly selected for payment were paid based on the decision-makers' sending decisions. At the end of the experiment, five games were randomly selected, and participants were paid real money. Participants included phone numbers, but no names or personal identifiers. In this way, we could contact students whose games were selected for payment and arrange to pay them based on one of their games, selected using a dice roll. This incentive mechanism where a few respondents are randomly selected to be paid based on a decision is widely used in experimental economics (see e.g. Bowman and Turnbull, 2003; Kahneman et al., 1986) and was explained in the students' instructions (included in the Appendix).

3.3 | Data

We had a total of 338 dictators, with 1689 decisions, in our dataset.[4] The mean transfer amount was ZAR43.94 (s.d. 21.95), or approximately 44% of the endowment. This aligns well with findings in dictator games: A meta-analysis of dictator game experiments finds an average transfer of 42.6% (Engel, 2011). We report the distribution of transfers in Figure 3. The modal transfer was ZAR50, 50% of the endowment.

3.4 | Estimation approach

To test our hypotheses of a beauty premium for receivers, and of similar giving from attractive and less attractive decision-makers, we construct the following simple model, which we test using OLS estimation. To leverage the within-subject nature of our study design, where each decision-maker made five decisions, we cluster standard errors at the level of the individual decision-maker[5]:

$$Transfer_{ij} = \beta_0 + \beta_1 Attract_{ij} + \beta_2 SelfAttract_i + \gamma X + \rho Y \quad (1)$$

TABLE 2 OLS regressions: Transfer predicted by receiver and dictator attractiveness

	Dependent variable: transfer				
	1	2	3	4	5
Receiver rank	−1.099***	−1.087***	−1.147***	−1.168***	
	(0.225)	(0.224)	(0.224)	(0.228)	
Receiver rank (low D)					−1.258***
					(0.238)
Receiver rank (high D)					−0.622
					(0.527)
Dictator rank	2.154***	2.154***	1.668**	1.665**	1.867**
	(0.770)	(0.770)	(0.761)	(0.764)	(0.823)
Decision order		−0.780***	−0.785***	−0.755***	−0.784***
		(0.232)	(0.232)	(0.249)	(0.249)
Male dictator			−1.856	−1.858	−1.734
			(2.298)	(2.296)	(2.304)
White dictator			8.323***	8.358***	8.390***
			(2.128)	(2.117)	(2.116)
White receiver				0.603	0.526
				(0.824)	(0.820)
Male receiver				0.322	0.379
				(1.051)	(1.055)
Constant	41.546***	43.854***	42.284***	41.826***	40.999***
	(2.251)	(2.293)	(2.440)	(2.468)	(2.702)
Obs.	1689	1689	1669	1669	1669
Adj. R^2	0.023	0.025	0.058	0.057	0.058

Note: Standard errors are in parentheses.
*$p < 0.10$. **$p < 0.05$. ***$p < 0.01$.

$Transfer_{ij}$ refers to the amount sent by participant i to receiver j. $Attract_{ij}$ is the attractiveness of receiver j, as rated by participant i. Recall that based on existing literature on the beauty premium, we hypothesised that receivers rated as more attractive would receive higher transfers than receivers rated as less attractive. Since receivers were ranked from most (1) to least (5) attractive, a higher number for attractiveness implies a less attractive receiver. We therefore expect a negative sign for this variable.

$SelfAttract_i$ refers to participant i's self-rated own attractiveness. A higher ranking would again imply a less attractive dictator. A negative coefficient on this variable would therefore imply that more attractive dictators give more than less attractive dictators, whereas a positive coefficient would imply higher giving from less attractive dictators. X is a vector of controls for participant i: We include controls for the gender and race of participants, and Y is a vector of controls for the pictured receiver j: gender and race. In order to see how the inclusion of controls impacts the main variables of interest, we first consider the regressions without controls and then add first the dictator and then the receiver controls.

4 | RESULTS

Table 2 reports the results of our OLS regressions with clustered standard errors. Regression (1) includes our two main variables of interest: the attractiveness rank of the receiver (as rated by the

dictator) and the attractiveness rank of the dictator (self-rated by the dictator). We include the order of the decision in regression (2) to control for any order effects. In regression (3), we add dictator demographic controls; in regression (4), we also include receiver demographic controls to ensure that we are not simply picking up race or gender preferences in our receiver rank measure. Finally, in regression (5), we consider the interaction between dictator and receiver attractiveness. To do this, we distinguish between dictators who saw themselves as being more attractive than at least three of the pictured receivers (i.e. dictators who ranked themselves in the top three of themselves and the five receivers) versus dictators who saw themselves as less attractive than at least three of the pictured receivers (i.e. dictators who ranked themselves in the bottom three of themselves and the five receivers). This allows us to consider the impact of receiver attractiveness for more- and less-attractive dictators separately.

The results in Table 2 show that receiver rank is negatively associated with transfer. Because the most attractive receiver was ranked 1, while the least attractive receiver was ranked 5, this means that our data show a beauty premium: Less attractive receivers (with higher number ranks) receive lower transfers. Dictator rank, on the other hand, is positively associated with transfer, meaning that less attractive dictators gave more, on average. Both of these relationships are robust to the inclusion of dictator and receiver demographic controls.

The decision order variable is negative and statistically significant, suggesting that transfers decrease on average as decision-makers progress through their five decisions. Including this variable does not, however, dramatically change the coefficients on our two main variables of interest: the receiver and dictator attractiveness ranks. We also note that White dictators gave more than Black dictators. This finding is likely related to inequality 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. Similar race-based differences in transfer amounts, attributed to this income inequality, have been noted in other dictator game studies in South Africa (Chisadza et al., 2021; Van Der Merwe and Burns, 2008;).

In our final regression, we consider the impact of decision-makers' own perceived attractiveness on whether receiver attractiveness impacts altruism. We find that receiver attractiveness is only a significant predictor of decision-makers' altruism for dictators who see themselves as relatively unattractive. The coefficient for receiver rank for decision-makers who rank themselves as more attractive is far smaller than that for decision-makers who see themselves as less attractive and is not statistically significant, suggesting that the impact of receiver attractiveness on transfers is driven by decisions of less attractive decision-makers. It is worth noting that although we find statistically significant associations between perceived attractiveness and transfers, the variables included in our regressions only explain a small percentage of the variation in transfer decisions.

Much of the existing literature on attractiveness and altruism focuses on male/female interactions and the potential role of mate selection motives in respondents' decisions around altruism. Although this is not the focus of our study, we do note that neither the male dictator nor the male receiver dummy variable is statistically significant in our regressions in Table 2, suggesting that gender does not play a significant explanatory role in our findings.

5 | DISCUSSION

In-line with our first hypothesis, we noted evidence of a beauty premium in altruistic behaviour: Receivers rated as more attractive by decision-makers were given a higher share of the endowment. Although beauty premiums have been noted in a variety of contexts, this finding is different from the findings of two existing dictator game experiments (Bhogal et al., 2016; Rosenblat, 2008), both of which did not find a significant impact of physical appearance on altruism. Both of these studies considered other cues (voice or behaviour) together with appearance, and Rosenblat (2008) noted higher amounts given to receivers who were rated as having attractive voices as well as appearances. Our study aimed specifically at isolating physical appearance by only showing pictures of the receiver.

It is worth noting that our images of more and less attractive people reflect the perceptions of the authors. Our selection might therefore have introduced some bias. We attempted to control for this by having respondents rank the images in terms of attractiveness, such that the respondents' perceptions, rather than the authors', were considered in our analysis.

Interestingly, our beauty premium appears to be driven by the decisions of respondents who considered themselves less attractive: It was these respondents who gave significantly more to more attractive receivers. We also found that less attractive decision-makers gave more than more attractive decision-makers. This finding contradicts the stereotypical idea of a beauty halo effect, where more attractive people are expected to be more cooperative or kind. The finding that attractive people do not give more than less attractive people is not surprising. We had not anticipated greater giving among more attractive people but had hypothesised that no significant difference in giving would be found for decision-makers with different attractiveness. This hypothesis was based on existing research showing that although people expect greater cooperation from more attractive decision-makers, this greater cooperation has not always been noted (e.g. Andreoni and Petrie, 2008; Wilson and Eckel, 2006). The finding that less attractive people gave more is also not without support in the literature. For example, Shinada and Yamagishi (2014) found that less attractive people were more cooperative than more attractive people.

Although the finding of a beauty premium in altruism is perhaps not surprising, given the myriad contexts in which beauty premiums have been observed, the fact that this premium is driven by low self-ranked decision-makers in our sample is interesting. It seems that decision-makers who see themselves as less attractive not only gave more of their endowment away, but they did so particularly to those whom they considered to be more attractive. Discrimination based on physical appearance is a concerning finding. However, understanding bias in decision-making is an important first step towards addressing such discrimination. The greater generosity of decision-makers who see themselves as less physically attractive challenges the beauty halo stereotype, where physically attractive people are often thought to possess other positive attributes, such as being cooperative, intelligent or trustworthy. Increasing awareness of untrue stereotypes around beauty, such as the findings from this experiment, might help to reduce beauty premiums by challenging discrimination based on physical attractiveness in the workplace.

Our experiment used self-rated rankings of own attractiveness relative to pictured receivers as a measure of decision-maker attractiveness, allowing for a possible confounding effect of self-esteem on our findings: Even an objectively attractive respondent with lower self-esteem might offer a low report of their own relative attractiveness. The results relating to decision-maker attractiveness should therefore be interpreted as indicative of the impact of own perceived attractiveness, rather than of the impact of actual attractiveness.

Attractiveness is a social construction, with different cultures having different perceptions on what makes a person attractive (this can include facial features and body shape, among other things). This social construction aspect of attractiveness is highlighted in research by Wong and Penner (2016), who demonstrated the role of grooming in explaining beauty premia, particularly in women. By considering only faces, we do not account for the role of body shape in influencing perceptions of attractiveness.

Finally, our study took place in a university context, with altruism being measured using monetary decisions. Our receivers' faces were mostly either Black or White, reflecting the demographics of the university where our study took place (the 2020 student group at the university used for this study reported race demographics of 54% Black African and 37% White). Future research could investigate whether the findings in our work generalise beyond the university context, and to non-monetary decisions. Other race/ethnic groups could also be specifically included in future research.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interests.

DATA AVAILABILITY STATEMENT

Data is available on request. This research received no funding grant.

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ENDNOTES

[1] We used search terms 'attractiveness', 'dictator game' and 'South Africa' on several popular search engines. We also used South African databases (Sabinet, ESSA). No research similar to ours was found in South Africa.

[2] Socio-economic details are not included, as students frequently do not have details of their family/household income. We also did not ask about sexual orientation, because this was not a focus of our study.

[3] We did not consider other details of facial expressions, such as those included in the Facial Action Coding System of Ekman and Rosenberg (2004). As a reviewer pointed out, this would have made an interesting addition. However, because our analysis is based on subjective assessments of the attractiveness of pictured faces, we do not believe that these additional details would impact our main findings about perceived attractiveness.

[4] One decision-maker erroneously sent ZAR200 in one of their decisions. As the endowment was ZAR100, and as there was only one instance of a transfer greater than the endowment, we treated this as an error and removed this observation from our data.

[5] As an alternative statistical approach to account for the five decisions per decision-maker, we also include a panel regression as a robustness check. This is reported in the 'Appendix' and shows findings consistent with those included in the 'Results' section.

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APPENDIX A

Table 3 further exploits the multiple decisions from each respondent by using fixed effect panel

TABLE 3 Panel regressions: Transfer predicted by receiver and dictator attractiveness

	Dependent variable: transfer			
	1	2	3	4
Receiver rank	−1.095***	−1.084***	−1.140***	−1.172***
	(0.201)	(0.200)	(0.201)	(0.202)
Dictator rank	2.155***	2.155***	1.671**	1.653**
	(0.743)	(0.743)	(0.738)	(0.738)
Decision order		−0.777***	−0.778***	−0.607***
		(0.200)	(0.201)	(0.214)
Male dictator			−1.845	−1.811
			(2.188)	(2.188)
White dictator			8.307***	8.304***
			(2.073)	(2.074)
White receiver				1.802***
				(0.627)
Male receiver				−0.107
				(0.651)
Constant	41.528***	43.826***	42.233***	41.101***
	(2.314)	(2.388)	(2.563)	(2.598)
Obs.	1689	1689	1669	1669
Wald Chi2	37.996***	53.340***	72.145***	80.672***

Note: Standard errors in parentheses.
*$p < 0.10$. **$p < 0.05$. ***$p < 0.01$.

regressions. Results are similar overall to the OLS results.

A.1 | Experiment instructions

In this game, you will be asked to divide R100 between you, the decision-maker, and another player called the receiver. You will be asked to play five games. In each game, you have R100 which you must divide between yourself and the player represented by the specific photograph. Thus, for every situation where you are the decision-maker there is a real receiver (a student at UP) who will be paid based on your decisions. To make sure your decisions are anonymous, we will not record your name or any personal identifying details.

At the end of the experiment, five decisions will be randomly selected to be paid in real money using a lucky draw. For this reason, your best strategy is to answer all questions as if they will be paid. That way, if your decision is selected to be paid in real money, you will not be disappointed by the outcome. Please provide a contact number where you can be reached so that we can arrange payment if your decision is selected for payment. For the five students who are randomly selected for payment, a dice will be rolled until we attain a number between 1 and 5, which will represent the game that is going to be paid out. For this game, the randomly selected students will be paid based on the decisions they made, whereas the student associated with the corresponding receiver photograph will be paid based on the decision that the decision-maker made.

Kindly answer the questions that follow, keeping in mind that the person in each picture represents a real person who will be paid based on your decisions. Remember, whatever you don't give to this person, will be kept for you.

A.2 | Panel regression

We include panel regressions in Table 3, taking into account the multiple decisions per dictator, as a robustness check for our main results. We note that our main findings are consistent with the OLS analysis with clustered standard errors included in the 'Results' section.