Who Is in Favor of Affirmative Action? Representative Evidence from an Experiment and a Survey

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Abstract

Although affirmative action remains controversial, little is known about who supports or opposes it and why. This paper investigates preferences for affirmative action by combining causal evidence from an experiment on the role of self-serving motives and in-group favoritism with survey data on three different affirmative action policies. Our results rely on a population-representative sample from the US. We find that support for affirmative action is based both on self-serving motives and principled grounds (e.g., related to an individual's altruism, fairness perceptions, concerns for efficiency, and political views). By contrast, in-group favouritism and socio-demographic characteristics play a much smaller role.

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1 Introduction

In nationally representative data from 60 countries that cover over 80% of the world population, Bursztyn et al. (2023) document that women are more supportive of affirmative action than men in all countries, with global approval rates of 73% among women and 60% among men. In the US, 72% of blacks, 66% of hispanics, but only 57% of whites support affirmative action for minorities (Gallup, 2019). Possible explanations for these gaps are numerous—they include, among others, self-serving motives, in-group favoritism, differences in fairness perceptions or discrimination experiences—but our current understanding of what actually causes approval of such policies is very limited. If affirmative action is politically desired (see, e.g. Lippert-Rasmussen (2020), for a discussion), it is, however, important to understand who needs to be convinced and how. Affirmative action policies that lack support or are perceived as unfair can induce a backlash against the targeted groups or discourage them from applying for jobs with equal employment opportunity statements in the advertisements (Leibbrandt et al., 2017; Fallucchi and Quercia, 2018; Leibbrandt and List, 2018; Schildberg-Hörisch et al., 2023).

This study takes a particularly comprehensive approach to enhance our understanding of who supports affirmative action and why. Using two different methodological approaches, we elicit representative data on the support for various affirmative action policies from the US. We combine evidence from an online experiment with survey data on three commonly implemented affirmative action policies favoring women, racial minorities, or disabled people. The experiment enables us to disentangle the causal effect of self-serving motives and in-group favoritism on support for affirmative action and gives insights into the role of the perceived effectiveness of affirmative action policies. Investigating a broad range of possible drivers of preferences for affirmative action, we provide descriptive evidence on the role of socio-demographic characteristics, risk preferences, altruism, efficiency concerns, political orientation, past experienced discrimination, as well as fairness perceptions.

Our experiment uses a between-subject design with three treatments. We exogenously vary decision makers' individual stakes and exposure to discrimination in a tournament setting before they decide whether to implement a quota in support of discriminated participants. In treatments SPEC and SPEC-TYPE, decision makers act as spectators; their decision affects another group of tournament participants, but has no consequence for themselves. In treatment PARTIAL, decision makers participate in the tournament themselves and are therefore affected by whether a quota is implemented or not. In each tournament, three disadvantaged (discriminated) and three advantaged (non-discriminated) participants compete on their performance in a real-effort task; two of them win and receive a prize. If the quota is implemented, one of the two winners has to be a disadvantaged participant. Decision makers in treatment PARTIAL and SPEC-TYPE are randomly assigned to either the disadvantaged or advantaged type, while decision makers in

SPEC have no type affiliation. Comparing behavior in treatments SPEC and SPEC-TYPE isolates the effect of in-group favoritism on the decision whether to implement a quota. The difference in implementation rates between treatments SPEC-TYPE and PARTIAL provides causal evidence on the importance of self-serving motives for the support of affirmative action.

After the experiment, participants answer a survey such that we obtain within-individual, experimental and survey data on the approval of affirmative action. The survey consists of three parts. In one part, we measure who favors, opposes, or has no opinion on affirmative action policies favoring women, racial minorities, or people with disabilities. We use these responses as additional outcomes in our analysis—on top of the decision whether to implement a quota in the experiment. We thereby provide a broader evidence base on drivers of preferences for affirmative action and check the external validity of our experimental results. In another survey part, we elicit numerous variables that may predict preferences for affirmative action, namely an individual's willingness to take risks, altruism, preference for efficiency (in the context of redistribution), political views (liberal to conservative), prior experienced discrimination, fairness perception of the quota in the experiment, as well as socio-demographics. The third part collects comprehensive belief data on how the quota affects the probability of different participants winning the tournament in the experiment.

Our results go beyond previous work in several respects. First, we are not aware of any previous evidence on the *causal* effect of self-serving motives and in-group favoritism on support for affirmative action.[1] We find that self-serving motives strongly influence the decision to implement a quota. In our experiment, those who are likely to benefit from the quota are much more likely (by 44 percentage points) to implement it than those whose prospects are better without affirmative action. This large difference is mainly driven by self-serving motives, while the role of in-group favoritism is much weaker. Individual-level analyses, using fine-grained data on subjects' beliefs about different tournament participants' chances of winning the tournament with and without the quota as well as comprehensive measures of in-group favoritism, confirm the causal evidence on the larger role of self-serving motives that relies on comparisons across treatments and randomly assigned types. One implication of the strong impact of self-serving motives on approval of affirmative action is that affirmative action policies will always stay controversial: by their very nature, they always enhance the prospects of one group at the cost of another group.

We also investigate the behavior of spectators who are free of self-serving motives or in-group favoritism to obtain information on impartial views on affirmative action. We find that spectators are more likely to choose quotas if they believe they

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[1] The meta-analysis of Harrison et al. (2006) documents a positive *association* between self-interest and support for employment-related affirmative action programs. For example, migrants, women, or individuals from a non-academic background are more likely to support affirmative action if they are in its target group (Teney et al., 2022).

provide equal chances for all. By contrast, they tend to object quotas if they believe that they more than offset an initial disadvantage or do not offset it sufficiently. Overall, spectators aim at fair competitions in which individuals who perform similarly have similar chances of winning a tournament, no matter whether they are initially discriminated against or not. These results are in line with the literature on fairness preferences which documents that many people adhere to meritocratic fairness ideals (see Cappelen et al., 2020). As a consequence, it seems key in designing and communicating affirmative action policies to ensure that they indeed level the playing field and are perceived as such.

We proceed by investigating further predictors of who supports or opposes affirmative action. While previous work has studied the role of socio-demographics, fairness perceptions, political orientation, and past experienced discrimination, typically in selective samples (see, e.g., Crosby et al. (2006) for an overview), evidence on the role of economic preferences such as altruism, risk preferences, preferences for efficiency, as well as the believed effectiveness of affirmative action policies is lacking.

To provide comprehensive evidence on people's preferences for affirmative action, we analyze all possible drivers in both the experimental and survey data. We find that predictors of approval of affirmative action policies align well in both types of data. Summarizing our results, altruism, preferences for efficiency, experienced discrimination, and fairness perceptions turn out to have stronger predictive power than most socio-demographic variables. Motives like altruism, preferences for efficiency, or fairness perceptions underline that preferences for affirmative action are not purely driven by self-interest, but also based on principled grounds.

The perception that affirmative action is fair strongly increases its acceptance, while efficiency concerns are negatively associated with support for affirmative action. These findings suggest that information provision can influence views on affirmative action. For example, people who worry about possible detrimental effects of quotas on efficiency could be confronted with evidence that quotas generally do not hurt efficiency (Schildberg-Hörisch et al., 2023). Another argument might be that gender quotas tend to encourage highly productive women to enter a competition they would have shied away from in the absence of affirmative action (Balafoutas and Sutter, 2012; Kölle, 2017; Niederle et al., 2013; Ibanez and Riener, 2018). Regarding fairness perceptions, providing explicit justifications for affirmative action policies—such as presenting evidence on unjustified disadvantages or discrimination of targeted groups—seems key to achieving broad support for affirmative action policies (Harrison et al., 2006).

In contrast, an individual's altruism or political views are rather stable, limiting the scope to use them as leverages—in one or the other direction—in discussions around affirmative action. Still, our finding that more altruistic individuals are more likely to support affirmative action policies has interesting implications. While Bartling et al. (2009) document that individuals with preferences for equal-

ity shy away from competition, our results suggest that altruistic individuals are more inclined to support forms of competition that compensate for disadvantages that they may perceive as unfair. Similarly, Phelan and Rudman (2011) find that the belief that society is already fair and that equal opportunities have been achieved leads to less support for affirmative action programs.

The previous economic literature on affirmative action largely focuses on analyzing the consequences of quotas or other affirmative action policies (see, among others, Balafoutas and Sutter (2012), Beaman et al. (2009), Beaurain and Masclet (2016), Bertrand et al. (2018), Fallucchi and Quercia (2018), Ibanez and Riener (2018), Ip et al. (2020), Kölle (2017), Leibbrandt et al. (2017), and Niederle et al. (2013) on gender or Bagde et al. (2016), Banerjee et al. (2018, 2020), and Jensenius (2015) on caste membership). Economic studies that investigate support for affirmative action policies are, however, rare.[2] A noteworthy exception is Bursztyn et al. (2023) who study gender norms and examine deviations between actual and perceived support for basic rights (allowing women to work outside of the home) and affirmative action (prioritizing women when hiring for leadership positions). Based on nationally representative datasets from 60 countries that cover over 80% of the world population, they establish that misperceptions of gender norms are pervasive across the world. They also document that average support for affirmative action in support of women is high around the world (73% among women versus 60% among men). However, their work does not speak to what drives this support, which is the focus of our paper. Moreover, our population-representative data from the US document that support of affirmative action is similarly high (about 70%) for different target groups (women, racial minorities, or people with disabilities).

Balafoutas et al. (2016) experimentally investigate voting behavior regarding the implementation of a quota and subsequent competition outcomes comparing whether they differ for gender quota and quota that refer to a randomly assigned characteristic (color). In contrast to our setup, the randomly assigned characteristic is only a label and does not imply any (dis)advantage. They show that gender quotas are implemented more frequently than color quotas, suggesting that support for affirmative action depends on how it is viewed within the affected group. We build on their work by not only considering support among those who are directly affected by the quota, but also examining approval of quota by different types of spectators with varying degrees of partiality. Additionally, we investigate drivers of support for affirmative action and complement an experimental approach with survey data.

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[2] Psychologists and sociologists have used surveys and survey experiments to investigate the support of specific affirmative action programs favoring racial minorities or women in employment or educational settings (Aberson, 2021; Kane and Whipkey, 2009; Konrad and Hartmann, 2001; Kravitz et al., 2008; Levi and Fried, 2008; Lowery et al., 2006; Möhring and Teney, 2023; Parker et al., 1997; Steinbugler et al., 2006). They document that support for affirmative action is based on the strength of affirmative action programs, beliefs about the existence of discrimination, race- or gender-based stereotype and prejudice, self-interest, and concerns for the in-group. Only Kane and Whipkey (2009) on gender-related affirmative action is based on a general population sample.

The remainder of the paper is organized as follows. Section 2 explains the design and procedural details of our experiment and survey. Section 3 presents results, while Section 4 concludes.

2 Design of experiment and survey

To generate causal evidence on people's preferences for affirmative action, we conduct an online experiment with decision makers in a population-representative sample from the US. We employ a tournament setting, in which half of the tournament participants are randomly assigned to be advantaged or disadvantaged. Decision makers have to decide for or against a quota (the affirmative action policy) that increases disadvantaged participants' chances of winning the tournament. By varying the degree to which decision makers have a personal stake in the affirmative action policy across treatments, we are able to disentangle the impact of self-serving motives and in-group favoritism from people's impartial preferences for affirmative action. We additionally provide representative survey evidence on agreement to three different, real-world affirmative action policies to put our insights on people's preferences for affirmative action on a broader evidence base and to investigate the external validity of our experimental results.

The real-effort task. Tournament winners are determined by performance in a word encryption task introduced by Erkal et al. (2011) and further developed by Benndorf et al. (2019). In this task, tournament participants encode words by substituting their sequence of letters with numbers using a table shown on screen (see Figure 1 for an example). This task has several advantages: First, it is simple and does not require any prior knowledge. Second, tournament participants can solve each word relatively quickly, making the task engaging enough to minimize dropout due to boredom. Third, the task is well-suited for an online experiment as it is compatible with all forms of devices tournament participants might use (computer, phone, tablet) and, due to the nature of the task, tournament participants cannot cheat. Fourth, it induces sufficient variation in performance such that winner determination is typically non-random (Erkal et al., 2011; Benndorf et al., 2019).

The tournament. Tournament participants compete against each other in randomly composed groups of six for five minutes. In each group of six, there are two winners who receive a prize of 6 USD. The remaining four tournament participants do not receive any prize.

Each group consists of tournament participants of two types: three disadvantaged and three advantaged tournament participants. To calculate a tournament participant's final performance, the number of correctly encoded words is multiplied by a type-dependent factor. Words encrypted by disadvantaged tournament participants are multiplied by 0.9, while words encrypted by advantaged tournament participants are not downgraded (equivalent to a multiplier of 1). We use the multiplier to introduce an unjustified disadvantage as a form of discrimination that affirmative action will address.
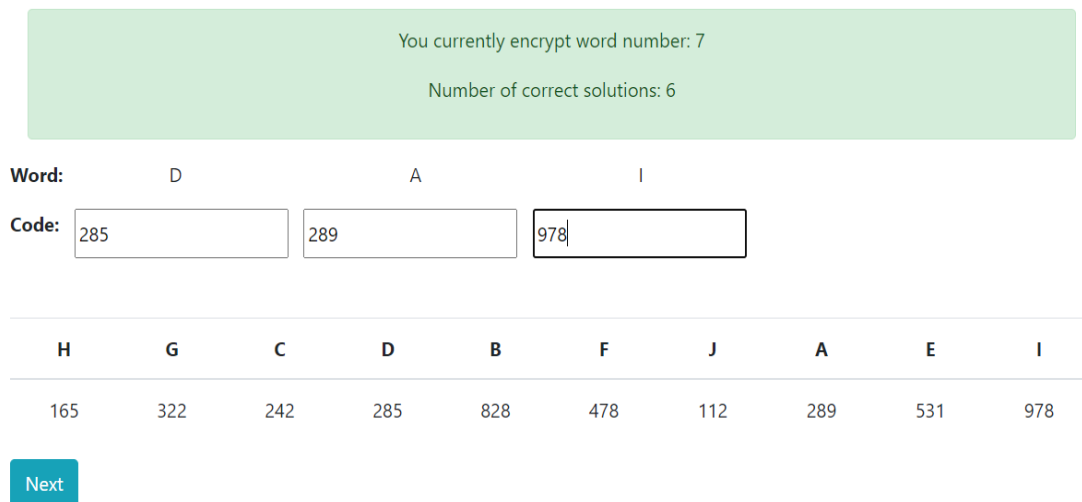
Figure 1. Example screen for word encryption task

How winners are determined depends on whether or not a quota is implemented. Without the quota, the winners are the two tournament participants with the highest final performance. With the quota, at least one winner has to be of the disadvantaged type. If this is not automatically the case, the highest performing disadvantaged participant replaces the second-highest performing advantaged participant as a winner. We use random tie-breaking if necessary.

We chose a multiplier design for several reasons. First, who is discriminated against is randomly assigned and remains unchanged throughout the experiment. This resembles stable causes of discrimination such as sex, skin color, or race. Balafoutas et al. (2016), Calsamiglia et al. (2013), Fallucchi and Quercia (2018), and Petters and Schroeder (2020) use similar designs to analyze the consequences of affirmative action policies that compensate for differences in a randomly assigned, exogenously given characteristic. By contrast, we focus on support for such policies.

An alternative to using a multiplier would be to rely on traits such as gender or ethnicity. Such traits may, however, invoke different perceptions of the reasons for the affirmative action policy across individuals (e.g., discrimination, differences in ability, or unequal opportunities in childhood). The multiplier, on the other hand, will be perceived much more uniformly as introducing an unjustified disadvantage (discrimination). Our design therefore reflects people's preferences for affirmative action policies targeting discrimination more broadly, not tied to a specific characteristic.

A further advantage of the multiplier is that we can use performance data from previous studies to calibrate a disadvantage multiplier that is low enough to constitute a non-negligible disadvantage, but high enough to ensure that disadvan-

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taged subjects still have a reasonable chance of winning even without the quota being implemented. Based on the data of Erkal et al. (2011), we simulate winning probabilities of 24.1% and 42.6% without affirmative action for disadvantaged and advantaged players, respectively. With the quota in place, these winning probabilities change by about 12 percentage points for each type, resulting in much more equal winning probabilities across types to ensure that the quota roughly levels the playing field.

Treatments. In all three treatments, decision makers decide in favor of or against the quota. This decision constitutes our main variable of interest. The three treatments vary the stakes that decision makers have in the quota. In treatment PARTIAL, decision makers participate in the tournament themselves. Those who have been randomly assigned to the disadvantaged type potentially benefit from the quota, while advantaged types are potentially hurt by it. Hence, in PARTIAL, both self-interest and in-group favoritism (i.e., a preference for treating individuals of the own type favorably) are possible motives when deciding for or against the quota. Treatment SPEC serves as a baseline. Decisions on the quota are made by impartial spectators who neither participate in the tournament, nor are of a specific type. Decision makers in treatment SPEC-TYPE are also spectators who do not participate in the tournament themselves. However, they are randomly assigned to the advantaged or disadvantaged type. Even though this type assignment does not have any monetary consequences for themselves, decision makers in SPEC-TYPE may exhibit in-group favoritism.[3] Treatment comparisons thus allow us to disentangle the strength of two key motives for approving or disapproving affirmative action beyond the revelation of impartial preferences in SPEC. Differences in approval rates in SPEC-TYPE and SPEC can be attributed to in-group favoritism, differences between SPEC-TYPE and PARTIAL to self-serving motives.

Stages of the experiment. Table 1 gives an overview of the different stages of the experiment in chronological order. For each treatment, it displays in which stages decision makers are involved. In treatment PARTIAL, decision makers participate in all stages. We therefore begin by describing this treatment and highlight the differences in SPEC-TYPE and SPEC afterwards.

After a two-minute trial round of the word encryption task, decision makers in PARTIAL are assigned to either the Green Group or the Blue Group, corresponding to the disadvantaged and the advantaged type, respectively. They learn how tournament participants' final performance is calculated depending on type as-

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[3] Inducing group identity based on the minimal group paradigm has been documented to bring about significant differences in behavior towards the in-group and the out-group. Starting with Tajfel et al. (1971), who were the first to conduct a minimal group experiment, a meta-analysis in social psychology by Mullen et al. (1992) documents the existence of in-group bias, while another by Balliet et al. (2014) relates in-group favoritism to cooperation. Charness and Chen (2020) and Li (2020) review the economic literature on group identity and in-group favoritism and find effects in line with the social psychology literature. For example, Chen and Li (2009) experimentally test the effect of minimal group categorization on distributional preferences and find that, on average, subjects allocate higher amounts of money to in-group members.

		SPEC	SPEC-TYPE	PARTIAL
Experiment	Trial task			✓
	Type assignment		✓	✓
	Instructions for tournament & control questions	✓	✓	✓
	Choice over quota	✓	✓	✓
	Belief elicitation	✓	✓	✓
	Tournament			✓
	Elicitation of in-group favoritism	✓	✓	✓
Survey	Preference for real-world affirmative action	✓	✓	✓
	Explanatory variables	✓	✓	✓

Table 1. Stages of experiment and survey by treatment (decision makers)

signment. They then receive instructions on the rules of the tournament, answer four control questions, and get explanations of the correct answer. Afterwards, they make their decision in favor of or against the quota. Each decision maker's choice is implemented for their group with equal probability, i.e., $\frac{1}{6}$. Random implementation of each decision maker's choice ensures that the chance that one's own choice is implemented is independent of other decision makers' choices. Before decision makers in PARTIAL actually start competing in the tournament by working on the word encryption task, we elicit their beliefs about their own chances of winning with and without the quota by letting them adjust a slider on a scale from 0 to 100%.

Since subjects in SPEC and SPEC-TYPE decide on the quota as impartial spectators, they neither participate in the trial task nor the tournament themselves, but instead receive information about the task and tournament rules. Their decision about the quota is relevant for a separate group of six tournament participants. As in PARTIAL, each spectator's decision is implemented with a probability of $\frac{1}{6}$. Decision makers in SPEC-TYPE are assigned to either the Green Group or the Blue Group. Decision makers in SPEC are not assigned a type themselves but only learn what it means to belong to the Green Group or Blue Group. For spectators, we elicit four belief variables: their beliefs about disadvantaged and advantaged tournament players' chances of winning with or without the quota.

For decision makers in all three treatments, we elicit three measures of in-group favoritism. They are asked (i) about their willingness to help tournament participants in the Green and the Blue group (7-point Likert-scale), respectively, (ii) how much they identify with tournament participants in the Green and the Blue group (7-point Likert-scale), respectively, and (iii) whether they would like to send a smiley face to the (other) tournament participants in "their" group of six, separately by type.

Tournament participants. On top of the decision makers, we recruit 78 subjects to participate in the tournament only (tournament participants). Following the two-

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minute trial task, they are assigned their type and receive the same explanation of the tournament rules and control questions as decision makers in PARTIAL. We truthfully reveal to tournament participants that the implementation of the quota depends on the decisions of others and also elicit their beliefs on their chances of winning. For efficiency reasons, they participate in the tournament for six rounds of five minutes and are randomly re-matched after each round such that we generate enough tournaments to be matched with the decision makers in SPEC and SPEC-TYPE.

Procedures and sample characteristics. We conducted both the experiment and the survey online on the data collection platform Prolific (www.prolific.com) from May, 28 to June, 9 2021 using the software oTree (Chen et al., 2016). The experiment was pre-registered at the AEA RCT Registry (https://www.socialscienceregistry.org/trials/7131). Instructions were displayed stage-by-stage and can be found in Appendix B.

We used the option offered by Prolific to acquire a representative sample. Table A.2 in the appendix displays summary statistics of all variables. Our sample is perfectly gender balanced (49% female, 50% male, and 1% diverse). It covers the whole adult range of ages (19 to 79 years with a mean of 44 years). Our sample is also diverse with respect to ethnicity, even though it is not entirely representative of the U.S. population.[4]

On average, decision makers' sessions lasted 19.42 minutes and they earned 6.5 USD (a fixed payment of 4.5 USD plus their payment of either 0 or 6 USD from the tournament in PARTIAL or an additional fixed payment of 2 USD in SPEC and SPEC-TYPE). Tournament players spent 50 minutes on the experiment on average and earned 17 USD (a fixed payment of 5 USD and up to an additional 6 x 6 = 36 USD from participating in the tournament). We randomly matched subjects in groups of six only after all data had been collected to avoid losing data for the whole group in case a group member dropped out. Therefore, tournament players saw the number of words they correctly encoded immediately but learned the outcome of the tournament, whether the quota was implemented, and, as decision makers, whether their decision on the quota was implemented in a later feedback email. Tournament participants were also informed about the number of smiley faces they received from other participants.

Overall, we collected 817 complete observations with a correct ProlificID. To ensure that subjects in our final subject pool understood the rules of the tournament and paid attention throughout the experiment, we inserted three attention checks and rejected subjects who failed at least (i) one attention check and two control questions (simultaneously), (ii) at least three control questions, or (iii) at least two attention checks. This leaves us with a sample of 729 observations that are evenly distributed across treatments and types (see Table 2).

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[4] Whites and Asian Americans are overrepresented, Blacks, Hispanics, and Native Americans underrepresented in our sample compared to U.S. census data (https://www.census.gov/quickfacts/fact/table/US/PST045222#qf-headnote-b).

Treatments	Types	N
PARTIAL	disadvantaged	144
	advantaged	145
SPEC		147
SPEC-TYPE	disadvantaged	146
	advantaged	147
Sum		729

Table 2. Number of observations by treatment and type

Survey. Finally, all subjects answer a survey after the end of the experiment. First, we ask whether they favor, oppose, or have no opinion on affirmative action for (i) women, (ii) racial minorities, or (iii) people with disabilities. These survey responses are additional outcomes in our analysis such that we can provide a broader picture on drivers of preferences for affirmative action. Second, we measure an individual's willingness to take risks, altruism, preference for efficiency in a redistribution context, political views (liberal to conservative), prior experienced discrimination, their perceived fairness of the quota in the experiment, and socio-demographics. Appendix C provides the exact wording of all survey questions. Finally, we collect comprehensive data on beliefs on how the quota affects the winning probabilities of different tournament participants in the experiment.

3 Results

Section 3.1 analyzes which individuals are more likely to implement the quota in the experiment. Guided by our pre-registered hypotheses, we investigate approval of the quota across treatments and types in Section 3.1.1. Using the approval rate of impartial spectators in SPEC as a benchmark, we dissect partiality into self-serving motives and in-group favoritism. We then comprehensively analyze individual-level drivers of decisions for or against implementing the quota, covering beliefs about chances of winning and in-group favoritism in Section 3.1.2 and the role of socio-demographic characteristics, economic and political preferences, having experienced discrimination, and fairness perceptions in Section 3.1.3. Finally, Section 3.2 provides survey evidence supporting the external validity of our experimental results and extends them to various real-world affirmative action policies.

3.1 Experimental evidence on approval of the quota

3.1.1 Analysis by treatment and type. We find clear evidence that approval rates of the quota depend on whether and how it affects decision makers themselves.
The role of partiality. Regarding treatments SPEC and PARTIAL, we hypothesized the following ordering of approval rates in the pre-registration: PARTIAL disadvantaged ≥ SPEC > PARTIAL advantaged, with a sizable difference

between the approval rates of the two types in PARTIAL. Figure 2 shows approval rates in each treatment, separately by type.
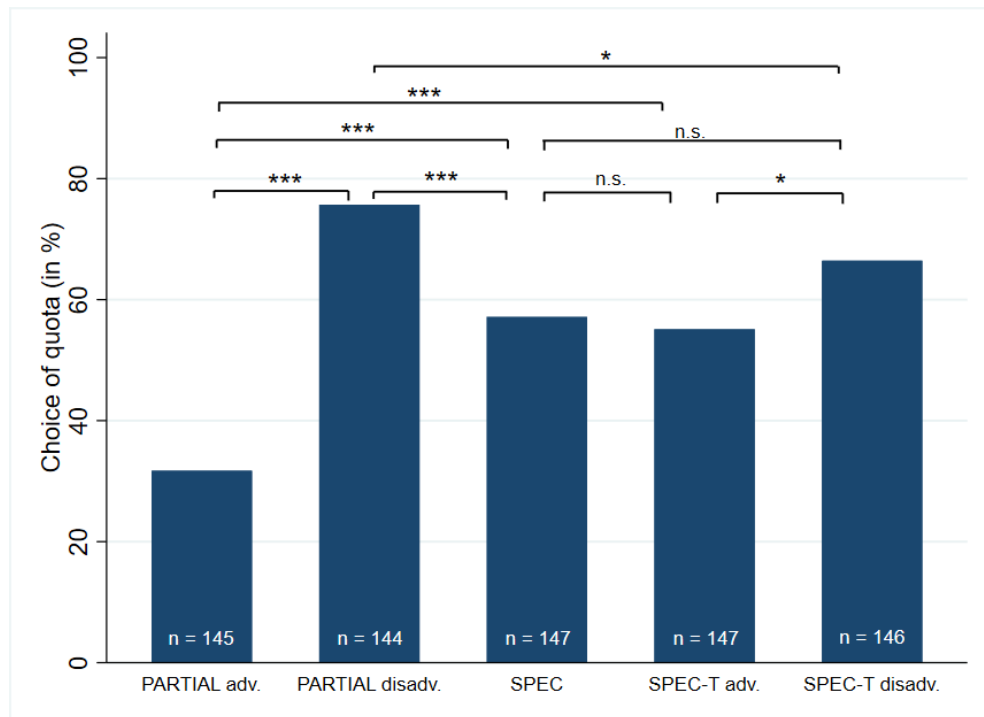
Figure 2. Approval of quota by treatment and type.
We use two-sided Fisher's exact tests to test for significant differences in approval rates: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

For impartial spectators (treatment SPEC), we observe an approval rate of 57%. That is, in the absence of personal stakes, the majority of our representative sample decides in favor of the introduction of the quota. As expected, approval is even higher, at 76%, among disadvantaged decision makers in treatment PARTIAL who can benefit from a quota (Fisher's exact test comparing with SPEC: $p = 0.001$). Approval is lowest for advantaged decision makers in treatment PARTIAL whose chances of winning the tournament decrease through the implementation of a quota (Fisher's exact test comparing with SPEC: $p < 0.001$). Thus, having individual stakes in the tournament strongly affects the decision whether to choose a quota. At the same time, the fact that 32% of advantaged decision makers in treatment PARTIAL choose the quota even though it hurts them, and "only" 76% of possibly benefiting disadvantaged decision makers in PARTIAL support it, underlines that attitudes towards affirmative action are not only based on individual stakes, but also on more principled grounds. We will analyze these in more detail in Section 3.1.3.

Random assignment to either the advantaged or disadvantaged type may affect quota choice through two main channels: in-group favoritism and/or self-serving

motives. In the following, we discuss whether and to which extent either of the two matter.

Disentangling self-serving motives and in-group favoritism. In a first step, we investigate the role of in-group favoritism. For this purpose, we compare approval rates between impartial spectators in SPEC and spectators in SPEC-TYPE. Since decision makers in SPEC-TYPE are assigned a type, but their decision regarding the quota does not have any monetary consequences for themselves, we account any difference in approval rates to in-group favoritism. Our pre-registered hypothesis was the following ordering of approval rates: SPEC-TYPE disadvantaged ≥ SPEC ≥ SPEC-TYPE advantaged. In line with this, disadvantaged spectators choose the quota 9 percentage points more often and advantaged spectators 2 percentage points less often than impartial spectators, but neither difference is significant (Fisher's exact tests: $p = 0.118$ and $p = 0.814$, respectively). Approval rates of the two different types in treatment SPEC-TYPE differ by 11 percentage points, a difference significant at the 10% level (Fisher's exact test: $p = 0.056$). Overall, in-group favoritism seems to play only a minor role in decisions about whether to implement affirmative action. Importantly, this is the case although attitudes and behaviors towards the in- and out-group captured by our measure of in-group favoritism differ significantly and substantially, see Table A.7 in the appendix.

A straightforward reason for decision makers in PARTIAL to decide in favor of or against the quota is the presence of self-serving motives.[5] While disadvantaged subjects benefit from the quota in terms of chances of winning and hence expected payoffs, advantaged decision makers are harmed. As decision makers in SPEC-TYPE are also assigned to either the disadvantaged or advantaged type, but remain spectators for whom the quota has no monetary consequences, a difference-in-difference comparison between the two types in PARTIAL and in SPEC-TYPE nets out the role of in-group favoritism and provides an isolated estimate of the relevance of self-serving motives. We observe a 33 percentage points increase in the likelihood to choose the quota in PARTIAL compared to SPEC-TYPE when decision makers are disadvantaged compared to advantaged. The 33 percentage point difference comes from a 44 percentage point difference in PARTIAL compared to 11 percentage points in SPEC-TYPE, underlining that self-serving motives have a much larger effect on support for the quota than in-group favoritism. Again, our results are in line with the pre-registered hypotheses that disadvantaged decision makers in PARTIAL choose the quota weakly more often than disadvantaged decision makers in SPEC-TYPE, while advantaged decision makers in PARTIAL choose it less often than advantaged decision makers in SPEC-TYPE.

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[5] In our experiment, we use monetary incentives to introduce self-serving motives. For real-world affirmative action policies, self-serving motives can be induced by monetary benefits as well, but also consist of non-monetary benefits such as amenities like privileged parking or a nicer office or the higher status that comes with, for example, a promotion.

Result 1: At the level of treatment and types, self-serving motives strongly influence the decision to choose the quota. Compared to self-serving motives, the role of in-group favoritism is smaller.

3.1.2 Individual-level analysis: The role of beliefs on winning and in-group favoritism.

In the following, we complement the previous evidence on the role of self-serving motives and in-group favoritism at the treatment- and type-level with individual-level evidence. For this purpose, we discuss the role of participants' beliefs about chances of winning the tournament with and without the quota as well as measures of in-group favoritism for an individual's choice in favor of the quota. Table 3 presents the marginal effects of a probit regression of a binary indicator of whether or not an individual chooses the quota on subjects' beliefs and in-group favoritism in treatment PARTIAL (Panel A) as well as solely on in-group favoritism in treatment SPEC-TYPE (Panel B), separately for advantaged and disadvantaged types.

	(1)	(2)
Panel A: PARTIAL		
	disadvantaged type	advantaged type
Belief (self)	0.0087***	0.0082***
	(0.0011)	(0.0022)
In-group favoritism index	0.0527***	-0.0823
	(0.0152)	(0.0572)
N	144	145
Pseudo-R^2	.159	.120
Panel B: SPEC-TYPE		
	disadvantaged type	advantaged type
In-group favoritism index	0.0555	-0.1035**
	(0.0380)	(0.0494)
N	146	147
Pseudo-R^2	.010	.032

Marginal effects of probit regressions. Standard errors in parentheses. Dependent variable: Choice of quota (indicator variable: 1 if implemented, 0 otherwise). * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. *Belief (self)* denotes the difference in beliefs about oneself winning the tournament with and without the quota (in percentage points). The *In-group favoritism index* is a standardized, aggregate measure; higher values indicate stronger favoritism towards in-group participants.

Table 3. Approval of quota: The role of beliefs of winning and in-group favoritism

Beliefs on own chances of winning. In treatment PARTIAL, the quota affects decision makers' own chances of winning the tournament and consequently their beliefs about these chances. We asked decision makers how they rate their own chances of winning the tournament with and without the quota, respectively. The variable *belief (self)* is generated by calculating the difference between the two, and

thus indicates how much decision makers believe the quota to affect their own chances of winning. A positive difference indicates an increase in believed chances of winning.[6]

The results in Panel A of Table 3 imply that an increase in the difference between the beliefs to win with and without the quota by 1 percentage point is associated with an increase in the predicted probability to choose the quota by 0.87 percentage points for disadvantaged and by 0.82 percentage points for advantaged decision makers. This constitutes evidence of strong self-serving motives also at the individual level and is in line with similar findings that preferences for redistribution are partly driven by self-interest, see, e.g., Fehr and Vollmann (2022).

In-group favoritism. Table 3 also examines the predictive power of an individual-level measure of in-group favoritism for choosing of the quota. The in-group favoritism indices in Panel A and B of Table 3 are constructed separately for each treatment by standardizing each of three measurements, summing them up, and standardizing again: (i) the willingness to help participants of one's own compared to the other type, (ii) the identification with participants of one's own compared to the other type, and (iii) the sum of smileys decision makers sent to decision makers of one's own compared to the other type after the main part of the experiment.

As reported in Panel A, the predicted probability to decide in favor of the quota in PARTIAL increases significantly by 5.27 percentage points for a one standard deviation increase in in-group favoritism for disadvantaged types, i.e., those who are favored by the quota. In contrast, in-group-favoritism has a negative, but not significant coefficient for advantaged types, i.e., those are not favored by the quota.

Also in SPEC-TYPE both types tend to act in line with in-group favoritism (see Panel B). Spectators of the disadvantaged type tend to be, but are not significantly more likely to choose the quota, the more they identify with disadvantaged tournament players who are favored by the quota. The probability that spectators of the advantaged type choose the quota which potentially hurts tournament players of "their" type decreases significantly by 10.35 percentage points if the in-group favoritism index increases by one standard deviation.

Overall, the individual-level evidence largely confirms our findings at the treatment- and type-level in Section 3.1.1.

Result 2: Also at the individual level, self-serving motives are a powerful and sizable determinant of support for a quota to implement affirmative action. In-group favoritism is a weaker predictor of support for a quota.

In the following, we take a closer look at the behavior of spectators. Table 4 displays OLS regression results of individual-level predictors of spectators' quota choice for all three kinds of spectators—those not assigned a type (treatment SPEC)

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[6] We find plausible belief patterns for all treatments and types (see Section A.3 in the appendix for further details). In particular, people correctly believe that the quota does in fact improve disadvantaged tournament players' chances of winning.

in Panel A and those of the advantaged or disadvantaged type in treatment SPEC-TYPE in Panel B.[7] In particular, we study the role of beliefs about how the quota affects the winning probabilities of advantaged and disadvantaged tournament players. We asked all spectators how they thought the introduction of the quota would affect the probability of winning of the advantaged and disadvantaged type, offering three response options: with the introduction of the quota, (i) the advantaged type has higher chances of winning the tournament than the disadvantaged type, (ii) the disadvantaged type has higher chances of winning than the advantaged type, or (iii) both types have about the same chance of winning the tournament.[8] In Table 4, choosing option (i) is coded as *belief adv. higher*=1, option (ii) as *belief disadv. higher*=1, and choosing (iii) is the omitted category.

Spectators' beliefs on winning. The most important take-away from Table 4 is that all three types of spectators are most likely to implement the quota if they believe it levels the playing field: if spectators expect both types to have about the same chance of winning the tournament when the quota is in place, about 71-75% are in favor of the quota, as becomes evident in the constant terms in Table 4.

All spectators are less likely to favor the quota if they believe that either type, disadvantaged or advantaged, has higher chances of winning the tournament when the quota is implemented. For impartial spectators, the coefficients of *belief adv. higher* and *belief disadv. higher* are negative, significant, large (about -37 percentage points), and almost identical in size (see Panel A). Also for spectators of the advantaged type, likelihood to choose the quota decreases similarly, by about 30 percentage points, if they believe that either the advantaged or the disadvantaged type have higher chances of winning (see column (2) in Panel B). However, the belief for the own type (advantaged) is somewhat (3 percentage points) smaller and not significant. As displayed in column (1) in Panel B, spectators of the disadvantaged type are 44.5 percentage points less likely to choose the quota if they believe that advantaged players have higher chances of winning the tournament. By contrast, their probability to choose the quota decreases by only 6.4 percentage points if they believe that their own, disadvantaged type has higher chances of winning. Overall, the results on the belief variables in Panel B point to some, modest extent of in-group favoritism, which is in line with the results in Table 3.

Spectators' favoritism toward disadvantaged types. In treatment SPEC, in-group favoritism cannot play a role. Instead we investigate whether spectators' decisions are affected by favoritism towards disadvantaged tournament participants. The index of favoritism towards disadvantaged tournament players reflects differences in

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[7] We decided for a linear regression model for ease of interpretation of the constant term, but find the same size and directions of effects in probit regressions (see Table A.3 in the appendix).

[8] Across all spectators (SPEC and SPEC-TYPE), 39.5% believe that disadvantaged tournament players have higher chances of winning with the quota, 51.5% believe that both types of tournament players have about the same chances, while 9% believe that advantaged tournament players' chances are higher with the quota (even though this cannot be true with at least one of the winners having to be from the disadvantaged group). The frequency of these answers is very similar across spectator subgroups.

	(1)	(2)
Panel A: SPEC		
Belief adv. higher	-0.3654**	-0.3662***
	(0.0648)	(0.0208)
Belief disadv. higher	-0.3707***	-0.3544***
	(0.0427)	(0.0425)
Favoritism index (disadv.)		0.0961***
		(0.0023)
Constant	0.7500***	0.7437***
	(0.0281)	(0.0308)
N	147	147
R^2	.139	.177
Panel B: SPEC-TYPE		
	disadvantaged type	advantaged type
Belief adv. higher	-0.4451***	-0.2957
	(0.0440)	(0.2540)
Belief disadv. higher	-0.0641*	-0.3252***
	(0.0308)	(0.0283)
Constant	0.7308***	0.7123***
	(0.0259)	(0.0602)
N	146	147
R^2	.072	.104

OLS regressions. Standard errors in parentheses. Dependent variable: Choice of quota (indicator variable: 1 if implemented, 0 otherwise). * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. *Belief adv. higher* is an indicator variable denoting whether an individual believes that, with the special rule, an advantaged tournament player has higher chances of winning the tournament than a disadvantaged tournament player (1 if yes, 0 otherwise). *Belief disadv. higher* is a similar indicator variable denoting whether an individual believes that, with the special rule, a disadvantaged tournament player has higher chances of winning the tournament than an advantaged tournament player (1 if yes, 0 otherwise). The omitted category is the belief that both types have similar chances of winning the tournament when the quota is in place. *Favoritism index (disadv.)* is a standardized, aggregate measure of favoritism toward disadvantaged tournament players by impartial spectators.

Table 4. Approval of quota: The role of spectator beliefs and favoritism toward disadvantaged tournament players

the willingness to help participants of the disadvantaged as opposed to advantaged type and differences in the sum of smileys sent to the two different types (see Table A.1 for a detailed description). We find an increase in the predicted probability to choose the quota by 9.6 percentage points for a one standard deviation increase in the index of favoritism towards disadvantaged tournament players. This indicates an impartial preference for affirmative action as a means for supporting those with an initial disadvantage.

Together with the belief variables, our results are thus in line with the literature on fairness preferences which documents that a majority of people adheres to an egalitarian or meritocratic fairness ideal (see Cappelen et al., 2020). They prefer to offset differences in (expected) income brought about by an external factor such as a randomly assigned disadvantage or advantage.

Result 3: Spectators are more likely to approve a quota if they believe it levels the playing field. Impartial spectators are additionally more likely to approve a quota the more favoritism they display towards disadvantaged individuals.

3.1.3 Individual-level analysis: The role of socio-demographic characteristics, economic and political preferences, experienced discrimination, and fairness perception. In what follows, we explore which individual characteristics predict quota choice. Table 5 displays marginal effects from probit regressions and proceeds in several steps. First, we analyze the role of socio-demographic characteristics in column (1). We continue by discussing the influence of economic and political preferences as well as experienced discrimination in column (2). Column (3) investigates the perceived fairness of the quota as a predictor for its approval. Finally, column (4) presents results from a specification that analyzes all predictors jointly. We consider the most comprehensive specification underlying results in column (4) as our main specification and focus our discussion on the corresponding results.[9] Finally, the last column of Table 5 reports which of the explanatory variables in column (4) are selected by the least absolute shrinkage and selection operator (LASSO).[10] Table A.1 contains a detailed description of all variables we use in our analysis.

Socio-demographic characteristics. While many socio-demographic characteristics—such as English as native language, sexual orientation, having children, or educational attainment—do not predict approval of the quota, some do. In particular, older people are less likely to support quotas.[11] Those who are currently employed are about 4 percentage points more likely to opt for the quota. We can only speculate about reasons: possibly employment increases

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[9] Table A.4 reports the same regression controlling for treatment and type in column (1) and separately for each treatment and type in columns (2)-(6).

[10] We use a cross-validation approach with adaptive weights in the lasso penalty term. The λ selected by cross-validation equals 0.0421.

[11] More precisely, we find a significant u-shape that implies that support for quota decreases up to age 77 in column (1) and age 82 in column (4), respectively.

	(1)	(2)	(3)	(4)	
					LASSO
Socio-demographic characteristics					
Age	-0.0154**			-0.0163***	
	(0.0068)			(0.0061)	
Age squared	0.0002**			0.0002***	
	(0.0001)			(0.0001)	
Non-male	-0.0086			-0.0256***	
	(0.0122)			(0.0091)	
White	0.0319***			0.0388**	
	(0.0120)			(0.0191)	
English native speaker	0.0452			0.0374	
	(0.0538)			(0.0645)	
Non-heterosexual	-0.0229			-0.0671	
	(0.0478)			(0.0419)	
Parent	-0.0039			-0.0174	
	(0.0535)			(0.0363)	
College degree	0.0716			0.0283	
	(0.0619)			(0.0335)	
Equivalence income	-0.0270			-0.1341***	
	(0.1427)			(0.0505)	
Equivalence income squared	0.0056			0.0730**	
	(0.0790)			(0.0297)	
Currently employed	0.0247**			0.0402***	
	(0.0124)			(0.0041)	
Economic and political preferences, experienced discrimination					
Altruism		0.0496***		0.0470***	✓
		(0.0110)		(0.0105)	
Preference for efficiency		-0.0281***		-0.0305***	✓
		(0.0048)		(0.0047)	
Willingness to take risks		-0.0178*		-0.0080	
		(0.0091)		(0.0117)	
Political view (liberal to conservative)		-0.0269***		-0.0029	
		(0.0050)		(0.0055)	
Experienced discrimination		0.0615***		0.0703***	✓
		(0.0225)		(0.0035)	
Fairness perception					
Perceived fairness of quota			0.2140***	0.2136***	✓
			(0.0048)	(0.0076)	
Observations	729	729	729	729	
Pseudo-R^2	.008	.016	.168	.194	

Marginal effects of probit regressions. Standard errors in parentheses. Dependent variable: Choice of quota (indicator variable: 1 if implemented, 0 otherwise). * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. *Equivalence income* is measured in 100,000 USD. *Altruism, Preference for efficiency, Willingness to take risks, Political view,* and *Perceived fairness of quota* are standardized. *Experienced discrimination* is elicited on a 5-point Likert scale. We code the top 3 categories ranging from "Yes – sometimes" to "Yes – very often" as 1.

Table 5. Approval of quota: The role of socio-demographic characteristics, economic and political preferences, experienced discrimination, and fairness perception.

exposure and/or sensitivity to situations as in our experiment in which access to rewards for high work-related output is not equally distributed across individuals. Only in our main specification in column (4) but not in column (1), gender and equivalent income turn out to be further significant predictors of approval of affirmative action. Higher income decreases the likelihood to opt for the quota up to very high equivalent incomes of about 180.000 USD per year. This pattern mimics findings on preferences for redistribution more broadly that generally document a negative association of income and preferences for redistribution (Alesina and La Ferrara, 2005; Alesina et al., 2011; Guillaud, 2013; Durante et al., 2014). Finally, men are 2.6 percentage points more likely to implement the quota for disadvantaged individuals than women or non-binary individuals. This rather small difference largely reflects a difference between men and women because we have only 1.4% non-binary individuals in our sample.

Economic and political preferences and experienced discrimination. Quotas (and affirmative action in general) can be considered as a form of "ex-ante redistribution" since their implementation ensures higher expected earnings for disadvantaged individuals who, in the absence of affirmative action, would have lower expected earnings relative to the general population. We therefore expect altruistic individuals to be more inclined to support quotas than selfish ones, while individuals who highly value efficiency may consider quotas as less favorable.

To elicit *altruism*, we use a measure introduced and validated by Falk et al. (2023): participants decide hypothetically how much out of a windfall profit of 1,000 USD they would donate to a good cause. To ease comparisons, we standardize altruism, preference for efficiency, and the willingness to take risks in our analysis. In line with our expectations, we find a significant increase in the predicted probability to opt for the quota of almost 5 percentage points for a one standard deviation increase in altruism.

To measure *preferences for efficiency*, decision makers are confronted with the hypothetical situation to divide 10 dollars between two people. For every dollar they assign to person A, person A receives 1 dollar. For every dollar they assign to person B, person B receives only 50 cents, while the other 50 cents are lost. We interpret allocating more money to the person A as a preference for a more efficient outcome over an equal outcome. We find that a one standard deviation increase in preference for efficiency is associated with a decrease in the probability to choose the quota by about 3 percentage points. This is hardly surprising because a loss in efficiency is a commonly voiced concern with the introduction of quotas. In our experiment, the quota leads to a slightly less efficient outcome in expectation, only in case one considers tournament winners' final performance (i.e., the number of correctly encoded words times the multiplier that is 1 for advantaged, but 0.9 for disadvantaged individuals) as a measure of efficiency.

Willingness to take risks is measured by the well-established general risk question from the German Socio-Economic Panel (GSOEP), a survey measure on an 11-point Likert scale that is predictive of risk taking in the real-world (Dohmen et al.,

2011). We find no significant relation between risk attitudes and the predicted probability to select the quota. Although one could consider quotas as a form of ex-ante redistribution of chances and risk preferences are predictive of preferences for income redistribution (e.g. Durante et al., 2014), this is not surprising at closer inspection. For decision makers in PARTIAL, the quota weakly increases the probability of winning the prize of 6 USD for disadvantaged types and weakly decreases it for advantaged types. Assuming that decision makers prefer 6 over 0 USD, disadvantaged types prefer to have and advantaged types prefer not to have implement the quota in place, irrespective of their risk preference. The remaining decision makers are spectators. For them, willingness to take risks serves as a proxy for risk-taking of others and a similar reasoning as for decision makers in PARTIAL applies.

In line with the literature on redistribution (see, e.g., Alesina et al., 2011; Fehr and Vollmann, 2022), we find regarding *political views* that conservative individuals tend to have a lower predicted probability to select the quota. In the specification reported in column (2) of Table 5, a one standard deviation increase in conservatism is associated with a decrease in the likelihood of choosing the quota by 2.7 percentage points. However, the size of this conditional correlation decreases substantially and is no longer significant once we additionally control for the perceived fairness of the quota in column (4) of Table 5.

Own prior *discrimination experiences* may be another possible predictor of approval of affirmative action. We thus elicit whether decision makers have ever experienced discrimination themselves and find that those who did are on average about 7 percentage points more likely to choose the quota.

Fairness perceptions. Finally, complementing the results in Schildberg-Hörisch et al. (2023), we assess the *perceived fairness* of the quota. We separately ask participants to rate how fair they perceive the rules of the tournament (i) with the quota and (ii) without it on 7-point Likert scales and then calculate the difference between the two. The predicted probability to opt for the quota increases by more than 20 percentage points with a one standard deviation increase in the perceived fairness of the quota. Context-specific fairness perceptions are thus the by far the strongest predictor of the approval of affirmative action.

Result 4: Individual preferences (in particular altruism and preferences for efficiency), experienced discrimination, and fairness perceptions have stronger predictive power for the quota choice than most socio-demographic characteristics.

The LASSO also underlines the greater relevance of individual preferences, experiences, and fairness perceptions than of socio-demographic characteristics for quota choice, see column (5) of Table 5. It selects 4 out of 6 variables in the first category—*preference for efficiency, altruism, experienced discrimination*, and *perceived fairness of quota*—, but none of the socio-demographic characteristics.

3.2 Survey evidence on approval of affirmative action policies

In the experiment, affirmative action refers to people who are disadvantaged due to a rather abstract characteristic, i.e., a multiplier below 1. We complement the experimental results on the decision on a quota in the tournament by evidence on approval rates of affirmative action policies commonly used outside the laboratory that address various possible sources of discrimination. In particular, we use a survey to measure the approval of affirmative action for (i) women, (ii) racial minorities, and (iii) people with disabilities. We elicit within-individual data, i.e., the same individuals participate in the experiment and answer the survey.[12]

Table 6 displays the survey answers. All three kinds of affirmative action are favored by more than 70% of individuals in our representative sample. About 14% oppose such programs and another about 14% have no opinion on them.

Opinion on affirmative action for ...			
	Favor	Oppose	No opinion
Women	71.74%	13.99%	14.27%
N	523	102	104
Racial minorities	71.88%	14.40%	13.72%
N	524	105	100
People with disabilities	70.64%	13.99%	15.36%
N	515	102	112

Table 6. Opinions on affirmative action for women, racial minorities, and people with disabilities

Result 5: Population-representative data document broad support (more than 70%) for affirmative action policies, with similar approval rates regarding policies favoring women, racial minorities, or people with disabilities.

We proceed by analyzing the same possible drivers of approval of commonly used affirmative action policies as for the decision on the quota in the experiment. Table 7 reports the marginal effects of the corresponding probit regressions and additionally indicates which explanatory variables are selected by LASSO, using an adaptive cross validation procedure.[13] To ensure that the analysis of experimental and survey data is comparable, Table 7 focuses on those individuals who either stated they favored or they opposed a given policy, dropping those with no opinion.[14] We still included the option to answer "No opinion" in the survey not to force

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[12] Reassuringly, treatment and type an individual was exposed to in the experiment do not affect the answers in the subsequent survey (see Table A.5 in the appendix). Table A.5 also provides a first indication of the external validity of our experimental results: individuals who decided in favor of the quota in the experiment are more likely to approve of real-world affirmative action policies. The corresponding coefficients are positive for all three policies under consideration and significant for affirmative action favoring women and disabled people.

[13] The selected values for λ are 0.0165, 0.0061, and 0.0109 for approval of affirmative action favoring women, racial minorities, and people with disabilities, respectively.

[14] As a robustness check, the analysis in Table A.6 in the appendix includes all three answers. Results are similar to those in Table 7.

Affirmative action favoring…	(1) women	LASSO	(2) minorities	LASSO	(3) disabled	LASSO
Sociodemographics						
Age	-0.0076		-0.0128***		-0.0091**	✓
	(0.0054)		(0.0019)		(0.0044)	
Age squared	0.0001		0.0001***		0.0001**	
	(0.0001)		(0.0000)		(0.0000)	
Non-male	0.0503***	✓	0.0527**	✓	0.0197**	
	(0.0154)		(0.0244)		(0.0100)	
White	-0.1647***	✓	-0.1248***	✓	-0.1050*	✓
	(0.0449)		(0.0156)		(0.0560)	
English native speaker	-0.0394		-0.0020		-0.0529	✓
	(0.0372)		(0.0157)		(0.0724)	
Non-heterosexual	-0.0192		-0.0364		-0.0339***	
	(0.0225)		(0.0237)		(0.0035)	
Parent	0.0143		-0.0065		0.0033	
	(0.0154)		(0.0089)		(0.0157)	
College degree	-0.0745	✓	-0.0636**	✓	-0.0657***	✓
	(0.0511)		(0.0279)		(0.0243)	
Equivalence income	0.0430		-0.1378***		-0.0709***	✓
	(0.1409)		(0.0171)		(0.0233)	
Equivalence income squared	-0.0436		0.0824***		0.0126	
	(0.0928)		(0.0187)		(0.0132)	
Currently employed	0.0184		0.0283		0.0421**	
	(0.0129)		(0.0298)		(0.0182)	
Economic and political preferences, experienced discrimination						
Altruism	0.0598***	✓	0.0699***	✓	0.0708***	✓
	(0.0191)		(0.0119)		(0.0177)	
Preference for efficiency	-0.0450***	✓	-0.0486***	✓	-0.0411***	✓
	(0.0115)		(0.0110)		(0.0056)	
Willingness to take risks	0.0222**	✓	0.0096		0.0083	
	(0.0105)		(0.0243)		(0.0266)	
Political view (liberal to conservative)	-0.1195***	✓	-0.1130***	✓	-0.1057***	✓
	(0.0092)		(0.0095)		(0.0050)	
Experienced discrimination	-0.0461***	✓	-0.0618***	✓	-0.0228**	
	(0.0111)		(0.0208)		(0.0090)	
Fairness perception						
Perceived fairness of quota	0.0340*	✓	0.0297***	✓	0.0373***	✓
	(0.0179)		(0.0054)		(0.0078)	
Observations	625		629		617	
Pseudo-R^2	.399		.314		.308	

Marginal effects of probit regressions. Standard errors in parentheses. Dependent variable: Opinion of the respective affirmative action policy (indicator variable: 1 if favor, 0 if oppose). * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. *Equivalence income* is measured in 100,000 USD. *Altruism, Preference for efficiency, Willingness to take risk, Political view,* and *Perceived fairness of quota* are standardized. *Experienced discrimination* is elicited on a 5-point Likert scale. We code the top 3 categories ranging from "Yes – sometimes" to "Yes – very often" as 1. The number of observations varies by column since we do not include subjects who have no opinion on the respective policy in this regession.

Table 7. Approval of affirmative action policies: The role of socio-demographic characteristics, economic and political preferences, experienced discrimination, and fairness perception.

participants to ad hoc make up their mind about a policy they may never have considered before.

Overall, the survey-based results on drivers of approval of affirmative action policies align well with those on the quota choice in the experiment. Most importantly, both sets of results suggest that socio-demographic characteristics are a weaker predictor than economic and political preferences, experienced discrimination, and fairness perceptions.

In particular, being a parent, having English as a first language, or sexual orientation are largely not significant in Table 5 and Table 7. The coefficients of age, being employed, and income consistently have the same sign for all four different dependent variables and are often significantly different from zero. In contrast to the results in Table 5, male and white individuals are significantly less likely to approve commonly implemented affirmative action policies. However, these results may be partly indicative of self-serving bias or in-group favoritism with regard to affirmative action towards policies favoring women or racial minorities. College education tends to be more predictive of people's preferences for affirmative action policies than of their decision to select the quota in the experiment, with higher educated people being less favorable.

In line with the results in Table 5, Table 7 documents large and significant associations between approval of commonly used affirmative action policies and altruism, preferences for efficiency, fairness perceptions as well as political views in the expected direction. As for the experimental results, willingness to take risks seems to be less important. Only the results on those who have experienced discrimination in the past come as a surprise: they are less likely to favor affirmative action programs for women, racial minorities, and disabled people. We can only speculate about possible reasons for this finding. One might be prior negative experiences with such programs, for example, their ineffectiveness or side effects such as retaliation, see, e.g., Fallucchi and Quercia (2018), Heilman et al. (1997), Leibbrandt et al. (2017), and Leibbrandt and List (2018). The fact that such negative consequences are excluded in our experiment by design may rationalize why we see this pattern only in the survey.

Result 6: Overall, predictors of approval of affirmative action policies align well in the survey and experimental data. In particular, altruism, preferences for efficiency, experienced discrimination, fairness perceptions, and self-serving motives have stronger predictive power than most socio-demographic variables.

Similarly, depending on the specific outcome variable, the LASSO procedure selects the vast majority or even all variables describing economic and political preferences, experienced discrimination, and perceived fairness of the quota. However, it only selects few sociodemographic variables. Among them are non-male and white, in particular also in those cases where they reflect self-serving bias.

Moreover, having a college degree is selected for all three affirmative action policies. For affirmative action for women and racial minorities, it is the only further selected variable.

In sum, the survey-based findings on approval of various affirmative action policies confirm our experimental results, underline their external validity, and provide a broader evidence base on people's preferences for affirmative action.

4 Discussion

The public debate following the 2023 US supreme court decision to end race-conscious admissions to colleges and universities highlights the controversy around affirmative action policies. At the same time, only broadly supported affirmative action policies can develop their full potential and avoid backlash against targeted groups (Leibbrandt et al., 2017; Fallucchi and Quercia, 2018; Leibbrandt and List, 2018; Schildberg-Hörisch et al., 2023). It is therefore vital for policymakers and stakeholders to understand who needs to be convinced and which concerns need to be addressed if such policies are politically desired.

This study takes a particularly comprehensive approach to enhance this understanding. First, we elicit support for various affirmative actions policies using two different methodological approaches. We complement evidence from an online experiment which studies a rather stylized, context-free quota for individuals who face a randomly assigned disadvantage with survey evidence on three, commonly implemented affirmative action policies. Second, we investigate an especially broad range of possible drivers of preferences for affirmative action. We combine causal evidence on the role of self-serving motives and in-group favoritism with descriptive evidence on the role of socio-demographic characteristics, risk and social preferences, efficiency concerns, fairness perception, political orientation, and past experienced discrimination. Finally, our analysis relies on population-representative data.

Our findings have important implications. They document that support for affirmative action is based both on principled grounds (e.g., related to an individual's altruism, fairness perceptions, concerns for efficiency, political views) as well as on self-serving motives. In particular, those who expect to benefit from affirmative action policies are much more likely to support them than those whose prospects are better without affirmative action. This is one reason why affirmative action will probably stay controversial.[15]

The prominent role of self-serving motives for the support of quota decision aligns well with the literature on preferences for redistribution of income (see Alesina et al., 2011, and Mengel and Weidenholzer (2023) for overviews and

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[15] However, even people who possibly experience immediate losses due to affirmative action policies (i.e., lower chances of admission, being hired or promoted) may indirectly benefit from efficiency gains due to a more diverse student body or work environment (Weber and Zulehner, 2010) or better qualified political leaders (Besley et al., 2017). They might be convinced to review their opinion on affirmative action based on such indirect benefits.

Deffains et al. (2016), Epper et al. (2020), and Grimalda et al. (2023) for recent contributions)—perhaps because affirmative action can be viewed as a form of ex-ante redistribution of opportunities. The role of self-serving motives is robust across contexts. Their causal effect on the likelihood to select the quota is large in the experiment where being favored by affirmative action arises from an initial, randomly assigned disadvantage. In a similar vein, our survey evidence documents that men tend to be less likely to support affirmative action in favor of women than women, even after controlling for experienced discrimination. The same logic applies to whites' lower support for affirmative action policies for racial minorities. While self-serving motives are a key determinant of preferences for or against affirmative action policies, in-group favoritism plays a much smaller role.[16] In times of more and more polarized societies this may be considered good news.[17]

Like in-group favoritism, socio-demographic characteristics turn out to be rather weak predictors of preferences for affirmative action policies. Being a parent and being an English language native speaker are never significant throughout all our analyses, while the roles of income and educational attainment are less consistent. Age and being employed follow a consistent pattern across all studied contexts, but are only sometimes significant. Employed individuals tend to be more supportive of affirmative action, while older people tend to be more opposed. The age pattern is open to different possible interpretations. If it reflects cohort effects and a given individual's preferences for affirmative action remain stable over the life cycle, our results predict that support for affirmative action will increase in the future. By contrast, if the age pattern was caused by age trends within individuals (i.e., the same people become less inclined to support affirmative action as they age), our results predict declining future support for affirmative action policies in aging societies. Future research could aim at disentangling cohort from aging effects by using panel data on the support of affirmative action policies.

Our results on the role of prior personal experience with discrimination are mixed. In the experiment, discrimination experiences increase support for the quota, as one might expect. In contrast to that, having experienced discrimination in the past reduces support for affirmative action programs favoring women, racial minorities, or disabled people. Speculating about reasons, people with prior discrimination experiences might fear a backlash of affirmative action policies against favored individuals in the form of sabotage or retaliation as documented by Harrison et al. (2006), Heilman et al. (1997), Fallucchi and Quercia (2018), Leibbrandt et al. (2017), and Leibbrandt and List (2018). Sabotage or retaliation are more likely to occur the easier it is to identify the group that benefits from affirmative action

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[16] Table A.7 documents that our design introduces significant in-group favoritism. Still, we may measure a lower limit for the role of in-group favoritism as the in-group relies on a minimal group paradigm as opposed to a real-world characteristic which might induce even stronger identification with the in-group (see, for example, Charness and Rustichini (2011) on gender and Bernhard et al. (2006) and Tanaka and Camerer (2016) on ethnicity).

[17] For example, Desmet and Wacziarg (2021) document a rising cultural divide for different religious groups or party identifications, but not by urbanicity and gender.

and women, minority members, or physically disabled people are typically visible as such. By contrast, the quota favors a randomly assigned and neutrally defined group of people in our experiment and such backlash is not possible by design.

Moreover, our results suggest that providing information on the consequences of affirmative action may change people's stance on affirmative action. People who fear that quotas reduce efficiency may change their mind when confronted with evidence that quotas are typically not detrimental to efficiency (Schildberg-Hörisch et al., 2023). One example are gender quotas: compared to men, women are, on average, more risk averse and less confident in their own performance such that even many highly productive women only enter competitions if affirmative action is in place (see, for example Balafoutas and Sutter, 2012; Besley et al., 2017; Ibanez and Riener, 2018; Kölle, 2017; Niederle et al., 2013; van Veldhuizen, 2022).

While efficiency concerns are negatively associated with support for affirmative action, the perception that it is fair and creates equal chances strongly increases its acceptance. Consequently, providing explicit justifications for affirmative action policies, such as evidence on discrimination or actual disadvantage of the targeted group, is key to achieving broad support for affirmative action policies. It is important, however, that such justifications are chosen with care as Harrison et al. (2006) document that affirmative action can backfire if its justification only focuses on the underrepresentation of the target group. Arguments in favor of affirmative action should highlight the negative consequences of such underrepresentation. For example, Radbruch and Schiprowski (2023) point to suboptimal hiring decisions by documenting that women's opinions on whom to hire are less influential, despite their equal qualification and experience. Moreover, emphasizing the positive consequences of affirmative action may be helpful. For example, binding gender quotas can induce women to benefit from their networks within a firm to a similar extent as men, which is not the case in the absence of quotas (Burzynska and Contreras, 2020).

To summarize, combining causal evidence from an experiment with comprehensive survey data from a population-representative sample, we enhance our understanding of who supports or opposes affirmative action and why. We find that preferences for affirmative action are both coined by self-interest and fundamental individual characteristics such as altruism, efficiency concerns, or fairness perceptions. It thus seems prudent to address these factors in the design and communication of affirmative action policies.

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A Appendix

A.1 Variable descriptions and summary statistics

Variable	Description
Choice of quota	Binary variable coded as 1 if subjects chooses to apply the special rule in decision making task, 0 else.
Treatments and types (colors)	
PARTIAL adv.	Binary variable coded as 1 if subjects are assigned to treatment PARTIAL and to type advantaged (blue), 0 else. Subjects in treatment PARTIAL are assigned a type, participate in the decision making task, and in the word encoding task.
PARTIAL disadv.	Binary variable coded as 1 if subjects are assigned to treatment PARTIAL and to type disadvantaged (green), 0 else. Subjects in treatment PARTIAL are assigned a type, participate in the decision making task, and in the word encoding task.
SPEC	Binary variable coded as 1 if subjects are assigned to treatment SPEC, 0 else. Subjects in treatment SPEC participate in the decision making task only.
SPEC-TYPE adv.	Binary variable coded as 1 if subjects are assigned to treatment SPEC-TYPE and to type advantaged (blue), 0 else. Subjects in treatment SPEC-TYPE are assigned a type and participate in the decision making task.
SPEC-TYPE disadv.	Binary variable coded as 1 if subjects are assigned to treatment SPEC-TYPE and to type disadvantaged (green), 0 else. Subjects in treatment SPEC-TYPE are assigned a type and participate in the decision making task.
Type	Binary variable coded as 1 if advantaged (blue), 0 else. For subjects of type advantaged: word encoding task $\times$ 1; for subjects of type disadvantaged: word encoding task $\times$ 0.9.
Demographic variables	
Age	Age of participants in years.
Non-male	Binary variable coded as 1 if female or diverse, 0 else.
White	Binary variable coded as 1 if ethnicity is White, 0 else: Hispanic / Latino or Spanish origin / Black or African American / American Indian / Alaska Native / Native American / Asian / Pacific Islander / Other.
English native speaker	Binary variable coded as 1 if English is stated as mother tongue or one of several mother tongues, 0 else. (Open question.)
Non-heterosexual	Binary variable coded as 1 if answer category other than heterosexual was selected among the following: Heterosexual / Homosexual / Other / Prefer not to say, 0 else.
Parent	Binary variable coded as 1 if participant states having at least one child, 0 else.

College degree	Binary variable coded as 1 if at least "Associate degree [...]" is selected for "Highest level of school completed or the highest degree received." among the following categories: No high school diploma / High school diploma or equivalent / Some college but no degree / Associate degree in college (2-year college) / Bachelor's degree (4-year college) / Master's degree (For example: MA, MS, MEng, MEd, MSW, MBA) / Professional School Degree or Doctorate Degree (For example: MD, DDS, DVM, LLB, JD, PhD, EdD), 0 else.
Equivalence income	Total combined household equivalence income during past 12 months (Equivalence income = (upward-adjusted) mean income of each income category in 100,000 USD divided by $1 + 0.5 \times$ (number of adults in a household $- 1$) $+ 0.3 \times$ number of children in a household). Answer options: Less than \$5,000 / \$5,000 to \$7,499 / \$7,500 to \$9,999 / \$10,000 to \$12,499 / \$12,500 to \$14,999 / \$15,000 to \$19,999 / \$20,000 to \$24,999 / \$25,000 to \$29,999 / \$30,000 to \$34,999 / \$35,000 to \$39,999 / \$40,000 to \$49,999 / \$50,000 to \$59,999 / \$60,000 to \$74,999 / \$75,000 to \$99,999 / \$100,000 to \$149,999 / \$150,000 or more.
Currently employed	Binary variable coded as 1 if "Full-time employee", "Part-time employee" or "Self-employed or business owner" is selected for employment status from the following categories: Not working and not currently looking for work / Unemployed and looking for work / Self-employed or business owner / Student / Retired / Part-time employee / Full-time employee, 0 else.

Economic and political preferences, and experienced discrimination

Altruism	Standardized variable for answer to hypothetical question: Share of a 1000 Dollars windfall profit would donate to a good cause.
Preference for efficiency	Standardized variable for hypothetical situation: "You are asked to divide 10 dollars between two people. For every dollar you assign to Person A, he or she receives 1 dollar. For every dollar you assign to Person B, he or she receives 50 Cents. The other 50 Cents are lost." Slider to adjust: the higher amount assigned to Person A, the more efficient.
Willingness to take risks	Standardized variable for answer to question "Generally speaking, are you a person who is fully prepared to take risks or trying to avoid risks?" Answers on an 11-point Likert scale from "unwilling to take risks" to "fully prepared to take risks".
Political view	Standardized variable for political view, elicited on 7-point Likert scale: Extremely liberal / Liberal / Slightly liberal / Moderate, middle of the road / Slightly conservative / Conservative / Extremely conservative.

Experienced discrimination	Binary variable coded as 1 if participant states at least "Yes - sometimes" to have experienced discrimination because of race, ethnicity, gender, age, religion, physical appearance, sexual orientation, or other characteristics on the following 5-point Likert scale: Yes – very often / Yes – often / Yes – sometimes / Yes – rarely / No – never, 0 else.
Perceived fairness	Standardized variable for difference between perceived fairness if quota is applied (0-completely unfair to 6-completely fair) and perceived fairness if quota is not applied (0-completely unfair to 6-completely fair).

Beliefs and In-group favoritism

Belief (self)	Difference in beliefs about oneself winning the tournament with and without the quota (in percentage points).
In-group favoritism index (PARTIAL and SPEC-TYPE)	Based on three components which are each standardized, summed up, and standardized again. This is done separately for each treatment. Components: (i) (willingness to help another tournament participant in own group) – (willingness to help another tournament participant in other group); 7-point Likert scales from 0-not at all to 6-very much ; (ii) (identification with a participant from own group) – (identification with a participant from the other group); 7-point Likert scales from 0-not at all to 6-very much; (iii) (number of smileys sent to tournament participants of own type) – (number of smileys sent to tournament participants of other type); one smiley per (other) participant possible.
Belief (dis)advantaged higher	Binary variables generated from answers to "How do you think the introduction of the special rule affects the probability of winning of the Blue and the Green (multiplier of 0.9) type?" Belief advantaged higher is coded as 1 if "With the special rule, the Blue type has a higher chance of winning than the Green type."is chosen, 0 else. Belief disadvantaged higher is coded as 1 if "With the special rule, the Green type has a higher chance of winning than the Blue type." is chosen, 0 else. The third option is "With the special rule, both groups have about the same chance."
Favoritism index (disadv.)	Based on two components. We standardize each component, sum them up, and standardize again. Components: (i) (willingness to help disadvantaged tournament participant) – (willingness to help advantaged tournament participant); 7-point Likert-scale from 0-not at all to 6-very much; (ii) (number of smileys sent to disadvantaged tournament participant) – (number of smileys sent to advantaged tournament participant); one smiley per participant possible.

Real-world affirmative action programs

Affirmative action favoring women	Binary variable coded as 1 if subjects generally favor affirmative action programs for women, 0 if subjects generally oppose affirmative action programs for women. Answer options in survey: subject generally favors / opposes / has no opinion regarding affirmative action programs for women.
Affirmative action favoring racial minorities	Binary variable coded as 1 if subjects generally favor affirmative action programs for racial minorities, 0 if subjects generally oppose affirmative action programs for racial minorities. Answer options in survey: subject generally favors / opposes / has no opinion regarding affirmative action programs for racial minorities.
Affirmative action favoring people with disabilities	Binary variable coded as 1 if subjects generally favor affirmative action programs for people with disabilities, 0 if subjects generally oppose affirmative action programs for people with disabilities. Answer options in survey: subject generally favors / opposes / has no opinion regarding affirmative action programs for people with disabilities.

Table A.1. Variable descriptions

	Mean	SD	Min	Max
Age (in years)	44.075	15.80	19	79
Female (1 if female, 0 else, same for following variables)	0.491	0.50	0	1
Male	0.495	0.50	0	1
Diverse	0.014	0.12	0	1
White	0.698	0.46	0	1
Asian	0.091	0.29	0	1
Black	0.121	0.33	0	1
Hispanic	0.044	0.21	0	1
Latino	0.016	0.13	0	1
Native	0.001	0.04	0	1
Other ethnicity	0.029	0.17	0	1
English native speaker	0.855	0.35	0	1
Heterosexual	0.859	0.35	0	1
Homosexual	0.040	0.20	0	1
Other sexual orientation	0.080	0.27	0	1
Subject preferred not to state sexual orientation	0.022	0.15	0	1
Number of children	1.043	1.30	0	9
Highest level of school completed (1 lowest, 7 highest)	4.520	1.44	1	7
Mean household income in past 12 months (in USD)	70,169	48,785	2,500	175k
Neither working nor currently looking for work	0.080	0.27	0	1
Unemployed and looking for work	0.088	0.28	0	1
Self-employed or business owner	0.128	0.33	0	1
Student	0.077	0.27	0	1
Retired	0.108	0.31	0	1
Part-time employee	0.121	0.33	0	1
Full-time employee	0.399	0.49	0	1
Altruism (donate between 0 and 1000 USD to good cause)	125.343	169.70	0	1,000
Preference for efficiency (0 least efficient, 10 most efficient)	4.409	2.25	0	10
Willingness to take risks (0 unwilling, 10 fully prepared)	5.259	2.52	0	10
Political view (1 extremely liberal, 7 extremely conservative)	3.092	1.66	1	7
Experienced discrimination (1 never, 5 very often)	2.280	1.04	1	5
Perceived fairness of quota (-6 no quota fairest, 6 quota fairest)	0.498	3.12	−6	6
N				729

Note: For the variable *children*, one participant entered 27 as number of children and age. In this overview table, we treat this likely erroneous entry as missing such that the number of observations for *children* is 728. In order not to lose this observation in the regression analysis, we replace this entry with 0 in the rest of the paper.

Table A.2. Summary statistics

A.2 Additional tables

	(1)	(2)
Panel A: SPEC		
Belief adv. higher	-0.3370***	-0.3451***
	(0.0528)	(0.0117)
Belief disadv. higher	-0.3419***	-0.3231***
	(0.0320)	(0.0317)
Favoritism index (disadv.)		0.1074***
		(0.0037)
N	147	147
Pseudo-R^2	.105	.139
Panel B: SPEC-TYPE		
	disadvantaged type	advantaged type
Belief adv. higher	-0.4057***	-0.2795
	(0.0355)	(0.2302)
Belief disadv. higher	-0.0633**	-0.3072***
	(0.0302)	(0.0202)
N	146	147
Pseudo-R^2	.053	.077

Marginal effects of probit regressions Standard errors in parentheses. Dependent variable: Choice of quota (indicator variable: 1 if implemented, 0 otherwise). * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. *Belief adv. higher* is an indicator variable denoting whether an individual believes that, with the special rule, an advantaged tournament player has higher chances of winning the tournament than a disadvantaged tournament player (1 if yes, 0 otherwise). *Belief disadv. higher* is a similar indicator variable denoting whether an individual believes that, with the special rule, a disadvantaged tournament player has higher chances of winning the tournament than an advantaged tournament player (1 if yes, 0 otherwise). The omitted category is the belief that both types have similar chances of winning the tournament when the quota is in place. *Favoritism index (disadv.)* is a standardized aggregate measure of favoritism toward disadvantaged tournament players by impartial spectators.

Table A.3. Alternative to Table 4. Approval of quota: The role of spectator beliefs and favoritism toward disadvantaged tournament players

	(1) All	(2) PARTIAL disadv.	(3) PARTIAL adv.	(4) SPEC	(5) SPEC-TYPE disadv.	(6) SPEC-TYPE adv.
Treatments						
Partial disadv.	0.1679***					
	(0.0288)					
Partial adv.	-0.1656***					
	(0.0237)					
Spectator disadv.	0.0988***					
	(0.0325)					
Spectator adv.	-0.0049					
	(0.0238)					
Sociodemographics						
Age	-0.0131*	-0.0126	-0.0169	-0.0064	-0.0179**	-0.0063
	(0.0070)	(0.0117)	(0.0144)	(0.0059)	(0.0078)	(0.0053)
Age squared	0.0001*	0.0001	0.0001	0.0001**	0.0002***	0.0000
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Non-male	-0.0217***	-0.0441**	-0.0058	-0.0248	-0.0021	-0.0484***
	(0.0034)	(0.0214)	(0.0040)	(0.0398)	(0.0274)	(0.0088)
White	0.0383	0.0642	0.0320	-0.0308	0.1463**	0.0133**
	(0.0303)	(0.0484)	(0.0669)	(0.2059)	(0.0584)	(0.0063)
English native speaker	0.0356	0.0884*	-0.0498	0.1147	-0.2064*	0.2000***
	(0.0613)	(0.0480)	(0.0711)	(0.1204)	(0.1179)	(0.0515)
Non-heterosexual	-0.0198	-0.0085	-0.0548***	-0.0282	-0.0563	0.0142
	(0.0161)	(0.1021)	(0.0053)	(0.2569)	(0.1132)	(0.0852)
Parent	-0.0179	-0.0723	0.0398	0.0029	-0.1496	0.0476
	(0.0335)	(0.1297)	(0.0704)	(0.0598)	(0.1122)	(0.0340)
College degree	0.0305	0.2975***	-0.1681***	-0.0765	0.0832*	-0.0876
	(0.0327)	(0.0192)	(0.0267)	(0.0597)	(0.0490)	(0.0608)
Equ. income	-0.1657**	-0.7401***	0.5480***	-0.7962**	-0.3355*	-0.2385
	(0.0665)	(0.1749)	(0.1654)	(0.3303)	(0.1831)	(0.1967)
Equ. inc. squared	0.1082***	0.5710***	-0.4043***	0.5293***	0.2310	0.1979
	(0.0353)	(0.1686)	(0.0759)	(0.1828)	(0.2205)	(0.1402)
Currently employed	0.0386***	0.0200	0.0849**	0.1136	0.1205**	0.0073
	(0.0074)	(0.0840)	(0.0344)	(0.0715)	(0.0607)	(0.0082)
Economic and political preferences, experienced discrimination						
Altruism	0.0506***	0.0204*	0.0561***	0.0906***	0.0560	0.0120
	(0.0103)	(0.0114)	(0.0090)	(0.0052)	(0.0471)	(0.0180)
Pref. for efficiency	-0.0274***	0.0168	-0.0020	0.0179	-0.0709***	-0.0621***
	(0.0043)	(0.0247)	(0.0060)	(0.0597)	(0.0049)	(0.0201)
Willingn. to take risks	-0.0116	0.0034	0.0208***	-0.0190	-0.0046	-0.0226
	(0.0115)	(0.0206)	(0.0071)	(0.0195)	(0.0201)	(0.0153)
Political view	-0.0043	-0.0045	0.0612***	-0.0052	-0.0207	-0.0022
	(0.0046)	(0.0199)	(0.0214)	(0.0140)	(0.0282)	(0.0069)
Exp. discrimination	0.0457***	-0.1126**	0.1959***	0.1303***	-0.0155	0.0739***
	(0.0060)	(0.0451)	(0.0386)	(0.0190)	(0.0342)	(0.0142)
Fairness perception						
Perc. fairness of quota	0.1974***	0.1401***	0.1549***	0.2652***	0.2060***	0.2251***
	(0.0038)	(0.0129)	(0.0288)	(0.0107)	(0.0145)	(0.0101)
Observations	729	144	145	147	146	147
Pseudo-R^2	.247	.315	.228	.363	.265	.259

Marginal effects of probit regressions. Standard errors in parentheses. Dependent variable: Choice of quota (indicator variable: 1 if implemented, 0 otherwise). * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Treatment SPEC is baseline category. *Equivalence income* is measured in 100,000 USD. *Altruism, Preference for efficiency, Willingness to take risks, Political view,* and *Perceived fairness of quota* are standardized. *Political view* runs from liberal to conservative. *Experienced discrimination* was elicited on a 5-point Likert scale. We code the top 3 categories "Yes – sometimes" to "Yes – very often" as 1.

Table A.4. Table 5 split by treatment and type. Approval of quota: The role of socio-demographic characteristics, economic and political preferences, experienced discrimination, and fairness perception; split by treatment and type

Affirmative action favoring...	(1) women	(2) minorities	(3) disabled
Data from experiment			
Choice of quota in experiment	0.0330***	0.0147	0.0271***
	(0.0128)	(0.0247)	(0.0050)
Partial disadv.	-0.0399	0.0027	-0.0476
	(0.0362)	(0.0363)	(0.0565)
Partial adv.	0.0029	0.0198	-0.0637
	(0.0470)	(0.0294)	(0.0744)
Spectator disadv.	-0.0217	-0.0254	-0.0473
	(0.0290)	(0.0218)	(0.0691)
Spectator adv.	0.0391	0.0122	-0.0589
	(0.0291)	(0.0259)	(0.0441)
Sociodemographics			
Age	-0.0084*	-0.0125***	-0.0089**
	(0.0046)	(0.0021)	(0.0036)
Age squared	0.0001	0.0001***	0.0001***
	(0.0001)	(0.0000)	(0.0000)
Non-male	0.0457***	0.0522**	0.0218**
	(0.0161)	(0.0239)	(0.0093)
White	-0.1673***	-0.1252***	-0.1077*
	(0.0455)	(0.0154)	(0.0566)
English native speaker	-0.0409	-0.0049	-0.0465
	(0.0397)	(0.0167)	(0.0733)
Non-heterosexual	-0.0202	-0.0372	-0.0269***
	(0.0214)	(0.0259)	(0.0065)
Parent	0.0140	-0.0056	0.0053
	(0.0150)	(0.0085)	(0.0126)
College degree	-0.0805	-0.0653**	-0.0632***
	(0.0504)	(0.0321)	(0.0209)
Equivalence income	0.0872	-0.1199***	-0.0698***
	(0.1332)	(0.0432)	(0.0187)
Equivalence income squared	-0.0784	0.0683***	0.0144*
	(0.0848)	(0.0230)	(0.0087)
Currently employed	0.0198**	0.0261	0.0423*
	(0.0090)	(0.0314)	(0.0237)
Economic and political preferences, experienced discrimination			
Altruism	0.0565***	0.0677***	0.0712***
	(0.0171)	(0.0104)	(0.0188)
Preference for efficiency	-0.0418***	-0.0485***	-0.0407***
	(0.0128)	(0.0093)	(0.0060)
Willingness to take risks	0.0216*	0.0090	0.0062
	(0.0112)	(0.0240)	(0.0253)
Political view (liberal to conservative)	-0.1190***	-0.1123***	-0.1053***
	(0.0084)	(0.0101)	(0.0054)
Experienced discrimination	-0.0446***	-0.0593***	-0.0291***
	(0.0101)	(0.0186)	(0.0081)
Fairness perception			
Perceived fairness of quota	0.0274	0.0276***	0.0294***
	(0.0169)	(0.0039)	(0.0071)
Observations	625	629	617
Pseudo-R^2	.409	.317	.314

Marginal effects of probit regressions. Dependent variable: Opinion on affirmative action policies (indicator variables that equal 1 if a subject favors the respective policy, 0 if they oppose). Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. *Equivalence income* is measured in 100,000 USD. *Altruism, Preference for efficiency, Willingness to take risks, Political view,* and *Perceived fairness of quota* are standardized. *Experienced discrimination* was elicited on a 5-point Likert scale. We code the top 3 categories "Yes – sometimes" to "Yes – very often" as 1. Number of observations varies by column as we do not include subjects with no opinion on the respective policy.

Table A.5. Table 7 including quota choice and treatments. Affirmative action policies: The role of socio-demographic characteristics, economic and political preferences, experienced discrimination, and fairness perception; controlling for data from experiment

	(1)	(2)	(3)
Affirmative action favoring…	women	minorities	disabled
Sociodemographics			
Age	-0.0051	-0.0064	-0.0048
	(0.0034)	(0.0081)	(0.0115)
Age squared	0.0001***	0.0001	0.0001
	(0.0000)	(0.0001)	(0.0001)
Non-male	0.0539*	0.0579***	0.0708***
	(0.0292)	(0.0171)	(0.0182)
White	-0.1135***	-0.0895*	-0.1100
	(0.0248)	(0.0528)	(0.0669)
English native speaker	-0.0093	-0.0114	-0.0268
	(0.0125)	(0.0274)	(0.0685)
Non-heterosexual	0.0271	0.0213	-0.0069
	(0.0304)	(0.0468)	(0.0556)
Parent	0.0473**	-0.0036	0.0257
	(0.0188)	(0.0393)	(0.0367)
College degree	-0.0428	-0.0299	-0.0350
	(0.0526)	(0.0423)	(0.0445)
Equivalence income	0.0865**	0.1342	0.1078
	(0.0404)	(0.1138)	(0.0668)
Equivalence income squared	-0.1097***	-0.1443***	-0.1283***
	(0.0141)	(0.0456)	(0.0209)
Currently employed	0.0333	0.0520	0.0250
	(0.0520)	(0.0671)	(0.0296)
Economic and political preferences, experienced discrimination			
Altruism	0.0509***	0.0557***	0.0406***
	(0.0036)	(0.0110)	(0.0052)
Preference for efficiency	-0.0495***	-0.0566***	-0.0492***
	(0.0107)	(0.0108)	(0.0043)
Willingness to take risks	0.0136	0.0034	0.0242
	(0.0153)	(0.0293)	(0.0238)
Political view (liberal to conservative)	-0.1488***	-0.1300***	-0.1411***
	(0.0067)	(0.0078)	(0.0031)
Experienced discrimination	-0.0259**	-0.0389***	-0.0292*
	(0.0128)	(0.0104)	(0.0175)
Fairness perception			
Perceived fairness of quota	0.0356*	0.0398***	0.0356**
	(0.0215)	(0.0086)	(0.0159)
Observations	729	729	729
Pseudo-R^2	.192	.165	.162

Marginal effects of probit regressions. Dependent variables: Opinion on affirmative action policies (indicator variables that equal 1 if a subject favors the respective policy, 0 if they oppose *or have no opinion on it*). Standard errors in parentheses.* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. *Equivalence income* is measured in 100,000 USD. *Altruism, Preference for efficiency, Willingness to take risks, Political view,* and *Perceived fairness of quota* are standardized. *Experienced discrimination* was elicited on a 5-point Likert scale. We code the top 3 categories "Yes – sometimes" to "Yes – very often" as 1.

Table A.6. Table 7 including answers "no opinion". Affirmative action policies: The role of sociodemographic characteristics, economic and political preferences, experienced discrimination, and fairness perception; using a different definition of the dependent variable.

	Mean	SD	Min	Max	signed-rank test (p-value)
PARTIAL advantaged					
Willingness to help participants of own group	4.007	2.03	0	6	
Willingness to help participants of other group	2.779	1.89	0	6	p<.0001
Identification with participants of own group	4.269	2.00	0	6	
Identification with participants of other group	1.559	1.73	0	6	p<.0001
Share of smileys sent to own group	0.903	0.30	0	1	
Share of smileys sent to other group	0.768	0.42	0	1	p<.0001
In-group favoritism index	-0.098	0.95	-2	2	
N	145				
PARTIAL disadvantaged					
Willingness to help participants of own group	4.521	1.59	0	6	
Willingness to help participants of other group	2.514	2.01	0	6	p<.0001
Identification with participants of own group	4.542	1.58	0	6	
Identification with participants of other group	1.715	1.74	0	6	p<.0001
Share of smileys sent to own group	0.917	0.26	0	1	
Share of smileys sent to other group	0.762	0.42	0	1	p=.0001
In-group favoritism index	0.099	1.04	-2	2	
N	144				
SPEC-TYPE advantaged					
Willingness to help participants of own group	4.571	1.59	0	6	
Willingness to help participants of other group	3.190	1.89	0	6	p<.0001
Identification with participants of own group	4.463	1.56	0	6	
Identification with participants of other group	2.136	1.72	0	6	p<.0001
Share of smileys sent to own group	0.844	0.36	0	1	
Share of smileys sent to other group	0.730	0.43	0	1	p=.0009
In-group favoritism index	-0.216	0.98	-3	2	
N	147				
SPEC-TYPE disadvantaged					
Willingness to help participants of own group	4.945	1.44	0	6	
Willingness to help participants of other group	2.466	1.82	0	6	p<.0001
Identification with participants of own group	4.815	1.48	0	6	
Identification with participants of other group	1.664	1.55	0	6	p<.0001
Share of smileys sent to own group	0.920	0.26	0	1	
Share of smileys sent to other group	0.687	0.46	0	1	p<.0001
In-group favoritism index	0.218	0.97	-3	2	
N	146				
SPEC					
Willingness to help participants of disadvantaged group	3.959	1.74	0	6	
Willingness to help participants of advantaged group	3.286	1.77	0	6	p<.0001
Share of smileys sent to disadvantaged group	0.805	0.38	0	1	
Share of smileys sent to advantaged group	0.757	0.41	0	1	p=.0561
Favoritism index (disadv.)	-0.000	1.00	-4	4	
N	147				

Wilcoxon signed-rank tests for equality of attitudes towards own versus other group, conducted for each component of the in-group favoritism index (willingness to help; identification; share of smileys sent) for treatments PARTIAL and SPEC-TYPE and for each component of the favoritism toward disadvantaged participants index (willingness to help participants of disadvantaged vs. advantaged group; share of smileys sent to disadvantaged vs. advantaged group) for treatment SPEC. With the exception of smileys sent by impartial spectators, there are significant differences for each comparison, implying that the minimal group paradigm (categorization by colors) induced significant differences in attitudes towards the different groups.

Table A.7. Summary statistics for in-group favoritism (for PARTIAL and SPEC-TYPE) and favoritism towards disadvantaged participants (for SPEC)
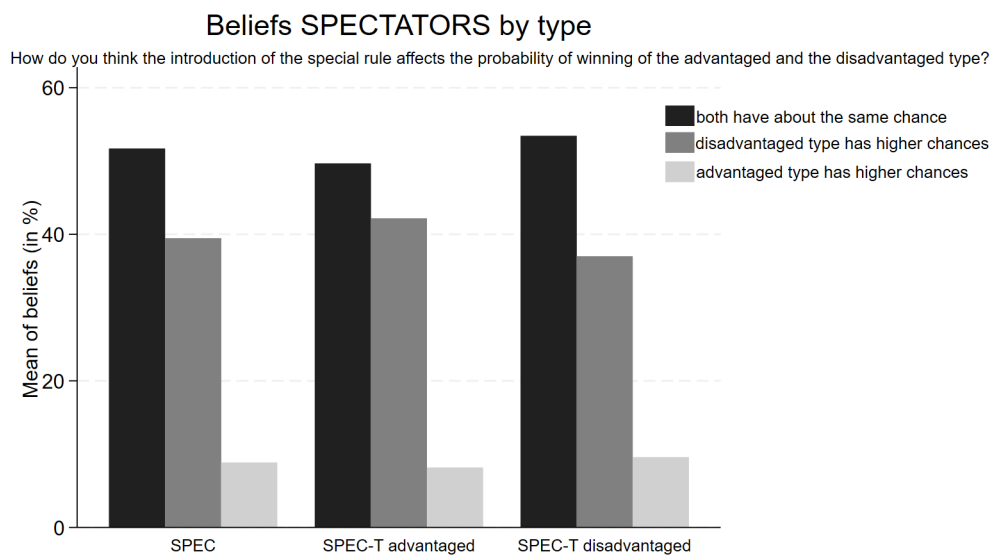
A.3 Additional figures
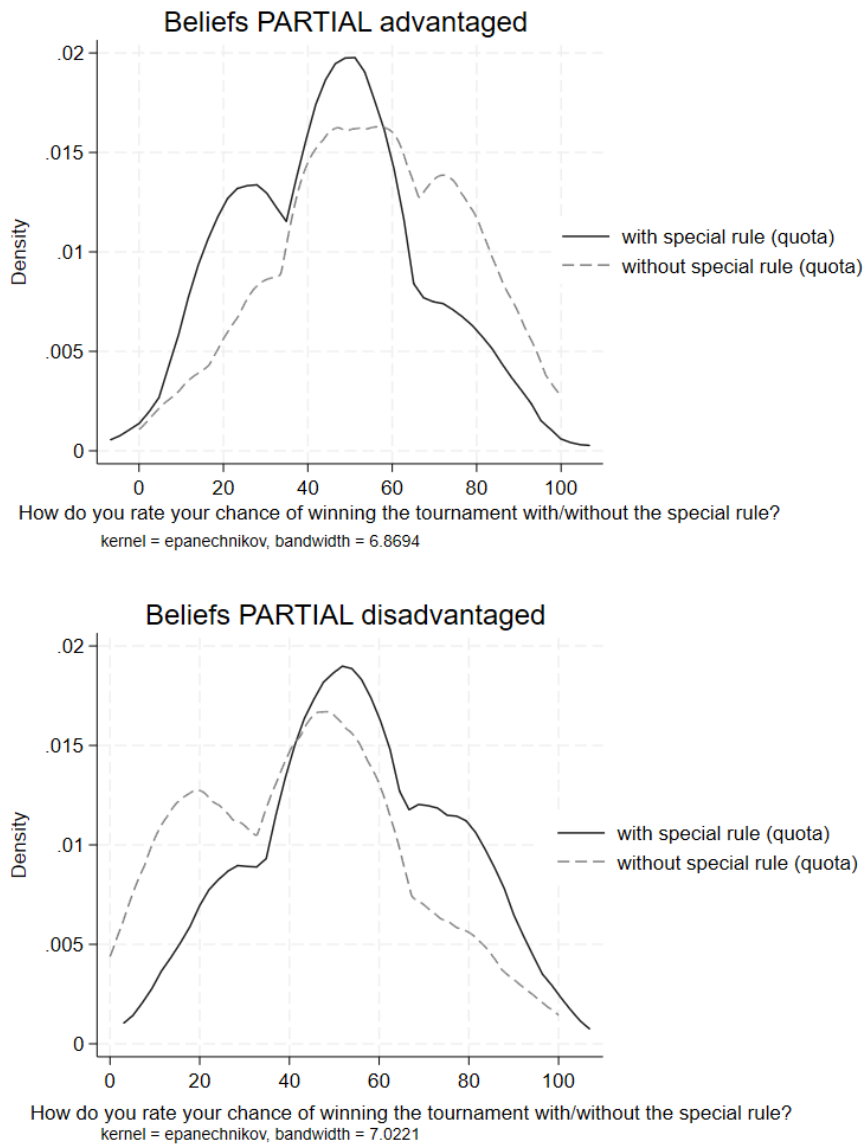
Figure A.1. Beliefs about own chances of winning the tournament

For all treatments and types, we find plausible patterns of beliefs. On average, advantaged subjects in treatment PARTIAL rate their chances of winning higher than disadvantaged subjects without the quota. Moreover, in treatment PARTIAL, disadvantaged subjects see their chances improved by the quota, while advantaged subjects expect to be hurt by it. Both types in SPEC-TYPE believe that the quota does in fact improve disadvantaged tournament players' chances. Impartial spectators (treatment SPEC) rate the chances of disadvantaged subjects without the quota being in place lowest, and those of advantaged subjects without the quota being in

place highest. Moreover, impartial spectators in SPEC believe that the quota improves disadvantaged tournament players' chances of winning the tournament.

Beliefs SPECTATORS by type

How do you think the introduction of the special rule affects the probability of winning of the advantaged and the disadvantaged type?

Figure A.2. Spectators' beliefs about the effect of introducing a quota.

B Experimental instructions (for online publication)

Section 1: Introduction. *Page 1: Overall instruction*

ALL TREATMENTS:
Welcome! Thank you for participating in this study!

All your decisions and answers will remain confidential and anonymous.

It is essential to participate in the study using a laptop or desktop computer. Participation using phone or tablet is **not possible**. If you are currently using a phone or tablet, either quit the study or close your browser and follow the link on a laptop or computer instead.

It is also essential to participate via one of these browsers: **Google Chrome, Microsoft Edge, Firefox**. If you are currently using a different browser, either quit the study or close your current browser and follow the link on Google Chrome, Microsoft Edge, or Firefox instead.

Please also ensure you have a stable and fast internet connection and power supply throughout the study. You need a high bandwidth so that the study runs smoothly. If the connection is interrupted and you drop out of the study, you will likely not be able to continue participating in the study and therefore will not be paid.

Page 2: Structure of the study and information about treatment and type

PARTIAL:
Structure of the study:
During this study, you will participate in a tournament, in a decision-making task and answer a questionnaire. Unlike what you may be used to not only your own decisions but also the decisions of other participants will determine your earnings. Your total earnings will be the payment from the tournament plus an additional 4.5 USD.

SPEC-TYPE and SPEC:
Structure of the study:
During this study, you will participate in a tournament, in a decision-making task and answer a questionnaire. Your total earnings will be the payment of 2 USD from the decision-making task plus an additional 4.5 USD.

ALL TREATMENTS:
You will receive your earnings within ten days after completion of the study via

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your Prolific account.

All other explanations will be given in a stepwise manner at the beginning of each part of the study.

Please do not hesitate to message us on Prolific if anything is unclear.

Section 2: Affirmative action choice and belief on rank. *Page 3: The study –* *Information about treatment*

PARTIAL: skip this page

SPEC-TYPE and SPEC:
Types of Players and Tasks

<u>Task:</u> Some of the other participants of this study are decision makers and complete the same decision-making task as you. Some of the other participants of this study are tournament participants and take part in a tournament.

Page 4: Information for treatments SPEC-TYPE and SPEC PARTIAL: skip this page
You are a decision-maker.

Page 4a: The trial task

SPEC-TYPE and SPEC: skip this page

PARTIAL:
The Word Encoding Task
In the tournament, you will complete a word encoding task. Before we explain the details of the tournament, you will have 2 minutes to try out the task yourself.

In the task, you will see a number of words and your task will be to encode these words by substituting the letters of the alphabet with numbers using a table like this:

Example: You are given the word DAI. The letters in the table show that D=285, A=289, and I=978.

Once you encode a word correctly, the computer will prompt you with another word which you will be asked to encode. Once you encode that word, you will be given another word and so on.

You may now try the task yourself for 2 minutes. The remaining time is displayed in the right top corner of your screen. The time starts once you click "Next".

Page 4b: The trial task

SPEC-TYPE and SPEC: skip this page

PARTIAL: Complete trial task for 2 minutes

Page 5: Real-effort task and information about multipliers and color.

PARTIAL: **Colors and Multipliers**

(SPEC and SPEC-TYPE):
Colors

ALL TREATMENTS: **Color:** Each (*SPEC:* tournament) participant is randomly assigned to one of two groups, the Green Group or the Blue Group. This assignment remains the same throughout the study. Half of the (*SPEC:* tournament) participants will be in the Green Group. The other half, will be in the Blue Group. (*SPEC:* Decision makers (as you) are not assigned a group.) (*SPEC-TYPE:* Both tournament participants and decision makers are assigned a group.)

PARTIAL AND SPEC-TYPE:
You belong to the Green [Blue] Group.

PARTIAL:
During the tournament, you will complete the word encoding task for 5 minutes. Your earnings from this task will depend on what we call "final performance". It consists of the number of correctly encoded words times a multiplier. Participants in the Green Group have a multiplier of 0.9. Participants in the Blue Group have a

multiplier of 1.

For example, if you are in the Green Group and you encode 10 words correctly, your final performance is 10 x 0.9 = 9 words. If you are in the Blue Group and you encode 10 words correctly, your final performance is 10 x 1 = 10 words.

Since you are in the Green [Blue] Group your final performance is:

Final performance = 0.9 x total number of correctly encoded words in five minutes [Final performance = 1 x total number of correctly encoded words in five minutes]

Page 6a: Explain tournament and choice

PARTIAL:
The Tournament

Group allocation: You take part in the tournament in a group of six participants, with three members of the Green Group and three other members of the Blue Group. The groups are formed randomly and stay the same throughout the study.

Rules of the tournament:
In the tournament two winners are determined. The winners are the two participants with highest final performance (= number of correctly encoded words x multiplier). The two winners receive a prize of 6 USD, while the other four tournament participants receive no prize.

So your payment depends on how high your final performance is compared to the other five tournament participants.

In addition, a **special rule** might be applied:
At least one winner must be a member of the Green Group who has the low multiplier of 0.9. If this is not automatically the case given the final performances of the tournament participants, the tournament participant with the highest performance of the three members of the Green Group will replace the tournament participant with the second highest final performance as a winner.

If there is a tie between two tournament participants, the winner will be determined randomly.

Choice of the tournament rule: Whether or not this special rule is applied to the tournament depends on *the decisions of the tournament participants*. Each will choose whether or not they want the special rule to be applied. One tournament participant's choice will be randomly selected to be implemented for the whole

group. This means there is a 1/6 probability that your choice will be implemented.

SPEC-TYPE and SPEC:
Rules of the Tournament

As a decision-maker, you will decide on the rules of the tournament but not take part in it yourself.

<u>**Information about the tournament:**</u>

- <u>**Group allocation:**</u> Each tournament participant takes part in the tournament in a group of six, with three members of the Green Group and three other members of the Blue Group. The groups are formed randomly and stay the same throughout the study.

- <u>**Task:**</u> Tournament participants will see a number of words. Their task will be to encode as many of these words as possible in 5 mins. They do so by substituting the letters of the alphabet with numbers using an Encryption Table (see picture below). All tournament participants will be given the same words to encode in the same sequence.

- <u>**Rules of the tournament:**</u> Tournament participants' earnings will depend on what we call "final performance". It consists of number of correctly encoded words times a multiplier. The color of their group determines the multiplier of each tournament participant. Tournament participants in the Green Group have a multiplier of 0.9. Tournament participants in the Blue Group have a multiplier of 1.

For example, for tournament participants in the Green Group who encode 10 words correctly, their final performance is 10 x 0.9 = 9 words. For tournament participants in the Blue Group who encode 10 tasks correctly, their final performance is 10 x 1 = 10 words.

The two tournament participants with highest final performance (= number of correctly encoded words x multiplier) are the two winners of the tournament.

The two winners receive a prize of 6 USD, while the other four tournament participants receive no prize.

Special rule: In addition, a **special rule** might be applied: At least one winner must be a member of the Green Group who has the low multiplier of 0.9. If this is not automatically the case given the total performances of the tournament participant, the tournament participant with the highest performance of the three members of the Green Group will replace the tournament participant with the second highest final performance as a winner.

If there is a tie between two tournament participants, the winner will be determined randomly.

Your choice of the tournament rule: Whether or not this special rule is applied to the tournament depends on *the decisions of you and five other randomly selected decision-makers.* Each will choose whether or not they want the special rule to be applied. One decision maker's choice will be randomly selected to be applied to the tournament. This means there is a 1/6 probability that your choice will be implemented.

ALL TREATMENTS: (Attention check 1)

Question

This question is simple: When asked for your favorite city you must enter the word smihr.
Question: What is your favorite city?

Page 6b: Explain tournament and choice

ALL TREATMENTS:
Examples

Before you make your choice of the tournament rule, we ask you to answer the following questions. Consider two examples.

Example 1:
In a group of six tournament participants, the final performances are as follows:

Tournament participant	Color	Multiplier	Number of correctly encoded words	Final performance
1	Green	0.9	1	0.9
2	Green	0.9	2	1.8
3	Green	0.9	3	2.7
4	Blue	1	1	1
5	Blue	1	1	1
6	Blue	1	3	3

Question 1: Assuming that the special rule **does not apply**, who are the two winners?

- *If 3&6:* Your answer is **correct**. The two tournament participants with the highest final performance (= number of correctly encoded words x multiplier) are the two winners of the tournament.

- *Otherwise*: Your answer is **incorrect**. The two tournament with the highest final performance (= number of correctly encoded words x multiplier) are the two winners of the tournament. In the example, these are tournament participants 3 and 6.

Question 2: Assuming that the special rule **applies**, who are the two winners?

- *If 3&6:* Your answer is **correct**. Tournament participants 3 and 6 have the highest final performance (=number of correctly encoded words x multiplier) and are the winners of the tournament.

  Since the special rule applies at least one winner must be a tournament participants from the Green Group. This is the case for tournament participant 3. So the special rule is automatically fulfilled.

- *Otherwise*: Your answer is **incorrect**. Tournament participants 3 and 6 have the highest final performance (= number of correctly encoded words x multiplier) and are the winners of the tournament.

  Since the special rule applies at least one winner must be a tournament participant from the Green Group. This is the case for tournament participant 3. So the special rule is automatically fulfilled.

Page 6b: Explain tournament and choice (Control q – page 2)

ALL TREATMENTS:

Example 2:
In a group of six tournament participants, the final performances are as follows:

Tournament participant	Color	Multiplier	Number of correctly encoded words	Final performance
1	Green	0.9	3	2.7
2	Green	0.9	2	1.8
3	Green	0.9	1	0.9
4	Blue	1	1	1
5	Blue	1	3	3
6	Blue	1	4	4

Question 3: Assuming that the special rule **does not apply**, who are the two winners?

- *If 5&6:* Your answer is **correct**. Tournament participants 5 and 6 have the highest final performance (= number of correctly encoded words x multiplier) and are therefore the winners of the tournament.

- *Otherwise:* Your answer is **incorrect**. Tournament participants 5 and 6 have the highest final performance (= number of correctly encoded words x multiplier) and are therefore the winners of the tournament.

  Question 4: Assuming that the special rule **applies**, who are the two winners?

- *If 1&6:* Your answer is **correct**. The two tournament participants with highest final performance (= number of correctly encoded words x multiplier) are tournament participants 5 and 6.

  Since the special rule applies at least one winner must be a tournament participant from the Green Group. This is not automatically fulfilled. Therefore, (as the tournament participant with the highest final performance among those from the Green Group) tournament participant 1 replaces tournament participant 5 as a winner.

  Thus, tournament participants 1 and 6 are the winners.

- *Otherwise:* Your answer is **incorrect**. The two tournament participants with the highest final performance (= number of correctly encoded words x multiplier) are tournament participants 5 and 6.

  Since the special rule applies at least one winner must be a tournament participant from the Green Group. This is not automatically fulfilled. Therefore, (as the tournament participant with the highest final performance among those from the Green Group) tournament participant 1 replaces tournament participant 5 as a winner.

  Thus, tournament participants 1 and 6 are the winners.

Next, you will make your choice of the tournament rule.

Page 7: Choice

ALL TREATMENTS:
Your Choice

- **The special rule is not applied:** The two tournament participants with highest final performance (= number of correctly encoded words x multiplier) are the two winners of the tournament, regardless of whether they are in the Green Group or the Blue Group.

  or

- **The special rule is applied:** At least one winner must be a member of the Green Group who has the low multiplier of 0.9. If this is not automatically the case, the tournament participant with the highest performance among the three members of the Green Group will replace the tournament participant with the second highest final performance as a winner.

Which rule do you choose? Please note that this is an important choice because it may affect all tournament participants' earnings.

(Apply the special rule / Do not apply the special rule)

Page 8a: Guesses

PARTIAL:
Guesses

Do you expect to be more or less or equally likely to win the tournament **with the special rule than without the special rule?**
(Less likely/Equally likely/ More likely)

How do you rate your chance of winning the tournament **with the special rule?**
(Slider from 0 to 100%)

How do you rate your chance of winning the tournament **without the special rule?**
(Slider from 0 to 100%)

(Attention check 2)

Please click on More likely:
(Less likely/Equally likely/ More likely)

SPEC-TYPE and SPEC:
Guesses

Do you expect tournament participants with the color **Green** (Multiplier of 0.9) to be more or less or equally likely to win the tournament **with the special rule than without the special rule?**
(Less likely/Equally likely/More likely)

Do you expect tournament participants with the color **Blue** (Multiplier of 1) to be more or less or equally likely to win the tournament **with the special rule than without the special rule?**
(Less likely/Equally likely/More likely)

SPEC: If you were a tournament participant of color **Green** (Multiplier of 0.9), would you expect yourself to be more or less or equally likely to win the tournament **with the special rule than without the special rule?**
(Less likely/Equally likely/More likely)

If you were a tournament participant of color **Blue** (Multiplier of 1), would you expect yourself to be more or less or equally likely to win the tournament **with the special rule than without the special rule?**
(Less likely/Equally likely/More likely)

SPEC-TYPE:
If you were a tournament participant, would you expect yourself to be more or less or equally likely to win the tournament **with the special rule than without the special rule?**
(Less likely/Equally likely/ More likely)

SPEC-TYPE and SPEC:
How do you think the introduction of the special rule affects the probability of winning of the Blue and the Green (Multiplier of 0.9) type? (choose one answer)

- With the special rule, both groups have about the same chance

- With the special rule, the Blue type has a higher chance of winning than the green type

- With the special rule, the Green type has a higher chance of winning than the blue type

  (Attention check 2)

Please click on More likely:
(Less likely/Equally likely/ More likely)

Page 8b: Guesses
SPEC-TYPE and SPEC:

How do you rate the average chance of winning the tournament of a tournament participant with color **Green (Multiplier of 0.9) with the special rule?**
(Slider from 0 to 100%)

How do you rate the average chance of winning the tournament of a tournament participant with color **Green (Multiplier of 0.9) without the special rule?**
(Slider from 0 to 100%)

How do you rate the average chance of winning the tournament of a tournament participant with color **Blue (Multiplier of 1) with the special rule?**
(Slider from 0 to 100%)

How do you rate the average chance of winning the tournament of a tournament participant with color **Blue (Multiplier of 1) without the special rule?**
(Slider from 0 to 100%)

Page 8c: Guesses
SPEC-TYPE and SPEC:

If you yourself were a tournament participant of the **Green Group (Multiplier of 0.9),** how would you rate your own chances of winning the tournament **with the special rule?**
(Slider from 0 to 100%)

If you yourself were a tournament participant of the **Green Group (Multiplier of 0.9),** how would you rate your own chances of winning the tournament **without the special rule?**
(Slider from 0 to 100%)

If you yourself were a tournament participant of the **Blue Group (Multiplier of 1),** how would you rate your own your chances of winning the tournament **with the special rule?**
(Slider from 0 to 100%)

If you yourself were a tournament participant of the **Blue Group (Multiplier of 1),** how would you rate your own chances of winning the tournament **without the special rule?**

(Slider from 0 to 100%)

Section 3: The real-effort task.   *Page 9a: The task - Start*

SPEC-TYPE and SPEC: skip this page

PARTIAL:
Tournament

You will now participate in the tournament. Whether or not the special rule applies depends on the choices you and the other 5 tournament participants just made. You will learn whether or not the special rule applies in the feedback after the experiment.

You will now work on the word encoding task under tournament conditions for 5 minutes. The remaining time is displayed at the top corner of your screen. The time starts once you click "Next".

Page 9b: The task
SPEC-TYPE and SPEC: skip this page

PARTIAL: complete real-effort task for 5 mins

Page 10: Interim

PARTIAL:
The time for the word encoding task is up. You encoded [XXX] words correctly, and [YYY] words incorrectly.

You will be informed about the outcome of the tournament in a separate feedback e-mail when you receive your payment.

ALL TREATMENTS:
The next part is a questionnaire.

Section 4: Survey: In-group favoritism.   *Page 11: Question 1*

ALL TREATMENTS: **Questionnaire**

PARTIAL:
Reminder: You are in the Green [Blue] Group.

SPEC:
Reminder: You are a decision-maker.

SPEC-TYPE:
Reminder: You are a decision-maker and are in the Green [Blue] Group.

ALL TREATMENTS: On a scale between 0 (not at all) and 6 (very much),

SPEC and SPEC-TYPE:

How much are you willing to help a tournament participant in the Green Group?
(Scale from 0 (not at all) to 6 (very much))

How much are you willing to help a tournament participant in the Blue Group?
(Scale from 0 (not at all) to 6 (very much))

How much do you identify yourself with tournament participants in the Green Group?
(Scale from 0 (not at all) to 6 (very much))

How much do you identify yourself with tournament participants in the Blue Group?
(Scale from 0 (not at all) to 6 (very much))

PARTIAL:

How much are you willing to help another tournament participant in the Green Group?
(Scale from 0 (not at all) to 6 (very much))

How much are you willing to help another tournament participant in the Blue Group?
(Scale from 0 (not at all) to 6 (very much))

How much do you identify yourself with other tournament participants in the Green Group?
(Scale from 0 (not at all) to 6 (very much))

How much do you identify yourself with other tournament participants in the Blue Group?

(Scale from 0 (not at all) to 6 (very much))

Page 12: Smiley icons

ALL TREATMENTS:
Sending Smileys

As a friendly gesture you can send a smiley icon to tournament participants (*PARTIAL:* of your group). The smileys you receive from others, as well as the smileys others receive from you will be delivered together in the feedback emails when you receive your payment.

To whom do you want to send a smiley icon?

PARTIAL (Green):

- Tournament participant 1 (Green) is you.

- To tournament participant 2 (Green) (Yes-no)

- To Tournament participant 3 (Green) (Yes-no)

- To tournament participant 4 (Blue) (Yes-no)

- To tournament participant 5 (Blue) (Yes-no)

- To tournament participant 6 (Blue) (Yes-no)

  PARTIAL (Blue):

- To tournament participant 1 (Green) (Yes-no)

- To tournament participant 2 (Green) (Yes-no)

- To Tournament participant 3 (Green) (Yes-no)

- To tournament participant 4 (Blue) (Yes-no)

- To tournament participant 5 (Blue) (Yes-no)

- Tournament participant 6 (Blue) is you.

  SPEC-TYPE and SPEC:

- To tournament participant 1 (Green) (Yes-no)

- To tournament participant 2 (Green) (Yes-no)

- To Tournament participant 3 (Green) (Yes-no)

- To tournament participant 4 (Blue) (Yes-no)

- To tournament participant 5 (Blue) (Yes-no)

- To tournament participant 6 (Blue) (Yes-no)

C Questionnaire (for online publication)

Section 5: Questionnaire. *(same for all treatments)*

Page 13: Affirmative action in the real world (Randomized order).

Please answer the following questions.

Do you generally favor or oppose affirmative action programs for women? (Options in random order.)
- Favor
- Oppose
- No opinion

Do you generally favor or oppose affirmative action programs for racial minorities? (Options in random order.)
- Favor
- Oppose
- No opinion

Do you generally favor or oppose affirmative action programs for people with disabilities? (Options in random order.)
- Favor
- Oppose
- No opinion

Page 14: Gen risk question

Please answer the following question.

How do you see yourself? Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks? Please tick a box on the scale, where the value 0 means: 'unwilling to take risks' and the value 10 means: 'fully prepared to take risk'.

Page 15: Altruism

Please answer the following question.

Imagine the following situation: Today you unexpectedly received 1,000 USD. How much of this amount would you donate to a good cause?

(enter number between 0 and 1000)

Page 16: Socio-demographic variables

Please answer the following questions about yourself.

What is you gender? (options: Male, Female, Diverse).

If you answered Diverse: (free entry)

What is your age? (18-100)

What is your employment status? (options: Full-time employee, Part-time employee, Retired, Student, Self-employed or business owner, Unemployed and looking for work, Not working and not currently looking for work).

If you had to use one of these five commonly-used names to describe your social class, which one would it be? (options: Lower Class or Poor, Working Class, Middle Class, Upper-middle Class, Upper Class).

How many children do you have? (free entry)

Which category represents your total combined household income during the past 12 months? This includes money from jobs, net income from business, farm or rent, pensions, dividends, interest, social security payments and any other money income received. (options: Less than $5,000, $5,000 to $7,499, $7,500 to $9,999, $10,000 to $12,499, $12,500 to $14,999, $15,000 to $19,999, $20,000 to $24,999, $25,000 to $29,999, $30,000 to $34,999, $35,000 to $39,999, $40,000 to $49,999, $50,000 to $59,999, $60,000 to $74,999, $75,000 to $99,999, $100,000 to $149,999, $150,000 or more).

How many children does your household have? (free entry)

How many adults does your household have? (free entry)

What is your ethnicity or cultural background? (options: White, Hispanic, Latino or Spanish origin, Black or African American, American Indian, Alaska Native, Native American, Asian, Pacific Islander, Other)

If you selected Other: (free entry)

What is your mother tongue(s)? (free entry)

What is the highest level of school you have completed or the highest degree you have received? (options: No high school diploma, High school diploma or equivalent, Some college but no degree, Associate degree in college (2-year college), Bachelor's degree (4-year college), Master's degree (For example: MA, MS, MEng, MEd, MSW, MBA), Professional School Degree or Doctoral Degree (For example: MD, DDS, DVM, LLB, JD, PhD, EdD)

What is your sexual orientation? (options: Heterosexual, Homosexual, Other, Prefer not to say)

Other sexual orientation: If you selected Other: (free entry)

Page 17: Political view

Please answer the following question about yourself.

Political: We hear a lot of talk these days about 'liberals' and 'conservatives'. Here is a 7-point-scale on which people's political views are arranged from extremely liberal to extremely conservative. Where would you place yourself on this scale?

(options: Extremely liberal, Liberal, Slightly liberal, Moderate/middle of the road, Slightly conservative, Conservative, Extremely conservative)

Page 18: Experienced discrimination

Please answer the following questions about yourself.

Have you ever experienced discrimination because of your race, ethnicity, gender, age, religion, physical appearance, sexual orientation, or other characteristics?

(options: Yes – very often, Yes – often, Yes – sometimes, Yes – rarely, No – never)

Page 19: Efficiency preferences

Now imagine you are in the following hypothetical situation:
You are asked to divide 10 Dollars between two people. For every dollar you assign to Person A, he or she receives 1 Dollar. For every dollar you assign to Person B, he or she receives 50 Cents. The other 50 Cents are lost.

How would you like to divide the money between them?

Slider: Person A ————————————————Person B

Person A: [X] dollar Person B: [Y] dollar

Please adjust the slider accordingly by clicking on it and moving it horizontally.

(Values for [X] and [Y] adjust when slider is moved.)

Page 20: Fairness perception

On a scale between 0 (completely unfair) and 6 (completely fair):

How fair do you perceive the rules of the tournament if **the special rule is applied?**

How fair do you perceive the rules of the tournament if **the special rule is not applied?**

Reminder:

The special rule is applied: At least one winner must be a member of the Green Group who has the low multiplier of 0.9. If this is not automatically the case, the tournament participant with the highest performance among the three members of the Green Group will replace the tournament participant with the second highest final performance as a winner.

The special rule is not applied: The two tournament participants with highest final performance (=number of correctly encoded words x multiplier) are the two winners of the tournament, regardless of whether they are in the Green Group or the Blue Group.

Page 21: Overconfidence 1

Next, we ask you to answer a short general knowledge quiz **within two minutes**. The time starts once you click "Next".

Q1: What is the capital city of France?
Wrong Answer: Barcelona
Right Answer: Paris

Q2: How much does an average chimpanzee weigh?
Wrong Answer: 500kg
Right Answer: 50kg

Q3: "The starry night" is a famous painting by
Wrong Answer: Jackson Pollock

Right Answer: Vincent van Gogh

Q4: "Verre" means "glass" in which language?
Wrong Answer: Italian
Right Answer: French

Q5: Amsterdam is nearer to?
Wrong Answer: Antwerp
Right Answer: Rotterdam

Q6: The capital of Hawaii is
Wrong Answer: Waikiki
Right Answer: Honolulu

Q7: Question: Which weighs more?
Wrong Answer: The London Eye
Right Answer: The Eiffel Tower

Q8: "Kieselstein" means "pebble" in which language?
Wrong Answer: Russian
Right Answer: German

Q9: "The Creation of Adam" is a painting by:
Wrong Answer: Leonardo da Vinci
Right Answer: Michelangelo

Q10: "Dronning" means "queen" in which language?
Wrong Answer: Serbian
Right Answer: Norwegian

Page 22: Overconfidence 2

Thank you for answering the quiz questions.

Compared to other participants in this study, where do you think you rank in terms of correctly answered questions?

Please adjust the slider accordingly by clicking on it and moving it horizontally.

Below average 0 ————- X ————————— 100 Above average

[X] people had fewer correct answers than me. [100-X] people had more correct answers than me.

Page 23: Thank you and good-bye.
This was the last question. Thank you for participating in this study.

You will receive a detailed feedback e-mail within ten days. Your payment for participating in this study will be made through Prolific.

Please click on "Go back to Prolific" to mark your participation in this study as completed.