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Choosing Who You Are: The Structure and Behavioral Effects of Revealed Identification Preferences

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Abstract

Social identity is an important driver of behavior. But where do differences in social identity come from? We use a novel laboratory experiment based on a revealed preference approach to analyze how individuals *choose* their identity. Facing a trade-off between monetary payments and belonging to different groups, individuals are willing to forego significant earnings to avoid certain groups and thereby reveal their identification preferences. We then show that these identification preferences are systematically related to behavioral heterogeneity in group-specific social preferences. These results illustrate the importance of identification as a choice and its relevance for explaining individual behavior.

JEL Codes: C91, C92, D03

Keywords: Social Identity, Identification, Social Preferences, Outgroup Discrimination

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1 Introduction

Individuals' social identity – their sense of *who they are* based on their perceived membership in social groups – has substantial effects on *how they act*.¹ Accordingly, a large literature shows the distinct role social identity plays across a broad variety of domains, ranging from the optimal design of the educational system and organizations (Akerlof and Kranton 2002, 2005, Fryer and Torelli 2010), preferences for redistribution (Klor and Shayo 2010), female labor supply and the gender pay gap (Bertrand et al. 2015), dishonest behavior and crime and even risk-taking and amplified dynamics in financial markets (Cohn et al. 2015a,b). Understanding the origins of variation in social identity would therefore facilitate understanding differences in behavior. Existing studies typically assume that an individual takes her identity as given. In contrast, social identity theory claims that individuals not only react to having a specific social identity, but rather that they also actively choose their identity through *identification* (Tajfel 1974). So what if individuals actually do “choose who they are”? Differences in behavior are then not only driven by exogenous variation in individuals' identity, but also endogenously affected by their choice of identity.

In this paper, we investigate whether and in which sense individuals actually do “choose who they are” and whether such endogenous identification affects behavior. Identification constitutes a choice among different alternative identities (social categories). For instance, an Afro-American alumn of Stanford, born in Wisconsin, working for a bank in New York can, among others, identify with her gender, race, alma mater, origin, occupation, or current residence. If individuals differ in these choices, these differences should be reflected in the relation between their social identity and behavior. Accordingly, differences in identification should be a key element in explaining the considerable heterogeneity of identity-related behavior (Mueller 2016, Kranton et al. 2016).

From an economic perspective, treating identity as a choice implies that individuals should have preferences over the respective alternatives. In our experiment, participants face a tradeoff between monetary payments and identification with different groups that have different characteristics. The implicit monetary valuations for different identification choices then imply a preference ordering over these different identities. Our first objective is assessing whether identification preferences explain heterogeneity in the behavioral effects of social

¹The feeling of belonging to a particular group leads to a stronger compliance with behavioral stereotypes (Shih et al. 1999, Benjamin et al. 2010). It segregates society by defining insiders and outsiders which serves as a basis for discrimination, for instance in distributional decisions (Chen and Li 2009, Kranton et al. 2016). It also affects the effectiveness of cooperation and coordination in groups (Chen and Chen 2011, Rustagi and Veronesi 2016) and the extent to which norms are being enforced (Goette et al. 2006).

identity, namely outgroup discrimination in dictator games. If identity is actually a choice, heterogeneity in the strength of identification constitutes a natural source of variation in the behavioral effects of social identity. This would imply that to understand and potentially affect individual behavior originating from social identity requires insights in how individuals actually want to identify. Our second objective is therefore to isolate key factors shaping the structure of identification preferences.

Empirically studying identification is challenging for a number of reasons. As previously discussed, an individual's social identity is multi-dimensional: individuals can identify with many different social categories whose salience and relevance vary over time (Tajfel 1974, Akerlof and Kranton 2000). This multi-dimensionality creates substantial ambiguity with respect to what individuals perceive to be available identities in a specific situation. In economic terminology: the researcher has imperfect knowledge about the individual's perceived choice set. Second, identity is a cognitive concept: it is not a part of how people act, but how people think (Tajfel 1974). Hence, identification is an inherently cognitive action without a straight-forward behavioral – and thus observable – counterpart. Third, in almost all natural settings, different identities have different “instrumental values”. This means that a specific identification choice can typically be rationalized by some sort of expected future (material) payoff. Think, for example, of joining a political party: while it might sound reasonable to interpret such a decision as being driven by identity considerations, it is not clear how to disentangle the identity motive from indirect material motives through improved career and network opportunities within the party. To really isolate *pure identification* preferences, it is crucial to provide a setting in which such strategic concerns about the instrumental value of identity are minimized.²

Our research design features a laboratory experimental setup that explicitly addresses these challenges. We assign participants at two universities to groups based on their institution and their performance in a cognitive task (each university has a high and low-performing group). In this setting, we create a social environment with a fixed, known set of group identities. To make identification choices observable, we rely on the fact that groups can be considered the main domain within which social identity matters. Joining a group and identifying with it are thus closely related. We interpret an individual's *willingness to accept re-assignment to each of the alternative groups* as revealing a preference for identifying with this particular group. Importantly, our design even allows us to elicit these differences

²In a recent field experiment, Burstyzn et al. (2016) argue along similar lines in order to identify political ideology as an intrinsic motivation for political behavior.

within-subject: we allow individuals to express a different willingness to accept reassignment to different alternative groups. Finally, the high degree of anonymity combined with control over monetary payoffs allows us to eliminate any potential direct or indirect incentives for group-switching within or outside the experiment (instrumental values).

Our results show the relevance of deliberate self-identification in understanding identity-related behavior. First, we find that individuals generally display preferences for identification, as they are willing to sacrifice a substantial part of their experimental earnings to identify with specific groups. In particular, the monetary amounts they are willing to forego depend on the characteristics of the group in question.

Second, we find that revealed identification preferences matter for subsequent behavior. In particular, they are systematically related to behavioral heterogeneity in group-specific social preferences as measured by dictator games. Individuals who reveal a stronger preference for identifying with their initial group discriminate more strongly between this group and other groups in allocation choices. We also find individuals discriminating not just between in- and outgroups but even among different outgroups. Strikingly, even this within-subject-heterogeneity in allocation choices is paralleled by the within-subject-heterogeneity in identification preferences: differences in revealed identification preferences predict subsequent allocation choices even up to the behavioral variation towards *different* outgroups.

Finally, we take a closer look at the structure of identification preferences. We focus on two dimensions established within the social psychology literature which have recently also been applied in the economic literature (e.g., Shayo 2009 and Bernard et al. forthcoming). First, individuals prefer to identify with groups whose stereotype(s) are more similar to their own group's characteristics, a motive referred to as "social distance". Second, individuals prefer to identify with groups whose average salient characteristics are superior to those of a comparison group, called "social status". Our experiment is explicitly designed to allow for these two dimensions to vary across different groups and thus to analyze their role in detail. We find that both these dimensions carry a substantial weight in revealed identification preferences.

Our paper contributes to two strands of literature. First, we provide a novel perspective on the rapidly growing empirical literature on social identity in economics. This literature experimentally varies the salient identity an individual perceives while making a decision, and observes a broad variety of behavioral effects. These encompass strengthened social

preferences towards individuals sharing an identity (Chen and Li 2009), increased stereotypical group behavior (Benjamin et al. 2010), and improved cooperation and coordination through shared group identity (Chen and Chen 2011). These papers induce the required exogenous variation in group identification via two methods. Studies like the one by Chen and Li (2009) build on the minimal group paradigm. This means inducing a specific new identity by forming groups based on an arbitrary assignment mechanism.³ In contrast to the original minimal group paradigm (Tajfel et al. 1971), however, most studies then strengthen these identities by subsequent social interaction (for example by chat-supported group activities).⁴ Studies like Benjamin et al. (2010), rather than inducing new identities, experimentally vary the salience of pre-existing dimensions of an individual’s identity via priming methods.⁵ In both approaches, group identity is varied exogenously. In contrast, our paper analyzes the identification behavior of individuals, thereby explicitly considering the endogeneity of an individual’s identity. So far, this aspect has been largely neglected by the experimental economics literature, despite being explored in the theoretical literature on identification as an explicit choice (Akerlof and Kranton 2000, Shayo 2009, Akerlof forthcoming, Bernard et al. forthcoming).

This analysis is also related to the broader literature on the existence, heterogeneity and stability of social preferences (Andreoni and Miller 2002, Charness and Rabin 2002, Engelmann and Strobel 2004, Fisman et al. 2007, Bellemare et al. 2008, Iriberry and Rey-Biel 2011, 2013, Breitmoser 2013, Bruhin et al. 2016, and Schumacher et al. forthcoming). In this regard our paper advocates the consideration of identification behavior as a potential mechanism underlying the existence and heterogeneity of social preferences across settings, individuals, and time.

The papers most closely related to ours are Hargreaves-Heap and Zizzo (2009), Charness et al. (2014) and Kranton et al. (2016). Hargreaves-Heap and Zizzo (2009) study the “value of groups” and document substantial “additional psychological benefits of group membership”. Within our framework, this could be interpreted as indicating a general preference for identification – a result we are able to confirm in our analysis. The focus of our paper will be to investigate the underlying structure of these identification preferences and its behavioral consequences. Charness et al. (2014) analyze group choice in public-good games while explicitly considering the multi-dimensionality of identity. The main result is that induced

³The classical way to do this is to build on preferences for paintings (Tajfel et al. 1971).

⁴Other economic studies using a near minimal group method are, for instance, Ockenfels and Werner (2014).

⁵Other studies using priming techniques are Cohn et al. (2014, 2015a, 2015b).

identities are dominated by endowment levels when it comes to endogenous group choice. This can be interpreted as individuals trading-off the effects on social identity and material payoffs when choosing group affiliation. However, in this setup it is not possible to cleanly isolate revealed preferences for identification as group choice is inherently linked to potential material and strategic effects. Kranton et al. (2016) share the spirit of our analysis in several ways. First, exploiting a within-subject design, they also allow for individual heterogeneity in the strength of identity-related social preferences. Second, they accordingly document different behavioral effects as a result of different identities. Our paper complements this by explicitly analyzing the process underlying these different identities, namely identification decisions of individuals.

The remainder of the paper is structured as follows. Section 2 presents a framework illustrating how identification takes place and why it should matter for economic decisions. Section 3 provides a detailed description of our experimental design. Results are presented in Section 4. Section 5 provides a discussion of our findings and concludes.

2 How do people identify and why should it matter?

Social groups are a major determinant of a person's identity. Once an individual perceives herself as belonging to a certain group, she derives utility from this affiliation both through the favorable comparison of her own groups (ingroups) with relevant others (outgroups) and from following her ingroups' behavioral prescriptions (Tajfel and Turner 1979, Akerlof and Kranton 2000).

However, what an individual perceives as ingroup and outgroup is not simply exogenous. Rather, it is the result of categorization and, even more importantly, identification. A person identifies herself by her perceived belonging to any of several group-characterizing categories (Tajfel and Turner 1979). Tajfel and Turner (1979) highlight that "Individuals must have internalized their group membership as an aspect of their self-concept: they must be subjectively identified with a relevant ingroup. It is not enough that the others define them as a group". Identification with different groups is a choice among different alternative identities (social categories). From an economic perspective, this raises the question about the structure of the particular preferences individuals hold over these choices.

Work in social psychology and economics has identified social status and social distance as two main dimensions which affect utility from social identity (Tajfel and Turner 1979, Turner

et al. 1987, Akerlof and Kranton 2000, Shayo 2009, Bernard et al. 2016). Groups of higher social status facilitate favorable comparisons to other groups (Tajfel et al. 1971, Tajfel 1972, 1978, and Tajfel and Turner 1979). Thus, status influences social identity from an inter-group perspective and individuals should seek to identify with groups of high status (Tajfel 1974). Social distance addresses the intra-group perspective of social identity (Turner et al. 1987). Identifying, i.e. perceiving membership with a given social category, comes more naturally for an individual if her own actual characteristics match this category's stereotypes (Akerlof and Kranton 2000). Hence, individuals should, *ceteris paribus*, prefer to identify with groups whose defining characteristics are more similar to their own.⁶

From an economic perspective, identification should, however, not just be constrained to more frequent identification with groups of high status and small social distance. It should also translate into consistent choices when identification with a certain group entails monetary trade-offs. When identification decisions are associated with group-specific monetary costs, choices should be consistent with maximization of a preference ordering which takes into account the relative price of utility from social identity and balance this with the corresponding monetary opportunity costs. This facilitates the elicitation of underlying identification preferences.

While identification and its associated monetary value can thus be an economically relevant entity by itself, its effect might even extend to other behavioral phenomena relevant for economic outcomes. A particular manifestation of the pursuit to create a favorable comparison between groups is discrimination against outgroups, which has been demonstrated persistently in psychological as well as economic studies (e.g., Tajfel and Turner 1986, Chen and Li 2009). It is thus a natural conjecture that the extent to which people engage in outgroup discrimination depends on the strength by which they identify with their particular ingroup and should therefore care for creating such a favorable comparison.

To illustrate this, consider the framework proposed by Charness and Rabin (2002) and extended by Chen and Li (2009):

π_A and π_B represent monetary payoffs of players A and B. According to the following utility function, w_A measures the weight by which player A's payoff enters player B's utility function:

⁶Social distance is thus also related to the concept of homophily (Currarini and Mengel, 2016), describing the tendency of network ties in social structures being typically formed according to similarity (McPherson et al. 2001, Girard et al. 2015).

$$u_B(\pi_A, \pi_B) = w_A \pi_A + (1 - w_A) \pi_B.$$

Social identity enters via a conditionality on the weight w_A

$$w_A^I = (1 + Ia)w_A$$

where I equals 1 if player A shares the same identity as player B. Thus, the effect of player A's payoff on player B's utility can differ (being scaled up by a) depending on whether players share or not share a common identity.

Chen and Li (2009) experimentally vary whether I is 0 or 1 using minimal group procedures. They document substantial effects of social identity on social preferences. Building on this framework, our conjecture is that variation in the revealed strength of identification with particular groups should explain variation in the strength by which these groups shape social preferences. Formally, this can be interpreted as individuals explicitly choosing I by their identification choices. Subsequently, they should act accordingly when it comes to allocation decisions. The more strongly that individuals identify with a particular group, the larger the impact on their subsequent group-specific behavior. In fact, previous experiments have found that some behavioral effects of social identity become stronger or can only be observed if induced identities are particularly strong. For instance, in Chen and Chen (2011), identity-dependent behavior only occurs when subjects had extensive social interaction, but not in a pure minimal group treatment. Goette et al. (2012) show that altruistic norm enforcement only appears within "real" groups, but not in minimal groups.

3 Research Design

Answering our research question requires measuring both preferences for identification and their behavioral consequences. Whereas discrimination in dictator games across varying recipients is routinely used to measure the latter (Chen and Li 2009), there exists no established procedure to measure identification preferences. Observing group identification is not straightforward: Identification itself is an inherently cognitive process and therefore not readily observable. While certain observable actions are commonly interpreted as proxies for identification (e.g. joining and interacting with particular groups), the social and economic structure of the natural settings in which such social interaction takes place gives rise to alternative motivations, including reputational concerns, sequential or repeated game dynamics, or instrumental values associated with membership in particular groups.

Another major concern regards the multi-dimensionality of an individual’s social identity: given the multitude of different social categories potentially available to an individual, a researcher cannot credibly assess what the perceived alternatives are among which an individual chooses in a given situation. We design a novel laboratory experiment tailored to address these challenges.

3.1 Measuring Identification preferences

Our experiment allows individual choices to reflect the non-monetary utility an individual derives from identification. These choices should thereby reveal identification preferences in an incentive-compatible way. Our approach first categorizes participants into several different groups. Subsequently, they face the possibility of reassignment to any of the other groups. Using the Becker-DeGroot-Marschak (1964) value-elicitation procedure (BDM), we then elicit each individual’s monetary payment required to accept this re-assignment for any particular group. These monetary payments then imply the corresponding structure of identification preferences.

As has been repeatedly shown by psychological and economic studies employing the “minimal-group”-paradigm, laboratory environments create a social environment in which the available set of identities is tightly controlled (Tajfel et al. 1971, Chen and Li 2009). This facilitates the interpretation of revealed identification preferences as it eliminates ambiguity regarding how individuals actually perceive different groups. In the standard framework, the respective group characteristics are intendedly arbitrary, typically reflecting preferences for different painters (Tajfel et al. 1971). However, measuring meaningful identification preferences requires exposing participants to a richer and more meaningful set of alternative groups to identify with. To provide such a setting, we apply two different group assignment rules, which are particularly designed to capture social distance as well as social status. As a result, each group carries not just one but two different characteristics. This allows us to observe differences in identification not only between one’s own ingroup and outgroup, but also across different outgroups with different characteristics.

Importantly, the laboratory environment permits us to explicitly control the monetary benefits and instrumental values associated with the different groups in our experiment. To that end, monetary incentives are muted in all stages unrelated to the elicitation of preferences for identification and identity-contingent discrimination. We thereby avoid that these decisions are affected by income effects arising from prior stages, feelings of generalized reciprocity due to group performance-related payoffs (Yamagishi and Kiyonari 2000) or strategic

considerations for upcoming stages.

3.2 Experimental Design

The experiment consists of five stages. Groups are assigned and characteristics are formed and enhanced in the first two stages. In the third and fourth stages, we measure identification preferences and group-specific dictator game behavior respectively. The fifth and final stage merely increases the psychological relevance of identification. Figure 1 shows the timing of the experiment as well as the information provided to the participants at the beginning of each stage.⁷

Stage 1: Group assignment and identity formation

We conduct the experiment simultaneously at two universities. Participants' affiliation with one of two different public universities serves as a first assignment rule to different groups. Within the groups of participants of each university, we add a second group dimension by sorting participants according to their performance in a real-effort task. Following Bartling et al. (2009), participants are asked to solve as many arithmetic problems (adding three two-digit numbers) as possible in 90 seconds. Participants whose performance exceeds the median number of correctly solved math problems of that session at their university are assigned to the blue group of their university, while those with an inferior score are assigned to the red group of their university.

Conditional on their performance in the math task and their affiliation with the two universities, we then assign participants to non-overlapping groups of four: (i) a group of high performance (blue) from university A, (ii) a group of high performance (blue) from university B, (iii) a group of low performance (red) from university A, and (iv) a group of low performance (red) from university B. Using university affiliation and performance in a real effort task for group assignment provides scope for social distance as well as social status to affect the individuals' identification in both dimensions. To emphasize the status-component of the real effort task even further, participants' screens display a winner's podium with the blue group on top and the red group standing next to it. The corresponding message says that participants assigned to the blue group belonged to the top half of the students in that session at their university. Accordingly, participants in the red group are informed that their performance is in the bottom half within their university.

⁷The instructions are provided in Appendix Appendix C.

We inform participants about the group assignment and the content of the following stage only *after* the completion of the real-effort task. Thus, when completing the task participants have no information about its purpose. This ensures strategic considerations based on the ensuing task do not factor into the effort decision and thereby not actively influence group assignment. The performance in the math-task is not incentivized to rule out that the elicitation of preferences for identification is affected by prior earnings.

Stage 2: Group enhancement

Recent evidence shows that studying identity successfully in the laboratory may often require enhancement through some joint activity (e.g. Eckel and Grossman 2005, Chen and Li 2009, Chen and Chen 2011). We therefore engage participants in a group-quiz. The quiz consists of three quartets of pictures. For each of these three sets of four pictures, groups have to find an umbrella term and have 60 seconds to discuss the solution via the chat program.⁸ Participants then enter their answers individually.⁹ Even though we do not incentivize correct answers and do not provide feedback about the solutions to preclude that performance in the group task affects identification, all participants actively engaged in all of their group’s problems and entered at least one line per quiz.

Stage 3: Elicitation of Revealed Identification Preferences

In a first step, each of the four groups is attached a random monetary value $\pi_{d,s}$, $d \in \{\text{University A, University B}\}$, $s \in \{\text{high performance, low performance}\}$, drawn from a uniform distribution in the interval $[200, 800]$, but not yet revealed to the participants.¹⁰ Importantly, to elicit clean identification preferences, group membership must not entail *any* other potential strategic benefits. The monetary group values are therefore *independent* of the groups’ prior performance in the math task and group-quiz, so that different monetary values cannot give rise to feelings of guilt, spite, or reciprocity towards other group members.

Based on these group values, we request participants to state the minimum difference in the payoff of their own group and any other group, i.e. WTA_k , $k \in \{(d, -s), (-d, s), (-d, -s)\}$, they demand to accept a reassignment to the respective group for the remainder of the ex-

⁸Participants are prohibited to discuss personal information during the chat phase and are informed that violation of this rule would result in expulsion from the experiment. Aside from this constraint, conversations are unrestricted. Chat-logs reveal that there was no communication about personal information. Since participants had no information about subsequent stages at the time of the group chats, they were also unable to discuss their choices in the following tasks in advance.

⁹Although participants are not bound by the prior group discussions, the chat-log reveals that almost all participants entered the group consensus in the chat.

¹⁰Throughout the paper, index d (s) refers to groups of the same university (performance), whereas $-d$ ($-s$) refers to groups of the other university (performance) from the perspective of the respective participant.

periment.¹¹ A purely money-oriented individual would be willing to accept re-assignment to any other group if the group’s monetary value exceeds the one of her own group, given the information that the ensuing task in the new group does not yield any monetary benefits. The stated minimum difference for such an individual should thus be zero. We interpret any deviation in the stated WTA_k as a revealed preference for identification as there are no other potential motives by design.¹²

Out of the four groups, one participant is randomly selected for actual re-assignment to a random group. She is reassigned to that group k only if the stated WTA_k is equal to or below the actual difference in monetary values between the respective groups.¹³ Importantly, by restricting the number of participants who can be reassigned to one, the choice of the $WTAs$ does not depend on participants’ beliefs about the behavior of the other participants, because participants are assured that the characteristics and composition of the other groups do not change apart from their own potential entry. Similarly, since the stated $WTAs$ are not communicated to the other group members who are only informed if anybody left or entered the own group, we can rule out that $WTAs$ are inflated by the motivation to enhance the others’ group identity or diminished by anticipatory regret, if others learn about the own identification.

Stage 4: Two-Person Dictator Games

Before revealing the outcome of the random draws from the third stage, i.e. the realizations of the attached monetary group values and whether they are re-assigned to another group, we ask every participant to make a series of decisions in four two-person dictator games selected from Bartling et al. (2009) to elicit group-specific social preferences (see Appendix C.II.). Just as in the group selection stage, we use the strategy-method to collect decisions for all groups. Every individual has to choose an allocation between herself and another member of each of the three other groups as well as between herself and a member of her own group. For each participant, one game, one role (dictator or receiver), and one partner is randomly selected for payment at the end of the experiment. Importantly, members are

¹¹As an illustration, an individual who states a positive WTA_k , would accept re-assignment to that group only if the payoffs of group k exceed the payoffs of her own group at least by the stated amount, i.e. if $\pi_k - \pi_{d,s} > WTA_k$. If the difference in payoffs between the two groups would fall, however, below that level, she would prefer to remain with her initial group, even if the payoffs of the other group are larger.

¹²Becker et al. (1964) show that this mechanism is incentive-compatible. There has been a recent debate on the reliability of the BDM mechanism for the measurement of WTP-WTA gaps to identify reference-dependence (Cason and Plott 2014, Bartling et al. 2015). However, given that our main results focus on differences between different $WTAs$, our approach appears robust towards these concerns.

¹³For example, if the group of the same university, but different status was selected for re-assignment, the participant would only be re-assigned if $\pi_{d,-s} - \pi_{d,s} > WTA_{d,-s}$ holds.

matched based on the initial group assignment. This means that by switching groups in stage 3, a participant cannot affect the monetary payoff resulting from stage 4.

Stage 5: Picture Quiz

Ultimately, participants play the second sequence of picture puzzles. This happens after the realizations of the monetary group payoffs of all four groups, the group which has been selected for re-assignment, and information about the potential new group composition are revealed. The procedures are identical to stage 2. If the randomly selected individual accepted re-assignment by stating a sufficiently low *WTA* for the randomly selected group, she performs the quiz as a member of the new group. As announced in stage 3, correct solutions to the picture puzzles are again not incentivized.

3.3 Experimental procedures

We conducted four independent computerized sessions using z-Tree (Fischbacher, 2007). The sessions were run simultaneously at the Frankfurt Laboratory for Experimental Economic Research (FLEX) at Goethe University Frankfurt and the Trier Experimental Laboratory (TrEx) at Trier University in the last week of June and the first week of July 2013 with 48 participants per session (24 participants per university). The 12 participants sharing the same two characteristics were randomly divided into groups of four. Thus, each of the four groups was represented thrice per session. To channel the participants' focus on the two different dimensions of identity, the respective university logo was displayed on all screens on the top right, while a group box at top center of the screen reminded them of their assignment to either the blue or red group. The logo and the group box were removed on the group selection screen. As an additional means to make one's group identity more salient, the ensuing instructions were printed on colored paper matching the participant's respective group assignment.

In total, 192 participants took part in our experiment. They were exclusively recruited from the student body of the two universities. Sessions lasted from 75 to 90 minutes. Participants were paid €1 per 100 points earned in the experiment. Including the show-up fee of €4 paid to every participant, participants on average earned €13.03, with the minimum at €8 and the maximum at €18.70. Instructions were split into four parts and distributed sequentially. Participants had to answer two sets of control questions prior to stages 3 and 4 before they made their decisions. After completion of the five stages, the experiment concluded with the solving of the picture puzzles and a post-experimental questionnaire.

4 Results

We present our results in three subsections. First, we focus on revealed identification preferences. and their structure, more specifically the role of social status and social distance (Section 4.1). Then, we analyze how these identification preferences affect subsequent behavior in group-specific dictator games (Section 4.2). Finally, we address potential concerns and alternative explanations and present results from a second round of experiments (Section 4.3).

4.1 Revealed identification preferences

We use stated WTAs in stage three of the experiment as measures for the utility differences derived from identification. Given that group affiliation does not bear any monetary consequences in the experiment aside from the monetary values attached to each group, any purely money-oriented individual should state WTAs of 0. Hence we interpret deviations from zero as revealing identification preferences. Identification with the own group compared to the other group k is thus increasing in the respective WTA_k .

Figure 2 displays the average stated WTAs for each of the three outgroups as well as the average WTA over all three groups (black bar) for all 192 participants. For an overwhelming majority of the participants, group affiliation holds sizeable value. On average, participants require a differential of 182.22 points between the payoffs of their own group and the payoffs of the other groups to accept re-assignment to another group. This value is not just statistically different from 0 (t-test: $p < 0.00005$), but also economically meaningful as it amounts to 36.44% of a participant’s expected earnings of 500 points from the group selection stage. Notably, only 15 participants are purely money-oriented and reveal no preference for identification (WTA equal to 0 or 1), while more than two-thirds of the participants have an average WTA larger than 100 (median=175). 26 percent of the participants even state valuations larger than 250, which corresponds to 50 percent of expected earnings from this experimental stage. Descriptive statistics for the overall average WTA and group-specific WTAs are presented in Table 1.

Positive valuations of own group membership could simply reflect a status quo bias and thus some sort of endowment effect with respect to the “endowed” initial group (Kahneman et al. 1986, Knetsch 1989, Hargreaves-Heap and Zizzo 2009). To rule this out, we exploit the within-subject structure of our design and compare WTAs across different outgroups. In our experiment, a potential endowment effect would equally apply to all three outgroups

and could therefore not explain differences in WTAs across outgroups. WTAs differ substantially across groups and range from 159.3 points for the group of the other university and the same performance to 201.2 points for the other university’s differently performing group (see Table 1). These intergroup WTA differences are significant at the 1 percent level (two-sided dependent t-test for paired samples) for all comparisons. At the individual level, we find that 68.2 percent of the participants ($n=131$) state different WTAs for at least two of the three outgroups. This share even increases to almost 75 percent when focusing only on those participants stating a $WTA > 1$. Differences in identification across groups are not just sizable in terms of frequency, but also with respect to magnitude (see Figure 3). The average standard deviation in WTAs across groups amounts to 55.5 points or 27 percent of the average stated WTA.¹⁴ Given this substantial variation, we are confident that our results do not merely capture status quo bias, but reflect preferences for identification.

Result 1 summarizes our findings up to this point:

Result 1: Identification matters. *Participants are willing to forfeit a significant amount of money to join or stay in a particular group despite the lack of any monetary incentive to do so, thus revealing significant identification preferences. The respective monetary amounts vary across groups, thereby reflecting that identification preferences depend on group characteristics.*

We have now established that participants care about their social identity and trade-off group identification and monetary payoffs. Moreover, our within-subject design not only enables us to rule out that we confound identification preferences with an endowment effect, but also allows us to examine the particular structure of revealed identification preferences. Making use of our particular group assignment rules, we investigate whether revealed identification in our experiment is in accordance with the theoretical foundations laid out in the social identity literature. More specifically, we ask whether we can organize identification preferences along two key dimensions of identification suggested by social psychology – social distance and social status.

To gauge the impact of social distance, we utilize the university dimension of our group assignment rules described in Section 3.2. Participants’ university affiliation constitutes a

¹⁴Importantly, these differences across outgroups do not stem from variation in the number of participants who are purely money-oriented for the respective outgroup, but are the result of differences in the degree of identification. For all three outgroups, the share of participants who stated a WTA unequal to 0 or 1 is close to 90 percent and not different from each other.

natural source for perceived social distance in this particular aspect. We contrast an individual’s WTAs for the two outgroups with the other math performance of the same university and the other university.¹⁵ Varying only the university affiliation of a group while holding math performance (social status) fixed allows to isolate the former’s effect.

Panel (a) of Figure 4 shows the WTAs for the two groups. The graph indicates that social distance matters. The average $WTA^{Distance}$, i.e. $WTA_{-d,-s} - WTA_{d,-s}$, is equal to 15.14. Put differently, participants require 15.14 more points to accept re-assignment to the group from the other university (grey bar) compared to the one from the same university (black bar) (two-sided t-test: $p < 0.005$).¹⁶

Result 2: Social distance matters. *Participants prefer to identify with groups to which they have a lower social distance.*

We apply the same strategy to identify the role of social status. Group assignment based on performance in a skill-based task like solving math-exercises induces social status in the sense that a higher performance is superior compared to a low performance. By focusing on the two groups from the other university, we hold university affiliation (social distance) fixed and only vary math performance. Panel (b) of Figure 4 shows participants’ average WTA with respect to the group of the other university and high status (white bar) and to the group of the other university and low status (dark grey bar). Computing $WTA^{Status} = WTA_{-d,low\ math\ performance} - WTA_{-d,high\ math\ performance}$, we find that the average difference between these two groups amounts to 48.2 points and is both economically (almost 10% of the expected payoff from that experimental stage) and statistically ($p < 0.00005$ in a two-sided t-test) highly significant.

Result 3: Social status matters. *Participants prefer to identify with groups that have a higher social status.*

Notably, individuals differ markedly in their valuation of social status contingent on their own performance. Whereas the average WTA^{Status} exceeds 90 points for members of the high performance groups, it is only 6.3 points for those in the low performance groups (see Figure A.3). This asymmetry in the importance of social status is in line with theoretical

¹⁵E.g., for an individual with high performance in the math task, we compare the WTAs for the two low performance groups of the same and the other university.

¹⁶ $WTA^{Distance}$ does not vary across the two universities, as can be seen in Figure A.3. The mean values for the two universities are 15.67 and 14.60 respectively (t-test: $p = 0.91$).

arguments raised by Wichardt (2008) and Akerlof (2015). Wichardt (2008) suggests that when confronted with multiple dimensions of group characteristics, an individual’s focus on a particular group increases in its positive contribution to their identity in a certain context. Similarly, Akerlof (2015) argues that individuals manage identity by reweighting “achievements” in different dimensions. We provide a more detailed account on this and on heterogeneity in social distance and social status in Appendix A.I.

4.2 Behavioral effects of identification

We now investigate the relation between identification and subsequent behavior and test whether the observed variation in identification preferences is able to explain heterogeneity in group-specific social preferences measured in the dictator games in stage 4 of our experiment.

4.2.1 Preferences for identification and allocation choices: Ingroup vs outgroups

We start by comparing discrimination in allocation choices between a member of one’s own group and a member of the three different outgroups. In a first step, we define outgroup discrimination as choosing a less favorable allocation for a matching partner from one of the three outgroups compared to the one from the ingroup in at least one of the dictator games. According to this definition, 80 participants discriminate in their allocation decisions.

The share of individuals discriminating against outgroups is substantially higher for participants with a high average WTA. Whereas 49.0 percent of the participants whose average WTA is above the median discriminate against outgroups, the corresponding share is only 34.4 percent for participants with a WTA average below the median (see also Figure A.1). This difference is statistically significant (Pearson- χ^2 -test: $p = 0.04$).

This result is also confirmed by regression analyses. Columns (1) and (2) of Table 2 present average marginal effects for logistic regressions of outgroup discrimination in allocation choices on preferences for identification and a set of socio-demographic controls. The dependent variable is a dummy variable that takes the value of 1 if a participant discriminates against outgroups in the allocation decisions and is zero otherwise. We control for a participant’s age, gender, and the enrollment status (using a dummy variable that is equal to 1 if the participant is enrolled in a bachelor program, and 0 otherwise). Standard errors are clustered at the group level and reported in parentheses. In column 1, identification is measured using a median split of average WTA. Closely mirroring the raw difference, indi-

viduals whose average WTA is above the median level are 16 percentage points more likely to discriminate against at least one outgroup. The marginal effect is statistically significant at the 5%-level. In column (2), we employ the average stated WTA in units of 100 over all three alternative groups as a more detailed, intensive margin measure of the degree of identification. Again, we find that the numerical impact is quite large. The probability of discrimination against at least one outgroup in the allocation games rises by 7.2 percentage points for every 100 point increase in the average WTA. This estimate is also statistically significant at the 5%-level.

This relation holds not only at the aggregate level but also for specific outgroups. Table 3 presents results of a logistic regression considering discrimination against a particular outgroup k in the four dictator games and uses the corresponding WTA_k as the explanatory variable. Once again, we find that our measure of identification is highly significant in our estimations. Column (1) reveals that the probability to discriminate against a particular outgroup in the allocation decisions increases by 5.3 percentage points for every 100-points increase in the stated WTA with respect to *this* outgroup. As a test for the importance of identification in comparison to outgroup characteristics, we add two dummy variables in columns (2) and (3). *Outgroup – other uni* indicates whether an outgroup stems from the other university, while *Outgroup – low performance* takes on the value of 1 for outgroups of below median performance in the math task. The numerical impact of identification preferences on outgroup-specific social preferences remains unchanged once we control for outgroup characteristics in column (2) and participants’ socio-demographic information in column (3). Our results reveal that an individual’s decision to discriminate in these allocation choices is driven by her level of identification and not (necessarily) by the exogenous group characteristics. Whereas the coefficients of both characteristics are insignificant, our measure of identification remains a significant predictor of discrimination in the dictator games. This highlights the relevance of endogenous identification as a relevant source of variation in individuals’ social identity.

Result 4: Identification explains ingroup-outgroup discrimination. *Individuals who identify more strongly with their initial group (who have a high average WTA) are more likely to discriminate against outgroups in allocation choices. A given participant is more likely to discriminate against a particular outgroup the lesser she identifies with this particular group (the higher her WTA towards this outgroup).*

4.2.2 Preferences for identification and allocation choices: Between outgroups

Result 4 already provides strong support for our hypothesis that the degree of identification explains heterogeneity in outgroup discrimination. However, our design allows for an even stronger test of the link between identification preferences and group-specific discrimination in allocation choices. Looking at discrimination between outgroups, we analyze if differences in the allocation choices parallel participants' differences in the revealed preferences for identification with these outgroups. Thus, we not only test if participants consider the characteristics of the respective outgroups in both decision domains, but also if they do so consistently.

Looking at the share of participants who discriminate in allocation choices between the three outgroups (see Figure A.1), we find that this share is significantly higher for individuals who also display differences in their identification with the three groups. Out of these 131 participants, 49.6 percent allocate different amounts of money across the outgroups in at least one game (i.e. they discriminate in the same direction), while only 6.56 percent of the 61 individuals who state equal WTAs for the three outgroups do so. This difference is highly statistically significant ($p < 0.001$) and virtually unaffected once we control for socio-demographic factors in a regression. The estimated average marginal effect of identification is 43 percentage points (column (3) of Table 2).

Turning again from the aggregate to the within-subjects level, we next consider pairwise comparisons of two outgroups each, yielding three observations per individual in total.¹⁷ Columns (4) and (5) of Table 3 present average marginal effects of logistic regressions, using the difference in WTAs between the respective outgroups as the explanatory variable. The dependent variable is equal to 1 for each pair of outgroups if a participant chooses a less favorable allocation for the member of the outgroup she is identifying less strongly with and 0 otherwise. Mirroring our previous results, differences in identification once again predict discrimination in allocation decisions. The marginal effect of *Identification* in column (4) reveals that a 100 points higher WTA difference between two outgroups increases the probability of allocation discrimination between the two groups by 8.9 percentage points. This estimate is unaffected when we control for socio-demographic information in column (5). Heterogeneity with respect to identification can thus explain heterogeneity with respect to allocation choices regarding different outgroups.

¹⁷For each participant, we compare (1) the two outgroups from the other university, (2) the outgroup from the own university and the outgroup of the same color but other university, and (3) the outgroup from the own university and the outgroup of the other color and other university.

Result 5: Identification explains outgroup-outgroup discrimination. *Individuals whose identification differs among outgroups are more likely to also differ in their allocation decisions between outgroups. Differences in identification between a particular pair of outgroups explain differences in the likelihood to discriminate between these outgroups at the within-subject level.*

4.3 Discussion and replication study

The results presented thus far are in line with the conjecture that both social distance and social status shape identification preferences and that heterogeneity in these preferences explains differences in behavior induced by the underlying social identity. We have demonstrated that (i) group identification matters, as participants are willing to forego a significant amount of money in order to remain a member of a particular group, that (ii) the structure of the participants' revealed identification preferences can be organized along social distance and social status, two key identity dimensions proposed by social identity theory, and that (iii) lower degrees of identification with a certain group translate into less preferential treatment.

Despite these strong and consistent results, our design might allow for alternative explanations and interpretations of the results. In this section, we address these concerns in two ways. First, we break down the data in more detail and uncover heterogeneity in the behavior of our participants which is clouded in the aggregated results. Second, we report results from a replication study with 128 participants in which we refined the original design to explicitly examine these concerns. Table 5 provides an overview of the key features and differences of the two experiments. The instructions and a full discussion of all the results in more detail are presented in Appendix B. In short, all of our main findings are confirmed in the replication study.

Role and Interpretation of Social Distance

Although $WTA^{Distance}$ is statistically highly significant and clearly confirms the hypothesized role of social distance for identification, it appears to be comparatively small in economic terms. A more detailed analysis reveals that heterogeneity in the individuals' responses to social distance conceals its strength in the previous aggregate analysis. Panel (a) of Figure A.2 displays the average difference in WTAs (bars) and the share of participants who distinguish between outgroups (diamonds). The difference of 15 points (black bar) between

the group of the same university and different performance and the corresponding one of the other university amounts to slightly more than 3 percent of the expected earnings in this stage. Once we restrict our analysis on those 76 individuals who actually discriminate between the two groups, the difference in WTAs becomes much more pronounced and is also economically highly significant. 51 individuals identify more strongly with their own university, requesting 91.47 points (18.3 percent of expected earnings) more to accept re-assignment to the group of the other university (grey bar). 25 participants on the other hand state a higher WTA for the group from their own university compared to the group of the other university (white bar). Their average difference amounts to 70.4 points (or 14.1 percent of expected earnings).

To provide another test for the role and significance of social distance in shaping identification preferences, we chose an emotionally more charged characteristic than university affiliation to induce differences in social distance in our replication study. Unlike in the US, where university affiliation is commonly a source of pride, the emotional attachment is much lower in the German system. One likely reason is the fact that college sports and intercollegiate competition, which fuels rivalries across schools, is nearly non-existent in Germany. We therefore conducted the replication study with supporters of two different professional soccer teams. To dampen the potential for differences in social status within the social distance dimension, we chose two clubs which resemble each other quite closely in their historical achievements: Eintracht Frankfurt and 1. FC Köln. Both teams share a long history in German professional soccer. Both were founding members of the German Bundesliga, played around 1550 Bundesliga matches, and are ranked 9th and 10th in the all-time table. Each of them won the German cup (DFB-Pokal) four times. Köln was relegated to the 2nd division (and afterwards promoted again to the Bundesliga) five times, Frankfurt four times.

Enhancing the relevance of social distance propels identification along this dimension. Comparing the WTAs of the two outgroups who differ only in the affiliation with the soccer clubs but share the same performance in the math task, the WTA difference amounts to 36.7 points. This is not only statistically significant (t-test: $p = 0.0338$), but also substantially closer to identification in the social status dimension (71.2 points) than what we observed in the main study (15.14 vs. 48.2 points). The fact that we observe significant identification preferences with respect to social distance in two separate experimental studies and different characteristics (university as well as soccer club affiliation) supports the claim that social distance plays a significant role in shaping identification preferences. Further, the relative effect size across the two experiments is also in line with the relative strength of the induced

social distance.

Interpreting WTAs as revealed identification preferences

A key feature of our design is its ability to interpret stated WTAs as reflecting pure identification preferences. This ability hinges upon stripping away the consequences of group re-assignment of any potential alternative motive other than identity. For this reason, we made the last round of the experiment – the second chat phase which is potentially carried out in the new group – anonymous and non-incentivized and explicitly informed participants about this. Despite this design feature, one might argue that the second chat phase could still induce motives for group-reassignment other than identity. We tackle this alternative explanation by re-running our analysis for the subset of 121 participants who stated in the post-experimental questionnaire that the second chat phase had no or only low relevance. For these participants, average WTA is 159.7 points (s.e.: 122.07), i.e. still more than 32 % of the expected earnings from that stage, and highly significantly different from 0 ($p < 0.00005$). The same holds for $WTA^{Distance}$ and WTA^{Status} with values of 10.1 points (s.e.: 5.27, $p = 0.058$) and 41.2 points (s.e.: 10.5, $p = 0.0001$) respectively.

Elicitation procedure

Irrespective of the sizable variation in the participants' stated WTAs across groups (see Figure 3), one might argue that our measures of group identification might be inflated by the chosen elicitation procedure. One indicator is the small number of observed zeros, i.e. the low share of individuals who are purely money-oriented and do not care about group affiliation (< 8%). In the replication study, we therefore asked individuals to set their WTA for each group on a scrollbar ranging from -8 Euro to +8 Euro instead of entering a value in a text box. The rationale for this was twofold: on the one hand, this highlighted the possibility that stating a negative WTA (i.e. expressing to prefer another group to the initial one even if this other group earns less money) was viable. On the other hand, it allowed us to specify a default, which we set at 0 so that individuals did not feel compelled to add a positive number as might have been the case with the text boxes. Another concern might be that participants did not understand that they maximize earnings by stating WTAs of zero even though it was clearly stated in the instructions. To rule this out we added a mandatory control question which asked for the optimal strategy of a purely payoff-oriented individual.

Indeed, we find that the share of individuals who do not reveal any preference over the different groups increases significantly under these new conditions. 26.6 % of the participants state WTAs of '0' for all three groups. However, the level of the average WTA remains re-

markably high (see Figure 5). Using the absolute value for the eight participants who state a negative *WTA* for at least one group, the average *WTA* in the replication study amounts to 236.2 points and is significantly different from 0 (t-test: $p < 0.0001$).¹⁸ Thus, our replication study provides even stronger evidence for heterogeneity of identification preferences.

Limited Action Space for Discrimination Decisions

Lastly, we also probed the association between preferences for identification and discrimination in the allocation games by extending the action space in the latter. The set of games used in the main study limited participants' actions to binary decisions and might thus cloud heterogeneity in discrimination behavior for those participants who would like to discriminate at an intermediate level between the two binary options. To account for this, we replaced the four binary dictator games with a single continuous dictator decision.

This design change not just introduces heterogeneity in the allocation decisions at the intensive margin, but also leads to more discrimination at the extensive margin. Whereas in the main study, only 34.0% of the participants discriminated against an outgroup in at least one of the four binary dictator games, this share rises to 50.8% with the continuous dictator game. Even more importantly, discrimination between outgroups by a given individual rises significantly from 21.4% to 46.9%. This within-subject variation allows us to include participant fixed effects in our regression analyses, which absorb any unobserved heterogeneity that might drive allocation decisions (see Table 4).¹⁹ Regressing the amount sent to the receiver of group k in the dictator game on the stated *WTA* for that group, we find all of our previous results confirmed.²⁰ The amount sent reduces significantly with the stated *WTA*, i.e. lower degrees of identification are associated with lower dictator giving. This result is independent of whether we control for outgroup characteristics (i.e. other football club and low performance) or not. Similarly, when we focus again on differences in allocations to different outgroups (columns (3) and (4)), discrimination across groups increases with the corresponding variation in stated *WTAs*, i.e. the degree of identification with the respective groups.

¹⁸While the absolute value of average *WTA* in the replication is higher than in our main experiment, it has to be noted that the range of potential *WTAs* also increased from 600 to 800. Normalizing average stated *WTAs*, we find that average *WTAs* are 30.4% of the maximum permissible *WTA* in our main experiment and 29.5% in the replication.

¹⁹In the main experiment, using fixed effects leads to a substantial reduction of the sample as there is a significant number of individuals who do not discriminate between outgroups due to the binary nature of the decision.

²⁰We set the *WTA* equal to 0 for the receiver from the ingroup.

5 Conclusion

This paper investigates identification as a choice and its role in shaping individual behavior. We analyze if and how individuals want to identify with different groups using a revealed preference approach. We then test whether these revealed preferences for identification explain behavior in the domain of social preferences as measured by allocation decisions in group-specific dictator games.

We find that individuals display economically meaningful and substantially heterogeneous preferences for identification and are willing to forego significant monetary payments in order to choose their social identity. In line with the predictions of social identity theory, we find that participants prefer more strongly identifying with groups that have a higher social status and to which they have a smaller social distance.

Further, we find that identification affects behavior. Participants who identify more strongly with their initial ingroup also discriminate more strongly between this ingroup and other groups in allocation choices. Our experimental design additionally allows us to analyze the within-subject-dimension of allocation choices. Notably, we find a strong connection between the within-subject heterogeneity in identification preferences and the within-subject-heterogeneity in social preferences. Individuals consistently consider the specific identity-related characteristics of groups across different domains. Finally, a replication exercise supports the results from our main experiment and addresses potential alternative explanations.

The observed consistency in revealed identification preferences and discrimination behavior shows the behavioral relevance of considering social identity as an endogenous choice instead of a purely exogenous characteristic. The presented findings provide insights into how individuals make these important identification decisions as they trade-off monetary gains and identity utility.

From an applied perspective, our results provide a novel angle to better understand when and how common group membership can shape behavior, when it does not, and what the underlying mechanism behind these different effects might be. It thereby also helps to assess the effectiveness of attempts to increase identification with organizations and in other economically relevant domains aiming at utilizing the potentially beneficial effects of common group identities. Our paper thus also helps in understanding why increasing the level of identification with a particular group might not be that easy. For example, Carell et al. (2013) find that some individuals tend to avoid interacting with certain peers with whom they

were intended to interact by organizational design. According to our results, strengthening the general feeling of belonging to groups can rather be achieved by shaping the salient characteristics of the particular group such that they match the respective identification preferences of the relevant individuals more closely. As our study shows, social distance and social status appear as particularly promising dimensions to be utilized.

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Tables and Figures

Tables

Table 1: Summary Statistics - Preferences for Identification

	Mean	Std. Dev.	Median	Lower Quart.	Upper Quart.	Min	Max
\overline{WTA}	182.22***	128.85	175.00	86.67	263.33	0.00	600.00
$WTA_{d,-s}$	186.11***	141.25	200.00	100.00	280.00	0.00	600.00
$WTA_{-d,s}$	159.30***	133.77	150.00	50.00	200.00	0.00	600.00
$WTA_{-d,-s}$	201.24***	149.29	200.00	100.00	300.00	0.00	600.00
$WTA^{Distance}$	15.14***	64.03	0.00	12.50	0.00	-211.00	300.00
WTA^{Status}	48.20***	116.73	0.00	0.00	100.00	-200.00	600.00

Notes: \overline{WTA} is the average stated difference in monetary payoffs between one's own group and all three other groups for which a group re-assignment would be accepted. $WTA_{d,-s}$ is the stated difference in payoffs between one's own group and the group from the same university and other math performance for which re-assignment to that group would be accepted. $WTA_{-d,s}$ is the stated difference in payoffs between one's own group and the group from the other university and the same math performance for which re-assignment to that group would be accepted. $WTA_{-d,-s}$ is the stated difference in payoffs between one's own group and the group from the other university and other math performance for which re-assignment to that group would be accepted. $WTA^{Distance}$ measures the difference in the stated willingness-to accept between the group of the other status from the other university and the group of the other status from the same university, i.e. $WTA^{Distance} = WTA_{-d,-s} - WTA_{d,-s}$. WTA^{Status} measures the difference in the stated willingness-to accept between the group of low performance from the other university and the group of high performance from the other university, i.e. $WTA^{Status} = WTA_{-d,low\ math\ performance} - WTA_{-d,high\ math\ performance}$.

* Significant at the 10 percent level (t-test),

** significant at the 5 percent level,

*** significant at the 1 percent level.

Table 2: Identification and Discrimination in Allocation Decisions against Outgroups

	Discrimination		Outgroup discrimination
	(1)	(2)	(3)
Identification			
Dummy	0.160** (0.065)		0.430*** (0.056)
Continuous		0.072** (0.029)	
Age	0.000 (0.011)	0.000 (0.012)	0.009 (0.007)
Gender	-0.160** (0.071)	-0.169** (0.070)	-0.026 (0.067)
Undergrad	-0.013 (0.089)	-0.005 (0.089)	-0.059 (0.072)
Observations	192	192	192
Pseudo R^2	0.036	0.041	0.167

Notes: Average marginal effects of a logistic regression with clustered standard errors at the group level in parentheses. The dependent variable is discrimination between different groups in one of the four distribution games. In columns 1 and 2, the dependent variable is equal to 1 if members of one of the three outgroups were given a lower payoff than members of the own group, and 0 otherwise. In column 3, the dependent variable is equal to 1 if members of the three outgroups received different payoffs, and 0 otherwise. In column 1, the dummy for identification is 1 if the average willingness-to-accept over all three outgroups exceeds the median, and 0 otherwise. In column 2, we use the average stated willingness-to-accept in units of 100 over all three outgroups as the continuous measure of identification. In column 3, the identification dummy is equal to 1 if the willingness-to-accept varies across the three outgroups and 0 otherwise. Age is measured in years, gender is equal to 1 for men, and undergrad is equal to 1 for bachelor students, and 0 otherwise.

* Significant at the 10 percent level,

** significant at the 5 percent level,

*** significant at the 1 percent level.

Table 3: Identification and Discrimination in Allocation Decisions across Outgroups

	Outgroup Discrimination in Allocation Games				
	Ingroup-Outgroup		Outgroup-Outgroup		
	No Controls (1)	Outgroup characteristics (2)	Controls (3)	No Controls (4)	Controls (5)
Identification	0.053*** (0.020)	0.054*** (0.020)	0.056** (0.022)	0.089*** (0.015)	0.082*** (0.016)
Outgroup – Other Uni		0.022 (0.025)	0.022 (0.026)		
Outgroup – Low Performance		0.008 (0.034)	-0.008 (0.030)		
Controls	No	No	Yes	No	Yes
Observations	576	576	576	576	576
Pseudo R^2	0.021	0.021	0.062	0.080	0.109

Notes: Average marginal effects of a logistic regression with clustered standard errors at the individual level in parentheses. In columns (1) - (3), the dependent variable is discrimination in allocation choices between one's own group and each of the three outgroups. It is equal to 1, if the member of the own group is awarded a higher payoff compared to the member of the respective outgroup in one of the four allocation games, and 0 otherwise. In column (4) & (5), the dependent variable is equal to 1 for each pair of outgroups if a participant chooses a less favorable allocation for the member of the outgroup she is identifying less strongly with, and 0 otherwise. Identification is measured as the stated WTA for the particular outgroup in units of 100 in columns (1) - (3). In columns (4) & (5), identification is measured as the difference in $WTAs$ between the respective outgroups. Outgroup - Other Uni is equal to 1, if the outgroup is from the other university, and 0 otherwise. Outgroup - Low Performance is equal to 1 if the outgroup had a low performance in the math task, and 0 otherwise. Controls include age, gender, and undergrad. Age is measured in years, gender is equal to 1 for men, and undergrad is equal to 1 for bachelor students, and 0 otherwise.

* Significant at the 10 percent level,

** significant at the 5 percent level,

*** significant at the 1 percent level.

Table 4: Identification and Discrimination in Allocation Decisions across Outgroups - Replication

	Outgroup Discrimination in Allocation Games			
	Ingroup-Outgroup		Outgroup-Outgroup	
	No Controls	Outgroup characteristics	No Controls	Controls
	(1)	(2)	(3)	(4)
Identification	-1.283*** (0.340)	-0.803*** (0.338)	-1.045*** (0.373)	-1.010*** (0.355)
Outgroup - Other Uni		-6.010*** (1.323)		
Outgroup - Low Performance		1.569* (0.845)		
Fixed Effects	Yes	Yes	No	No
Controls	No	No	No	Yes
Observations	512	512	384	384
R^2	0.052	0.1351	0.027	0.064

Notes: OLS regression with clustered standard errors at the individual level in parentheses. In columns (1) - (2), the dependent variable is the amount given to the recipient in the dictator game for each of the four groups. In columns (3) & (4), the dependent variable is equal to the difference in the amounts given to the recipient in the dictator game for all three different outgroup pairs. Identification is measured as the stated *WTA* for the particular outgroup in units of 100 in columns (1) & (2). In columns (3) & (4), identification is measured as the difference in *WTAs* between the respective outgroups. Outgroup - Other Uni is equal to 1, if the outgroup is from the other university, and 0 otherwise. Outgroup - Low Performance is equal to 1 if the outgroup had a low performance in the math task, and 0 otherwise. Controls include age, gender, and undergrad. Age is measured in years, gender is equal to 1 for men, and undergrad is equal to 1 for bachelor students, and 0 otherwise.

* Significant at the 10 percent level,

** significant at the 5 percent level,

*** significant at the 1 percent level.

Table 5: Comparison Experimental Designs

	Main Study	Replication Study
Laboratories	Frankfurt & Trier	Frankfurt & Cologne
Participants	192	128
Stage 1: Group Assignment		
Social Distance	University	Soccer Club
Social Status	Performance	Math Task
Stage 3: Elicitation Procedure		
Elicitation Procedure	Text Box	Scrollbar
Control Questions	Examples	Optimal Strategies
Stage 4: Allocation Decisions	4 Binary Dictator Games	1 Continuous Dictator Game
Stage 5: Payoff-Consequences	Implicit	Explicit

Figures

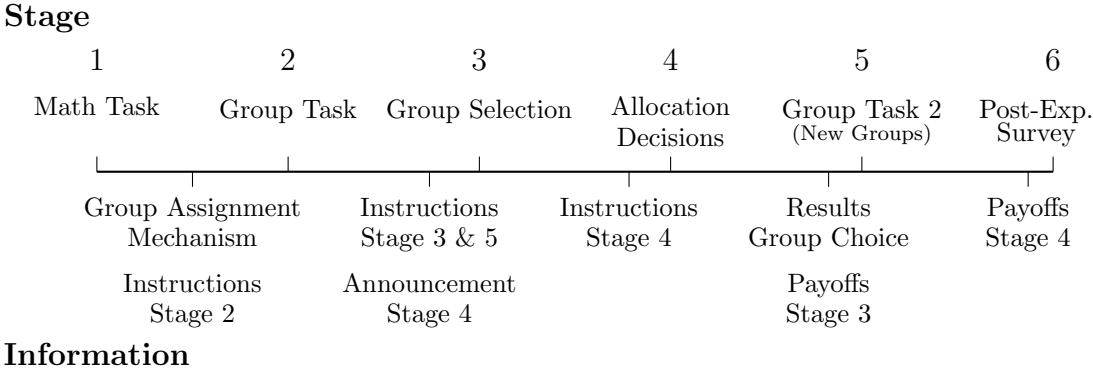


Figure 1: Timeline Experiment

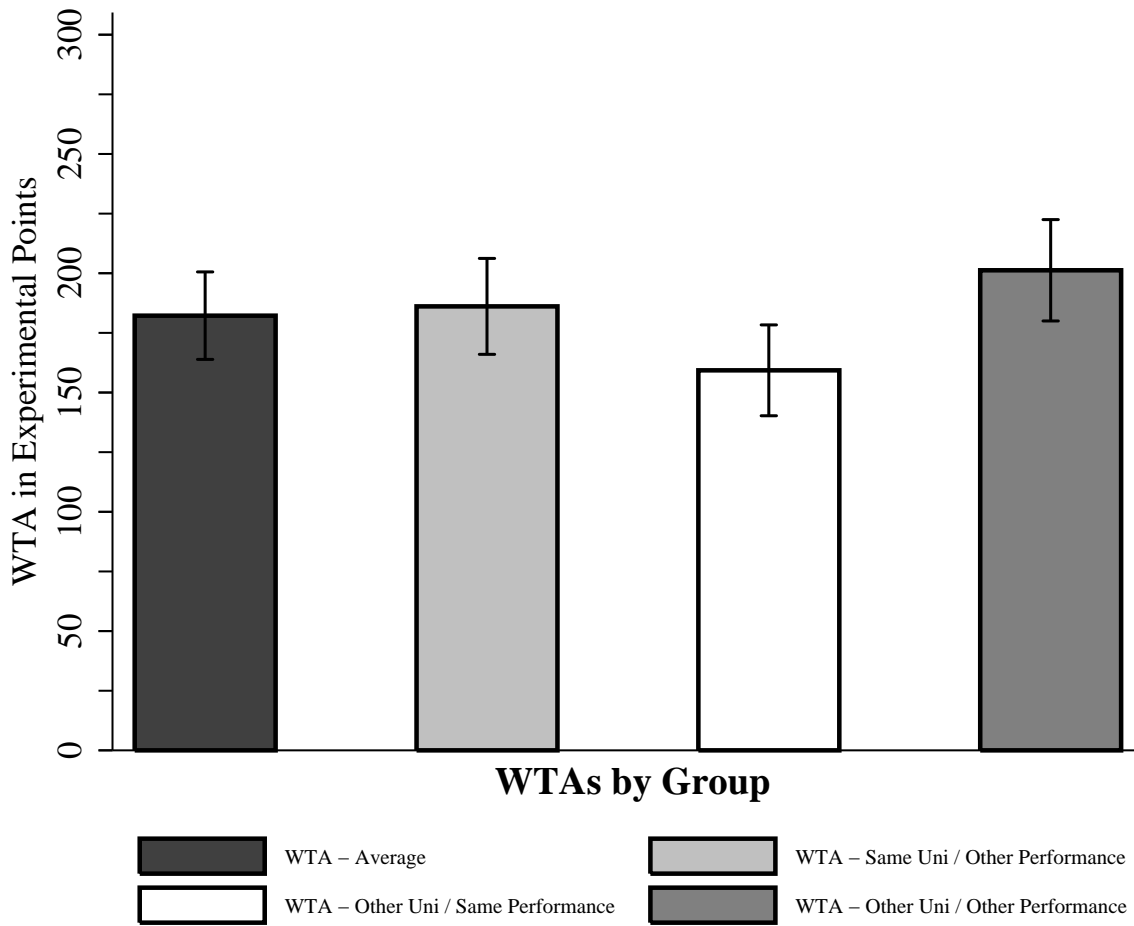
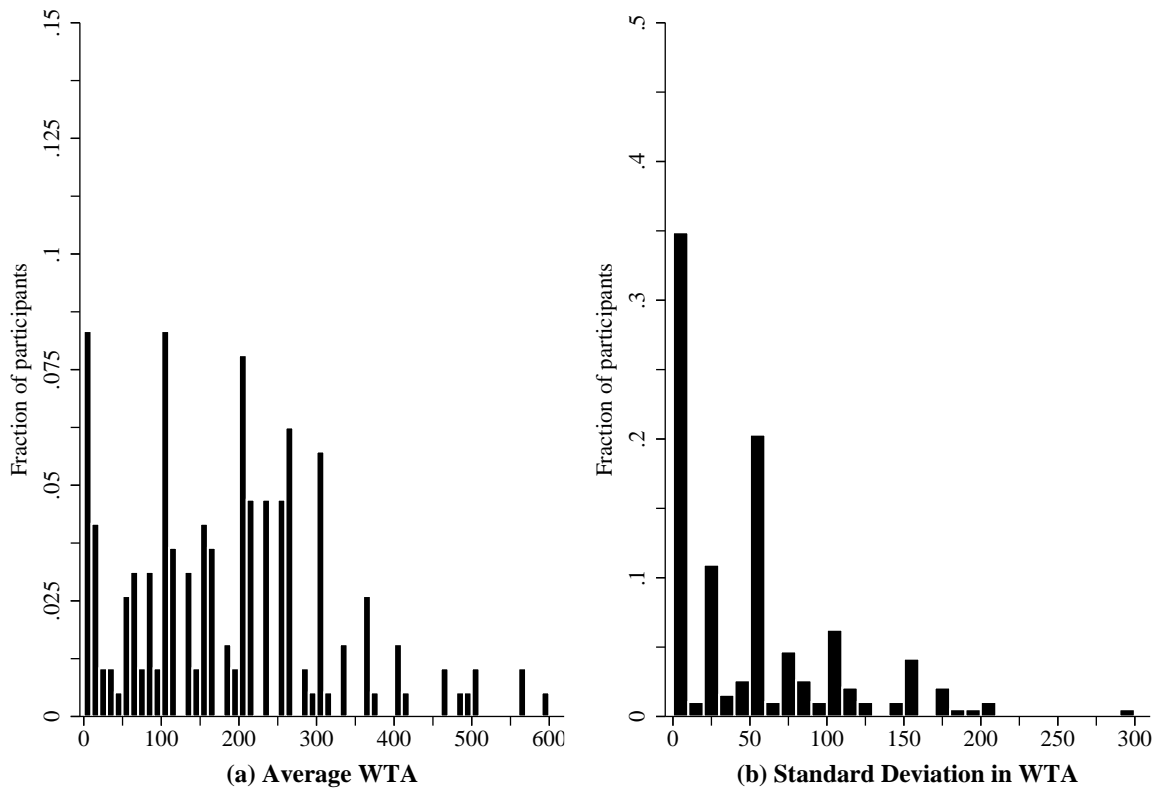


Figure 2: Preferences for Identification



Original

Figure 3: WTA: Average and Standard Deviation

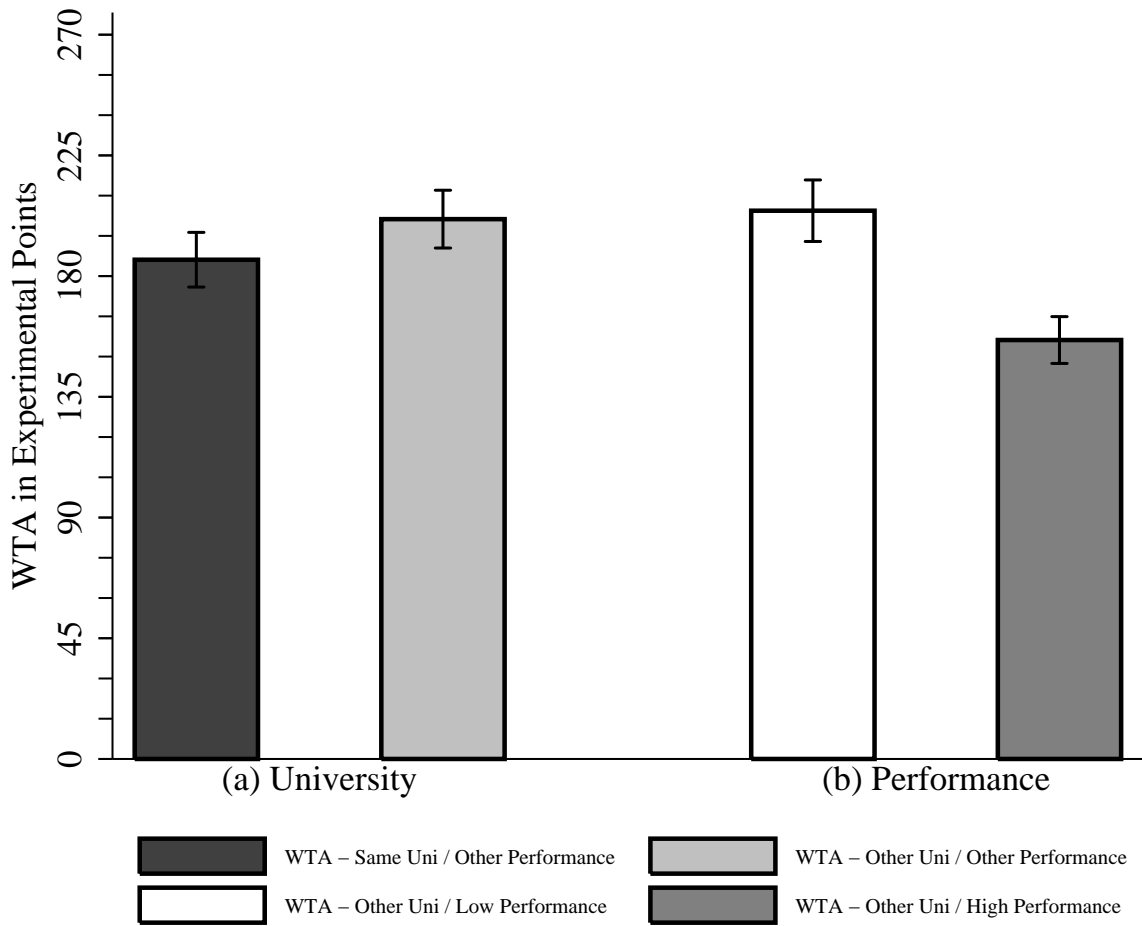


Figure 4: Preferences for Identification: Social Distance and Social Status

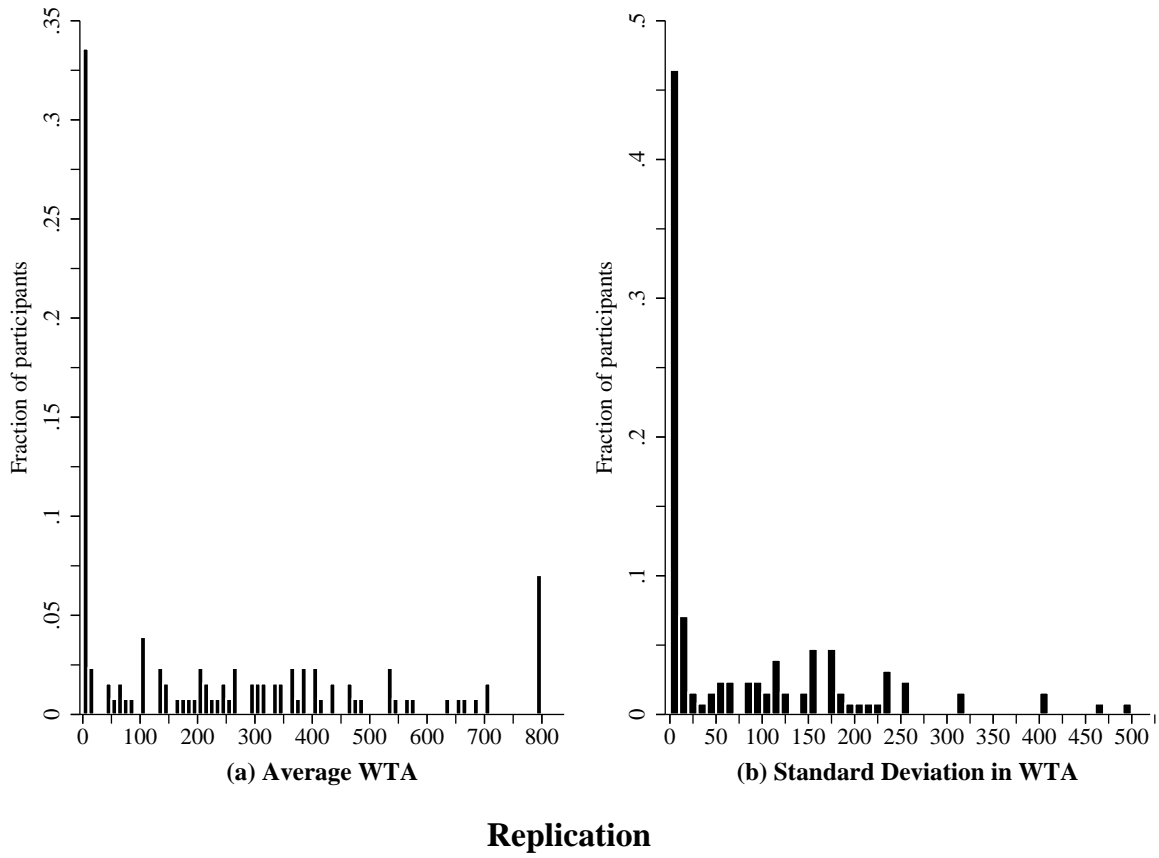


Figure 5: WTA: Average and Standard Deviation - Replication

For Online Publication

ONLINE APPENDIX:

Choosing Who You Are: The Structure and Behavioral Effects of Revealed Identification Preferences

Florian Hett, Markus Kröll, and Mario Mechtel

Appendix A. Additional results

I. Heterogeneity in identification preferences

In this section, we give a more detailed account of the role of social distance and social status for identification preferences. As outlined in Section 4.1, both of these components affect identification preferences. Individuals identify more strongly with groups of close social distance and higher social status. As previously discussed, while social distance appears to have a weaker impact than social status, heterogeneity in the individuals' responses to social distance conceals its strength in the aggregate analysis. It is not just that a large share of individuals (120 out of the 196) do not distinguish between the two respective outgroups, but also that 25 participants identify more strongly with the group of the other university. For these individuals, $WTA^{Distance}$ amounts to -70.4 points (or 14.1 percent of expected earnings) and thus considerably pulls down the aggregate value for the full sample.

The choices of these 25 participants seem puzzling at first glance, because they appear to identify more strongly with the group to which they have a higher social distance. However, data from our post-experimental questionnaire hints at another explanation. Asked to rate the relative reputation of the other university compared to one's own university, the vast majority of participants (~ 75 percent) perceive the two universities to be about equal. For the 25 participants who identify more strongly with the other university, the perception of their own university is significantly lower than for the other participants ($p = 0.013$). This indicates that their decision might be driven by social status concerns, which could manifest themselves in the university affiliation as well.

As for social distance, we also observe substantial heterogeneity between individuals with respect to social status (see panel (b) of Figure A.2). 64.6 percent of the participants display status-induced differences in identification (i.e. state different WTAs for the two groups from the other university). Out of these, 86 participants (or 44.8 percent of the full sample) identify more strongly with the high status group, i.e. $WTA^{Status} > 0$. Their average stated difference is 144.42 points (grey bar), which equates to almost 30 percent of expected earnings, underlining the importance of social status for identification. Another 37 individuals, however, show a somewhat lower yet still strong identification with the low status group (white bar) and request 85 points more to accept re-assignment to the high status group.

This heterogeneity is due to an asymmetry in the effect of status. Breaking down identification preferences regarding status for participants of high and low status groups indeed reveals an interesting pattern (Figure A.3). The overall status effect is driven by participants from the high status groups. While participants from the high status groups strongly and almost exclusively identify with the high status group, there is no clear pattern for members of the low status groups. Whereas 29 of the 96 members of the low status groups identify with the low status, 28 members identify with the high status.

This result demonstrates that social distance and social status are inherently intertwined, as participants might perceive social distance not only with respect to university affiliation, but also with respect to status. Any variation in the status dimension automatically also induces differences in the social distance dimension, as differences in the characteristic that induces status imply a social distance in this characteristic as well. For individuals from a high status group, a high status group from the other university dominates a low status group from the other university in both, social status and social distance. For individuals from a low status group, however, the high status group from the other university provides higher social status, but also larger social distance.

Alternatively, the social identity literature suggests that individuals might devalue dimensions in which their ingroup performs poorly and focus on other dimensions instead (Turner and Brown 1978, Tajfel and Turner 1979, Hogg and Abrams 1988, Hornsey 2008). Consistent with that idea is Wichardt’s (2008) argument that individuals who are confronted with different dimensions of group characteristics focus the more on a particular group the more it offers them a positive contribution to their identity in a certain context. Akerlof (2015) focuses on a similar margin along which individuals can manage identity: reweighting “achievements” in different dimensions. Our result that WTA differences in the status di-

mension are much stronger for members of high status groups corroborates this hypothesis. It is consistent with the notion that participants from the low status groups *endogenously* put less weight on the status dimension than participants from the high status groups. For future research, it would thus be worthwhile to investigate in more detail the effect of a group’s relative performance in different dimensions of social identity on the role these dimensions actually play in identification choices.

II. Additional Tables and Figures

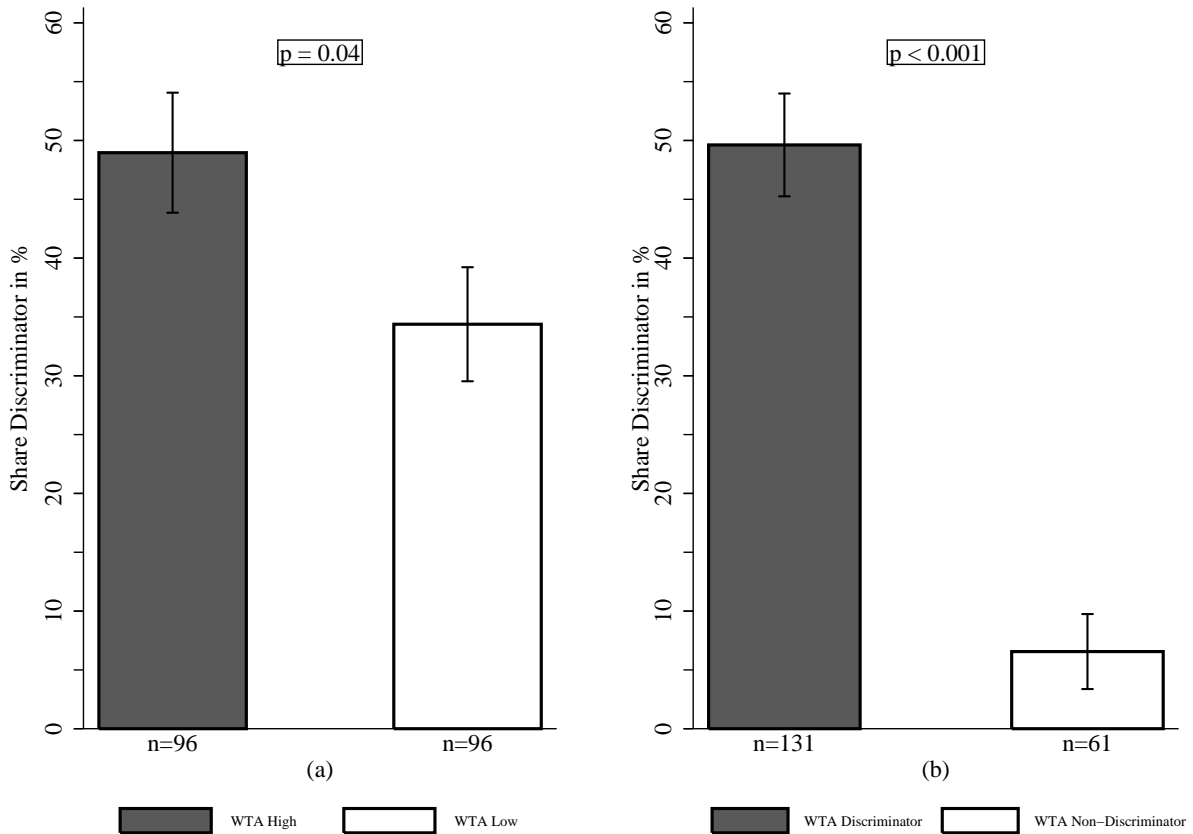


Figure A.1: Discrimination in Allocation Games: the Role of Identification

Notes: In Panel (a), the vertical axis indicates the share of participants who discriminate in allocations between the own group and any of the three outgroups in one of the four dictator games. In Panel (b), the vertical axis indicates the share of participants who discriminate in allocations across the three outgroups in one of the four dictator games.

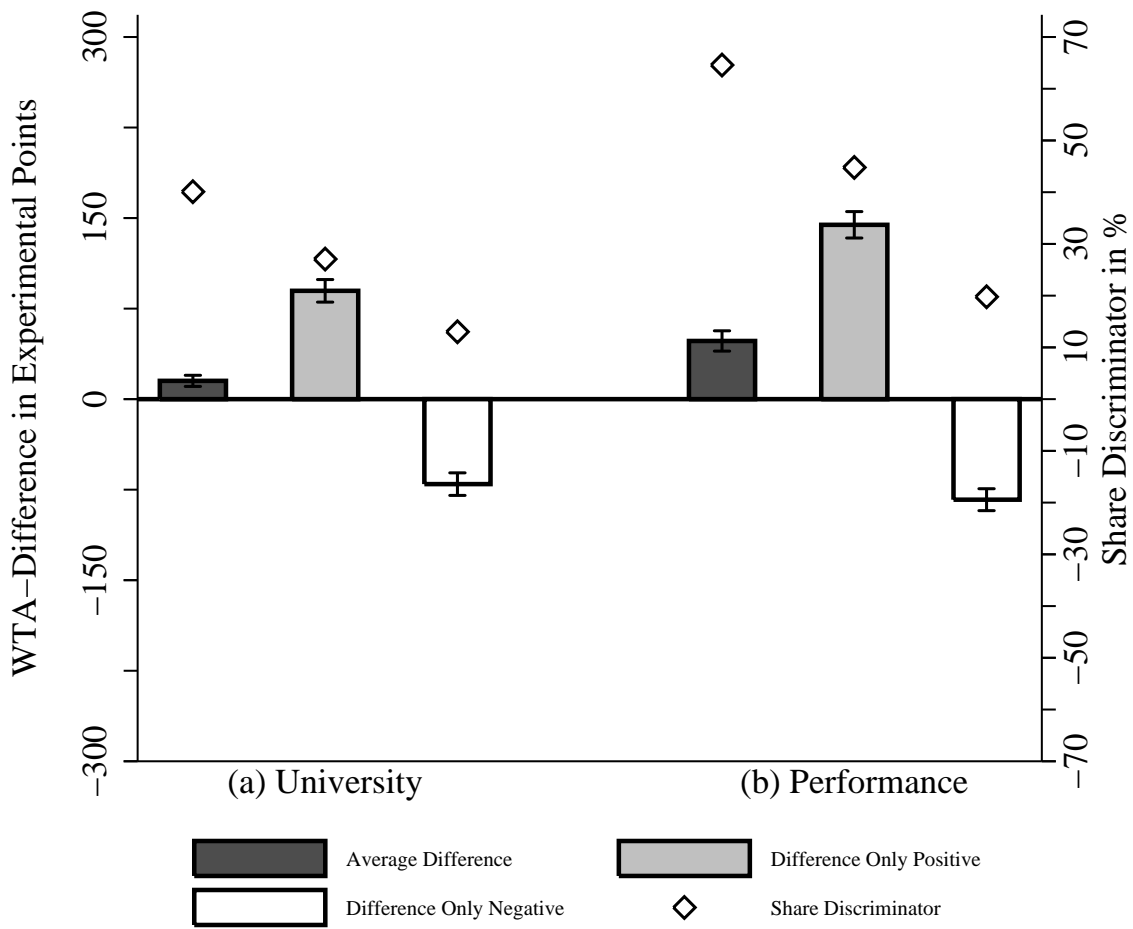


Figure A.2: Preferences for Identification: Heterogeneity

Notes: The left vertical axis indicates the WTA in experimental points, which are depicted by the bars. The right vertical axis scales the share of participants, which is displayed by the black diamonds.

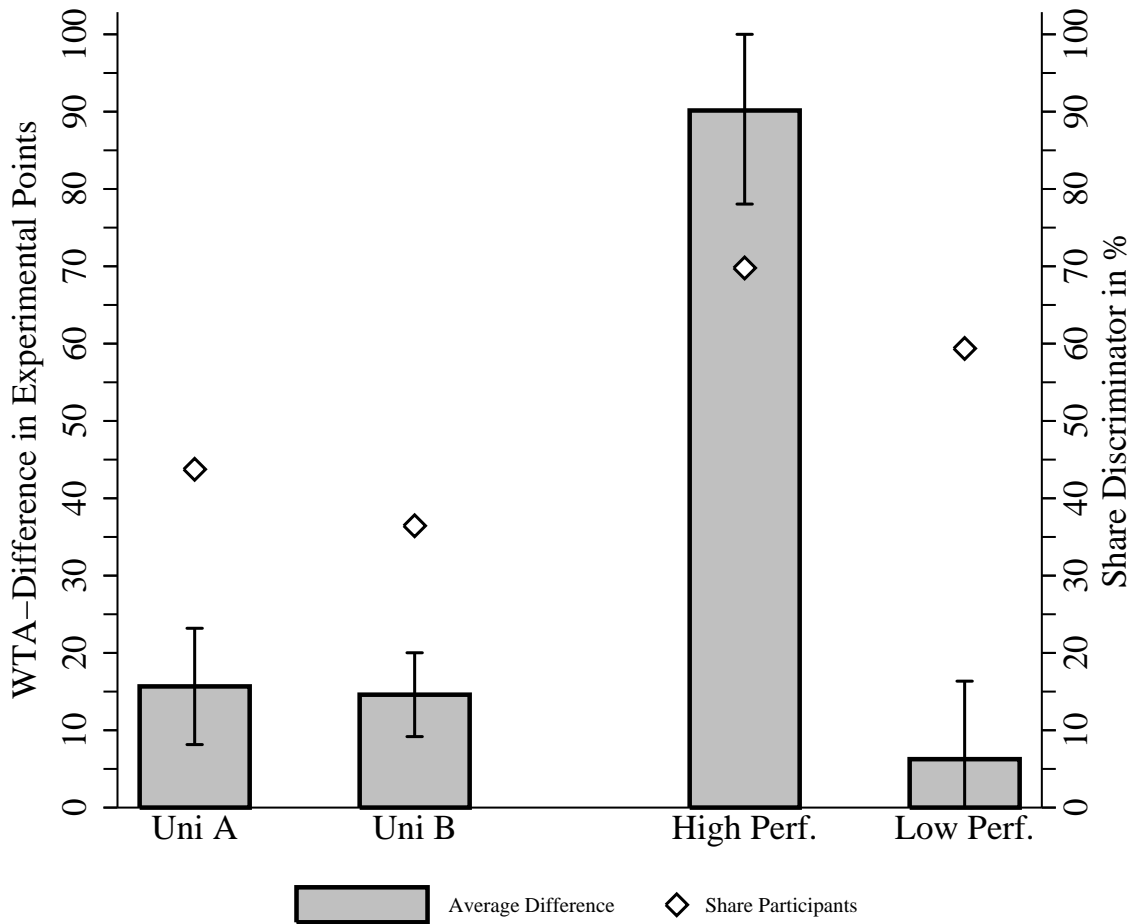


Figure A.3: Revealed Identification Preferences: Social Distance and Social Status

Notes: The left vertical axis indicates the WTA in experimental points, which are depicted by the bars. The right vertical axis scales the share of participants, which is displayed by the black diamonds. Samples are split by universities (first two bars) and by math performance (bars three and four).

Appendix B. Replication Study

I. Experimental design

Our replication study consisted of the same five stages as the main experiment. Again, we assigned groups based on two characteristics in the first stage and used three unincentivized picture puzzles and a chat phase for group enhancement through joint activity. We then used the same revealed preference approach to elicit identification preferences in stage 3 and measured identity-contingent social preferences with a simple dictator game in stage 4. Once more, the experiment was capped with a second unincentivized round of picture puzzles after payoff-realizations as well as group changes were revealed. While we thus fully replicated the original experiment in terms of the underlying experimental strategy and design, we made four important procedural changes to address some potential concerns with the initial design.

Group assignment characteristics – Even though our initial design was successful in spanning an identity space which reflected social distance and social status, other categories than university affiliation might carry stronger social distance. Identification with one’s *alma mater* is less salient in Germany than for example the US, where university affiliation is more culturally ingrained and reinforced by intercollegiate competition. We therefore define new groups based on a characteristic which is in Germany emotionally more charged than university affiliation: support for the professional soccer clubs Eintracht Frankfurt and 1. FC Köln. We specifically chose these two clubs as they share a long history in German professional soccer and mirror each other quite closely in terms of their historic as well as recent performance. This allowed us to dampen the potential for additional social status concerns in this group assignment characteristic by design.

We conducted the experiments with the subject pools of the Frankfurt Laboratory for Experimental Economic Research (FLEX) and the Cologne Laboratory for Economic Research (CLER). To ensure that supporters of the two clubs participated in the experiment, we targeted soccer fans within the subject pool by announcing that we would ask team-specific questions in the experiment and asked only supporters of the two clubs to sign up at the respective university. For the social status dimension, we again used the math task from the original experiment and assigned participants in high or low performance groups contingent on their performance in this task. We however changed the color labels attached to the high (from blue to green) and low (from red to green) performing group so that they did not overlap with any of the colors of the soccer teams.

Instructions and Control Questions – In order to make the payoffs in the third stage even more salient and ensure that every participant understood the payoff consequences of their decisions, we altered the control questions in the replication study. Rather than giving examples and asking what would happen under the described circumstances, we opted for comprehension questions which focused on the optimal strategy given a certain objective. More specifically, every individual had to state the optimal strategy for three types of individuals: (i) an individual who would like to remain with her initial group, (ii) one who would like to leave her initial group, and (iii) one who does not care about group membership and wants to maximize her own payoffs.

Additionally, we rephrased the description of the second round of picture puzzles and group chats. In the main experiment, we stated that this second phase would be fully identical to the first one aside from the potential new group compositions. While it is thereby implicit that this stage has no payoff consequences, one might argue that participants still had some strategic considerations when making their identification choices. We therefore added the following line to the instructions of stage 3 in the replication study: “You will **not** receive any payments for correct solutions to the picture puzzles in the second round of the group quiz.”

Elicitation Procedure – We used plain text boxes to elicit the *WTAs* in our main experiment. This procedure might artificially inflate the *WTAs* because participants might have felt compelled to add a positive number. Secondly, participants might not have been aware that entering negative values was viable. Indeed, we found that only a very small fraction of participants stated *WTAs* of 0 and did not care about group affiliation (< 8%). Nobody entered a negative number.

In the replication study, we therefore replaced the text boxes with scrollbars ranging from -8 Euro to +8 Euro. This highlighted the possibility that stating a negative *WTA* (i.e. expressing to prefer another group to the initial one) was possible and allowed us to specify a default, which we set at 0.

Dictator Games – The set of games used in the main study limited participants’ actions to binary decisions and might thus cloud heterogeneity in discrimination behavior for those participants who would like to discriminate at an intermediate level between the two binary options. To account for this, we replaced the four binary dictator games with a single continuous dictator decision.

Individuals were again matched in pairs of two. There are two roles: dictator and receiver. The dictator was endowed with 10 Euros, whereas the receiver was given 5 Euros. The dictator could now share some of her endowment with the receiver, take some of the endowment from the receiver, or leave both players with the initial endowment. Giving or taking was restricted to increments of 10 Cents. Every Cent given to the receiver was doubled by the experimenter, every Cent taken from the receiver was halved by the experimenter. Thus, giving (taking) was efficient (inefficient).

We again employed the strategy method: Every participant made the decision in the role of the dictator being matched with a receiver from each of the four groups (receiver from her own group/group of the same soccer team and other performance/group of the other soccer team and same performance/group of the other soccer team and other performance). We informed participants that roles and one group combination would be randomly selected and that participants would be paid according to these decisions.

II. Results

To test for the robustness of our results with respect to the described design features, we ran the replication study with 128 participants. Table 5 provides an overview of the key features and differences to the main experiment as described above. Within this section, we describe the results of the replication in detail and relate them to our findings presented in the main part of the paper.

Participants' average *WTA* amounts to 236.2 points in the replication study (using the absolute value for negative stated *WTAs*), which equals 59.1% of expected earnings at the group selection stage. The *WTA* average over all participants is significantly different from 0 (t-test: $p < 0.0001$). The same holds for the average values of outgroup-specific *WTAs*. As in the main experiment, revealed *WTAs* were group-contingent: The highest average *WTA* (243.08 points) results for the outgroup of different performance and the other soccer club, while average *WTA* is the lowest for the outgroup of different performance and the same soccer club (206.36 points). This latter finding is a first indicator for a more important role of the social distance (i.e. soccer club) dimension in the replication study. While the absolute value of average *WTA* in the replication is higher than in our main experiment, we should take into account that the interval of potential *WTA* differences between two groups is 800 in the replication study instead of 600. The fraction of average *WTA* over potential

WTA difference is, thus, 30.4% in our main experiment and 29.5% in the replication. In contrast to the main experiment, two participants state a negative *WTA* average for all three outgroups (0 in the main experiment). While only 15 of 192 participants in the main experiment chose a *WTA* average of 0 or 1, the share of participants for whom groups do not matter is larger in the replication (26.6% with an average *WTA* of 0). However, 22 percent of the participants even state *WTAs* larger than 400, which corresponds to 50 percent of expected earnings from the group selection stage in the replication study. Combining these results supports the view that there is much heterogeneity with respect to the perceived importance of groups, i.e. that some people are more “groupy” than others (Kranton et al. 2016). Taken together, result 1 is, thus, confirmed by the replication study.

Results 2 and 3 focus on the structure of identification preferences (see Figure B.2). As in the main experiment, we compare the *WTA* regarding two outgroups of the same math performance but different soccer teams to identify the role of social distance. On average, the *WTA* difference amounts to 36.7 points and is statistically significant (t-test: $p = 0.0338$). Result 2 is, thus, confirmed. The same holds true for result 3: social status matters for identification. On average, participants have a 71.2 points higher *WTA* regarding the outgroup from the other soccer team that performed worth in the math task. While the social distance effect amounts to around 30% of the social status effect in the main experiment, its relative importance is substantially higher in the replication study (more than 50%).

Results 4 and 5 established that identification explains ingroup-outgroup discrimination and outgroup-outgroup discrimination. The data from the replication study confirm that participants who identify more strongly with their initial group are significantly more likely to discriminate against outgroups. This is true both for the replication of Figure A.1 and a logistic regression where the explanatory variable of main interest is a dummy that equals 1 if a participant’s average *WTA* exceeds the median value. The average marginal effect equals 0.191 and is, thus, very similar to that in column (1) of Table 2. Applying a participant’s *WTA* average as continuous measure for identification yields a positive but statistically insignificant marginal effect in the replication study.²¹ The continuous version of the dictator games utilized in the replication study allows for more within-subject variation and enables to push the analysis one step further. In the flavor of Table 3, we can now analyze allocation choices at the group level, taking into account unobserved heterogeneity by including

²¹Using *WTA* as explanatory variable assumes a linear relationship between *WTA* and the probability to discriminate against outgroups. Given the larger level of heterogeneity with respect to identification observed in the replication study (with a much higher share of participants with an average *WTA* of 0), this assumption appears to be less appropriate than in the main experiment.

participant fixed effects (see Table 4). The dependent variable captures the amount sent to the receiver in the dictator game (contingent on the receiver’s group membership). Our explanatory variable of main interest captures identification with the receiver’s group. It equals the group-specific *WTA* for outgroup receivers and is 0 if the receiver stems from the ingroup. The estimations strongly support the results from Table 3: the stronger the level of identification with the receiver’s group, the larger is the amount sent by a participant. This result is independent of whether we control for outgroup characteristics (i.e. other soccer club and low performance) or not. Result 4 is, thus, supported (and augmented) by the replication study.

Our finding that *WTA* discrimination across outgroups explains discrimination in allocation choices across outgroups (result 5) is also supported by the replication exercise. The share of outgroup-outgroup allocation discriminators is significantly larger among those participants who also discriminate across two particular outgroups with respect to *WTA* in the flavour of Figure A.1. This result also holds for the replication study when introducing additional controls (as in column (3) of Table 2). The marginal effect of the *WTA* dummy which captures a *WTA* difference between outgroups is 0.368 and statistically significant at the 1%-level. Furthermore, the result is confirmed when focusing on the group-level (as in Table 3).

Overall, the replication exercise supports the results from our main experiment. We find that identification matters (result 1), a group’s social distance and social status matter for identification (results 2 and 3), and identification predicts group specific social preferences (results 4 and 5). As expected, the role of social distance became larger and identification again played an important role, although we stressed the possibility to enter a negative *WTA*. Furthermore, the effects of group-specific identification on social preferences remain stable even when we account for participant fixed effects which is possible due to the change in the experimental design in the replication study (continuous dictator game).

III. Tables and Figures

Table B.1: Summary Statistics - Preferences for Identification
Replication

	Mean	Std. Dev.	Median	Lower Quart.	Upper Quart.	Min	Max
\overline{WTA}	221.51***	254.65	142.44	0.00	373.78	-464.44	800.00
$WTA_{d,-s}$	206.36***	277.68	0.00	100.00	400.00	-568.00	800.00
$WTA_{-d,s}$	215.08***	267.57	101.00	0.00	352.00	-255.00	800.00
$WTA_{-d,-s}$	243.08***	305.54	200.00	0.00	420.00	-800.00	800.00
$WTA^{Distance}$	36.72***	193.56	0.00	0.00	31.00	-1600.00	548.00
WTA^{Status}	71.19***	237.29	0.00	0.00	114.00	-1600.00	845.00

Notes: \overline{WTA} is the average stated difference in monetary payoffs between one's own group and all three other groups for which a group re-assignment would be accepted. $WTA_{d,-s}$ is the stated difference in payoffs between one's own group and the group from the same soccer club and other math performance for which re-assignment to that group would be accepted. $WTA_{-d,s}$ is the stated difference in payoffs between one's own group and the group from the other soccer club and the same math performance for which re-assignment to that group would be accepted. $WTA_{-d,-s}$ is the stated difference in payoffs between one's own group and the group from the other soccer club and other math performance for which re-assignment to that group would be accepted. $WTA^{Distance}$ measures the difference in the stated willingness-to accept between the group of the other status from the other soccer club and the group of the other status from the same soccer club, i.e. $WTA^{Distance} = WTA_{-d,-s} - WTA_{d,-s}$. WTA^{Status} measures the difference in the stated willingness-to accept between the group of low performance from the other soccer club and the group of high performance from the other soccer club, i.e. $WTA^{Status} = WTA_{-d,low\ math\ performance} - WTA_{-d,high\ math\ performance}$.

* Significant at the 10 percent level (t-test),

** significant at the 5 percent level,

*** significant at the 1 percent level.

Table B.2: Identification and Discrimination in Allocation Decisions against Outgroups – Replication

	Discrimination		Outgroup discrimination
	(1)	(2)	(3)
Identification			
Dummy	0.191*		0.368***
	(0.099)		(0.101)
Continuous		0.013	
		(0.021)	
Age	0.010	0.011	0.003
	(0.010)	(0.010)	(0.007)
Gender	0.014	0.047	0.043
	(0.089)	(0.079)	(0.100)
Undergrad	-0.068	-0.051	-0.211
	(0.110)	(0.108)	(0.106)
Observations	128	128	128
Pseudo R^2	0.037	0.016	0.117

Notes: Average marginal effects of a logistic regression with clustered standard errors at the group level in parentheses. The dependent variable is discrimination between different groups in one of the four distribution games. In columns 1 and 2, the dependent variable is equal to 1 if members of one of the three outgroups were given a lower payoff than members of the own group, and 0 otherwise. In column 3, the dependent variable is equal to 1 if members of the three outgroups received different payoffs, and 0 otherwise. In column 1, the dummy for identification is 1 if the average willingness-to-accept over all three outgroups exceeds the median, and 0 otherwise. In column 2, we use the average stated willingness-to-accept in units of 100 over all three outgroups as the continuous measure of identification. In column 3, the identification dummy is equal to 1 if the willingness-to-accept varies across the three outgroups and 0 otherwise. Age is measured in years, gender is equal to 1 for men, and undergrad is equal to 1 for bachelor students, and 0 otherwise.

* Significant at the 10 percent level,

** significant at the 5 percent level,

*** significant at the 1 percent level.

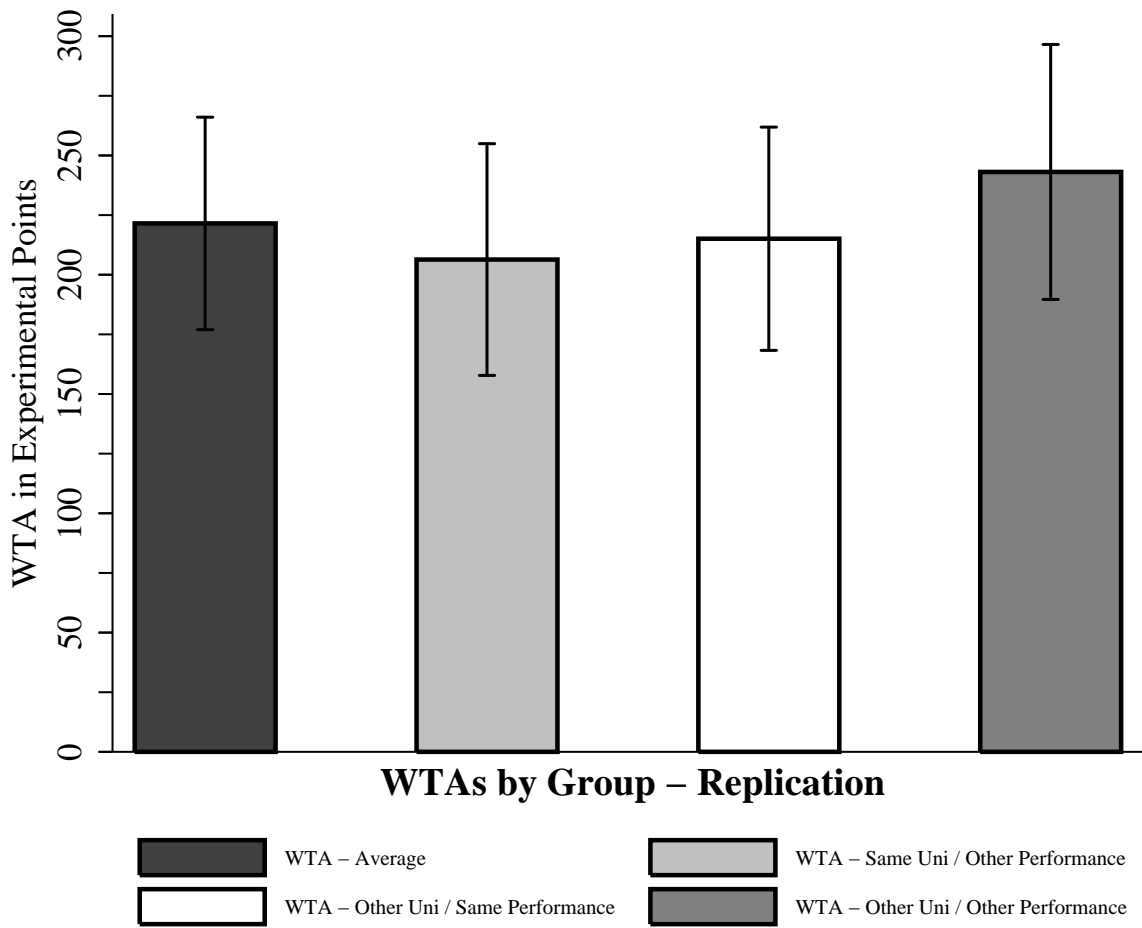


Figure B.1: Preferences for Identification – Replication

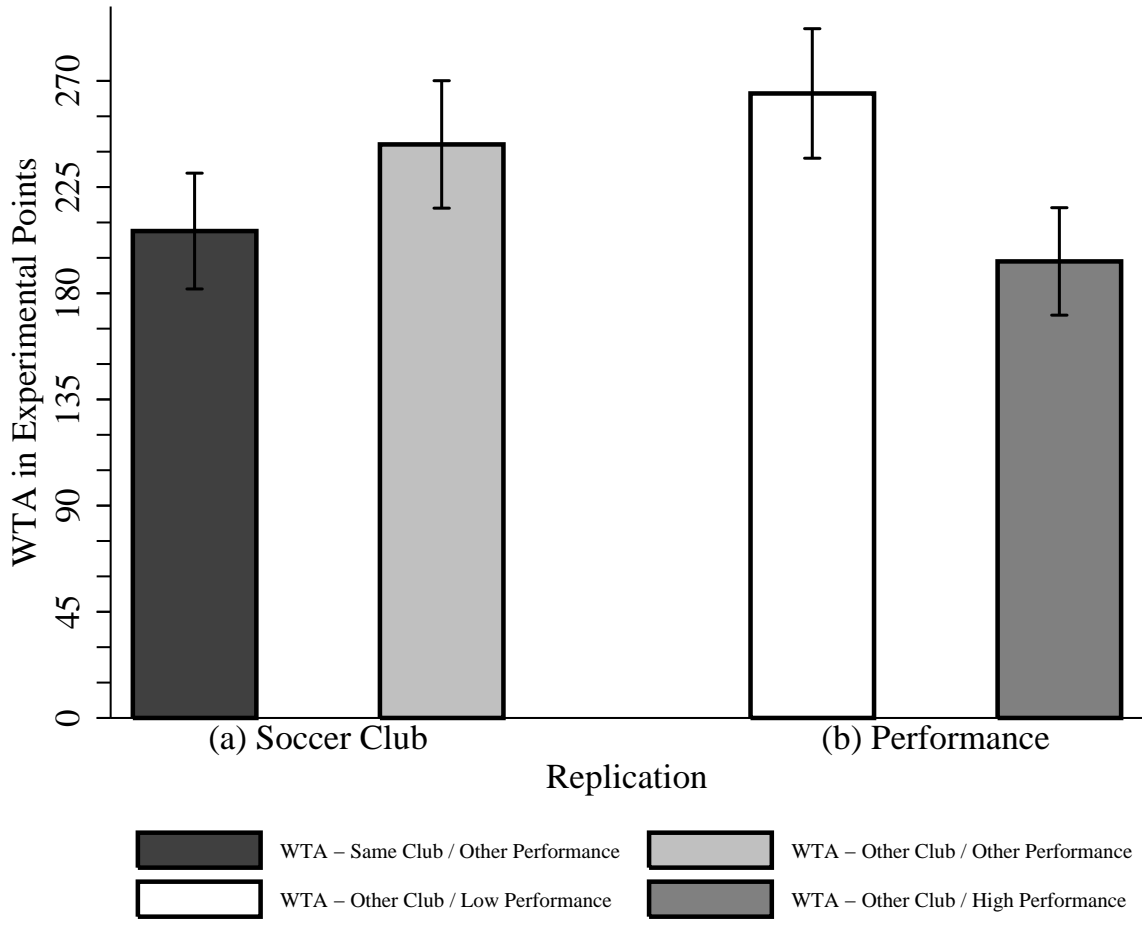
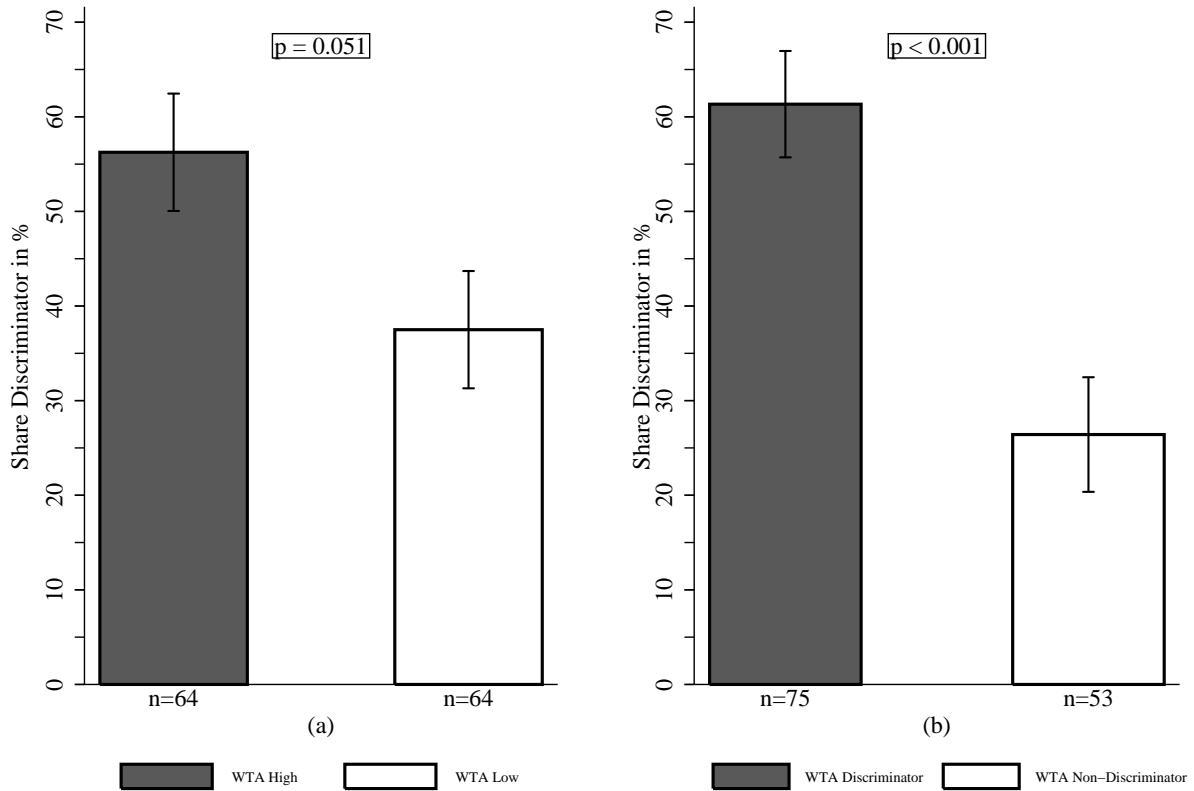


Figure B.2: Preferences for Identification: Social Distance and Social Status – Replication



Replication

Figure B.3: Discrimination in Allocation Games: the Role of Identification – Replication

Notes: In Panel (a), the vertical axis indicates the share of participants who discriminate in allocations between the own group and any of the three outgroups in one of the four dictator games. In Panel (b), the vertical axis indicates the share of participants who discriminate in allocations across the three outgroups in one of the four dictator games.

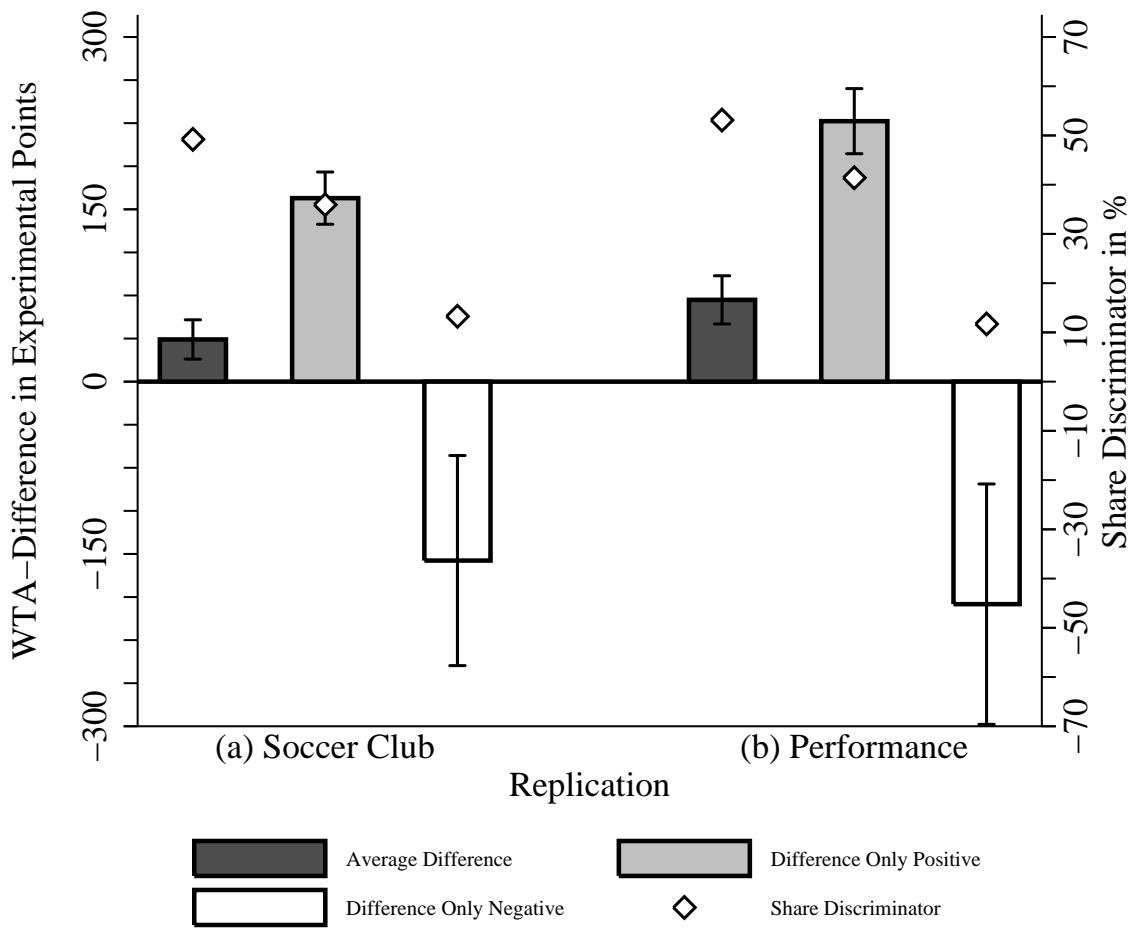


Figure B.4: Preferences for Identification: Heterogeneity – Replication

Notes: The left vertical axis indicates the WTA in experimental points, which are depicted by the bars. The right vertical axis scales the share of participants, which is displayed by the black diamonds.

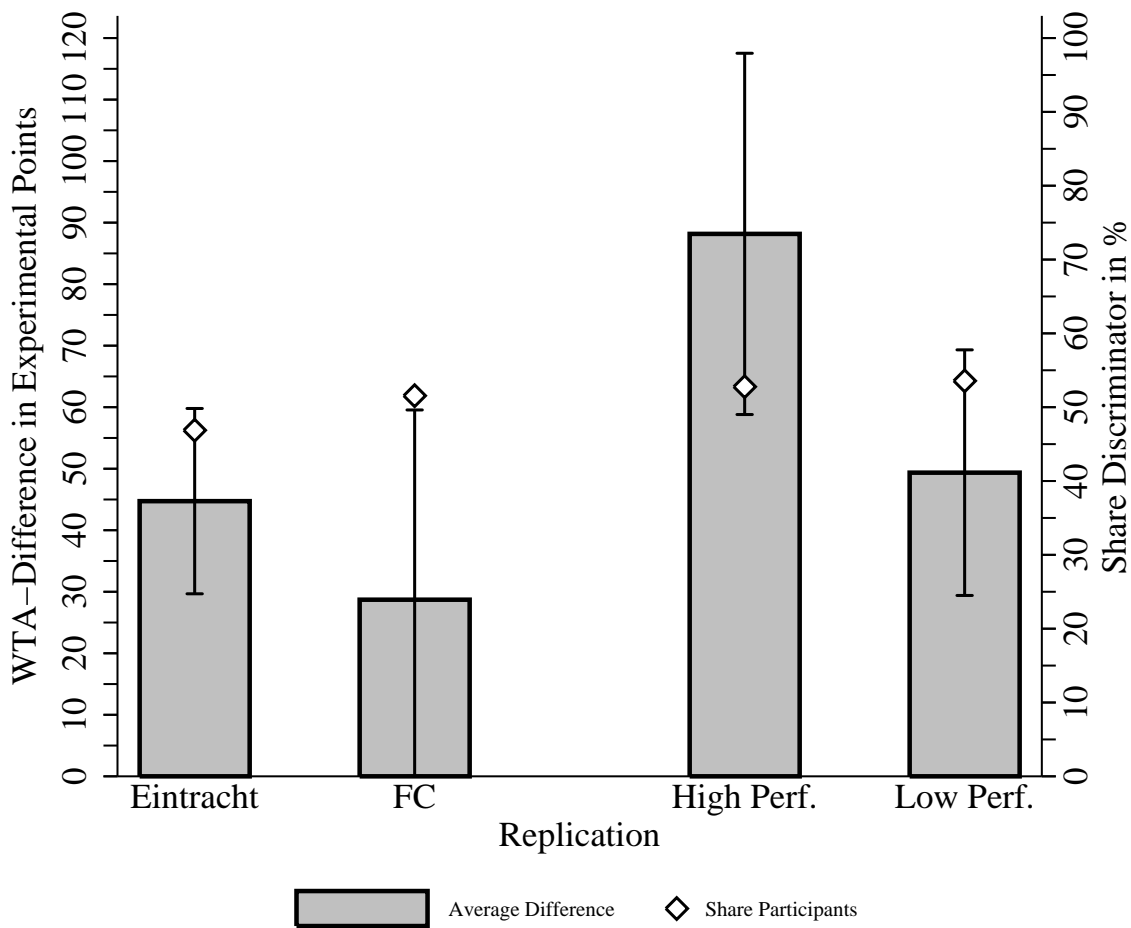


Figure B.5: Revealed Identification Preferences: Social Distance and Social Status – Replication

Notes: The left vertical axis indicates the WTA in experimental points, which are depicted by the bars. The right vertical axis scales the share of participants, which is displayed by the black diamonds. Samples are split by universities (first two bars) and by math performance (bars three and four).

Appendix C. Experimental Instructions

I. Experimental Instructions

General Instructions

Thank you for your participation in this scientific study. Please read through the instructions carefully. Everything that you have to know about the participation in this study will be explained in the following. If you have any difficulties in understanding the instructions, please raise your hand. We will then come to your place and answer your question.

For your appearance on time to participate in this study, you receive 4 Euro. Throughout the experiment, you can earn additional money. Your earnings depend on your own decisions and those of the other participants. You have to make your decisions on the screen.

This study takes place simultaneously at the universities of Frankfurt and Trier. The group of participants thus consists of students from both universities that are present in the labs either in Frankfurt or Trier.

In this study, you collect points and the amount of points that you additionally earn at the end of the study depends on your decisions and those of the other participants. All points that you earn throughout the study will finally be converted into Euros and paid out to you. The exchange rate is the following:

$$100 \text{ Points} = 1.00 \text{ Euro.}$$

The amount of money that you earn will be paid out to you together with the 4 Euro in cash at the end of the study.

Please note that, during the study, communication among participants is only allowed in the prepared chat windows. All other form of communication is prohibited. We request you to only use the open programs for the experiment. Communication with other participants as well as other cases of interference will lead to your exclusion from the experiment.

Note that all the information you provide will be treated confidentially and will not be given to third parties. The data only serves scientific purpose.

Please do now click the ‘Continue’-button and follow the instructions.

Instructions Stage I

In the beginning you are asked to do some calculations. In each exercise, you have to add up three double-digit numbers.

Only when you solve the exercise correctly, the next exercise will appear.

You now have 90 seconds to solve as many exercises as you can.

Instructions Stage II

Within both universities, all participants are now assigned to four-person-groups, that is either a red group or a blue group.

The selection into the groups depends on the number of exercises you have previously solved correctly. The twelve best performing participants of each university will be allocated to one of the blue groups whereas the twelve worst performing participants will be allocated to one of the red groups.

So there are three blue groups and three red groups at each university and the blue group members have answered more questions correctly than the red group members in round 1. Neither you nor the other members of your group know each other's identity.

Following group assignment, you are asked to solve three picture puzzles, one after the other, such as the following. Each picture puzzle consists of four pictures that all have one main theme in common. In the given example, this main theme would be 'geometry' (picture top left: geometric body; picture top right: set square and compass; bottom left: geometric functions; bottom right: theorem of Pythagoras).

For each picture puzzle, you have 60 seconds to discuss with the other members of your group via the chat window. The chat messages sent by you are only visible for the members of your group. You can only see the messages sent by your own group members. After the one minute of discussion time you have 15 seconds to state your personal answer.

Note that you are allowed to exchange any content you want via the chat. However, it is prohibited to give any hints about your own identity via the chat. Doing so can lead to your exclusion from the experiment.



Do you have any remaining questions? If not, please click the ‘Continue’-button to see which group you belong to.

Instructions Stage III (for University A - High Performance)

In the subsequent course of the experiment, there are four groups that are relevant for you. Your own blue group of Goethe University, one randomly chosen red group of Goethe University, and a randomly chosen red and a randomly chosen blue group from Trier University.

In the next stage of the experiment, these four groups will be given random payoffs that can reach from 200 up to 800 points. You now have to decide whether you want to stay in your blue group of Goethe University or you would like to join one of the other groups. Every group member receives the payoff that is given to his or her group. If you decide to stay in your group, you will receive the payoff of the blue group of Goethe University. If you switch groups, you will earn the amount of the other group. You take your decision separately for each of the three other groups that you can potentially join.

For this purpose, you type in the payoff differential between your own group and the other group (see the figure below) that is just big enough to make you willing to change groups. For example, if you indicate a payoff differential of 30 points, this means that you are willing to join the according group if its payoff is at least more than 30 points higher than your groups payoff.

Subsequently, you take another series of individual choices and will then be informed about the payoffs that are drawn for each group.

Verbleibende Zeit [sec]: 180

Sie sind in der blauen Gruppe der Goethe-Universität Frankfurt

Ab welcher Differenz in ganzen Punkten zwischen den Auszahlungen Ihrer blauen Gruppe der Goethe-Universität Frankfurt und den folgenden Gruppen möchten Sie Ihre blaue Gruppe der Goethe-Universität Frankfurt verlassen und in die entsprechende andere Gruppe wechseln?

Punktdifferenz, ab der Sie von Ihrer Gruppe in die rote Gruppe der Goethe-Universität Frankfurt wechseln möchten

Punktdifferenz, ab der Sie von Ihrer Gruppe in die blaue Gruppe der Universität Trier wechseln möchten

Punktdifferenz, ab der Sie von Ihrer Gruppe in die rote Gruppe der Universität Trier wechseln möchten

Afterwards, **one** participant will be randomly selected out of **one** of the four groups. Out of the remaining other three groups, one group will also be selected randomly. For this participant, her or his decision concerning the chosen group will then be implemented: If the actual payoff differential between the own group and the randomly chosen group is larger than the amount that would make the person willing to change groups, the person does indeed change groups for the remainder of the experiment. All other participants stay in their initial groups.

Overall, this means that no more than one person will change groups.

Example:

A participant is initially member of the blue group of Goethe University and is randomly selected. Furthermore one of the other three groups gets chosen randomly.

If the difference between the payoffs that are drawn is larger than the difference from which on the participant is willing to change groups, this person will then receive the payoff of the other group and will be part of the other group for the remainder of the experiment.

If the difference between the payoffs that are drawn is smaller than the difference from which on the person is willing to change groups, this person will then receive the payoff of its own

blue group of Goethe University and will stay in her or his initial group for the remainder of the experiment.

In the following, there are three more examples for illustration:

Example 1: You indicate a payoff-differential of 210 points to the red group of Trier University and are randomly selected. The red group of Trier University gets selected as well. The actual payoff for the red group of Trier University is 180 points higher than the payoff for your own group (this means the differential is 180 points). Hence you do not change groups.

Example 2: You indicate a payoff-differential of 100 points to the red group of Trier University and are randomly selected. The red group of Trier University gets selected as well. The actual payoff for the red group of Trier University is 300 points higher than the payoff for your own group (this means the differential is 300 points). Hence you change groups.

Example 3: You indicate a payoff-differential of 0 points to the red group of Trier University and are randomly selected. The red group of Trier University gets selected as well. You change groups in case that the payoff for the red group of Trier University is at least as high as the payoff for your own group.

After that, there are three more picture puzzles to solve in the potentially newly composed groups. In case you change groups, you will solve the puzzles together with the members of your new group. If you do not change groups, you will solve the puzzles together with the members of your initial blue group of Goethe University.

Both the members of the blue group of Goethe University and the members of the other group will be informed about a potential group member change.

Except for the possible new group arrangement, the rules for solving the puzzles remain the same: You have again 60 seconds to advise with the other group members via chat and afterwards have 15 seconds to type in your answer.

Do you have any remaining questions? If not, please click the ‘Continue’-button and answer the control questions.

Instructions Stage IV (for University A - High Performance)

In the fourth stage of the experiment, you are asked to take some allocation decisions in four different games.

In each game, the decisions you take and their consequences are independent of your decisions in the other three games. This means that the decision you take in one game has no influence on what you earn in another game.

In each game you are randomly matched with another anonymous participant. You take your decisions in each game for four different scenarios:

- Your partner is member of your own group.
- Your partner is member of the red group of Goethe University.
- Your partner is member of the blue group of Trier University.
- Your partner is member of the red group of Trier University.

Your decision influences the payoff for your partner in the same way that her or his decision influences your payoff.

In every game there are each two roles A and B.

At the end of the experiment one game (and your according role in this game) will be chosen randomly to determine your payoff. Only now you will be informed about your partner's decisions in the according game. All games and both of the two roles A and B have the same probability to be chosen.

Do you have any remaining questions? If not, please click the 'Continue'-button and answer the control questions.

Instructions Stage V

Please do now solve the following three picture puzzles. You again have 60 seconds to advise with your blue group of Goethe University, before you give your answer.

II. Allocation Games - Stage IV

Table B1: Allocation Games

Game	Choice
Prosocial	(400, 400) vs. (400, 240)
Costly Prosocial	(400, 400) vs. (640, 160)
Envy	(400, 400) vs. (400, 720)
Costly Envy	(400, 400) vs. (440, 760)