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Cooperation within EDI-oriented Institutional Framing*

Abstract

How can cooperation be sustained in socially heterogeneous settings when institutions explicitly emphasize inclusion and diversity? We study this question using a field experiment based on a common-pool resource game conducted in four European cities. Participants face a repeated cooperation dilemma framed as an investment in a local urban amenity. We randomly vary whether the project is described as benefiting the general population or explicitly benefiting a locally relevant marginalized group. We find that inclusive framing has no effect on average contribution levels or beliefs about others' behavior, indicating that explicit inclusion does not undermine aggregate cooperation. However, we document substantial heterogeneity. Minority participants and women increase their contributions under inclusive framing, particularly in later stages of the game. Using the strategy method, we classify individuals into cooperative strategy profiles and show that inclusive framing primarily activates equality-oriented behavioural strategies. Analysis of strategy stability further indicates that inclusion reshapes behaviour within existing strategy profiles rather than inducing shifts across them. Overall, our results suggest that inclusive institutional design can preserve collective action while redistributing cooperative effort across identities and behavioural motivations.

JEL classification

C93, H41, D91, J14, J15, J16

Keywords

institutional framing, diversity and inclusion, common-pool resources, conditional cooperation, field experiment

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1 Introduction

Cooperation in the provision and maintenance of common pool resources is a longstanding concern in economics and the social sciences. A large literature has shown that cooperation in social dilemmas is sustained not only by material incentives, but also by social preferences, norms, expectations, and institutional arrangements that regulate behavior in groups (Fehr & Gächter, 2000; Fischbacher et al., 2001; Ostrom, 2000; Ostrom et al., 1994). Understanding these dynamics is especially important in the context of increasing diversity in societies. Furthermore, public investments in urban spaces, community facilities and shared infrastructure are increasingly justified in terms of inclusion and equity and often explicitly designed to benefit marginalized or underrepresented groups alongside the general population. All this raises a behavioral question: does making inclusion explicit undermine the willingness of heterogeneous populations to cooperate in maintaining shared resources?

Cities and urban settings provide a particularly salient context in which to study this question. They are spaces of intense social interaction characterized by economic inequality, cultural diversity, and the coexistence of multiple social identities. Urban commons, in the form of public spaces, community facilities, shared services, must be collectively supported by individuals who often differ in income, gender, ethnicity, age, or social status. While diversity is often viewed as a source of innovation and resilience, it may also complicate cooperation by weakening shared norms, increasing social distance, or amplifying perceptions of unfairness (Alesina & La Ferrara, 2000; Glaeser et al., 2000). When a collective good is framed as serving a specific minority group, majority participants may perceive the institution as less universal, withdrawing support that would otherwise have been forthcoming. If this crowding-out mechanism operates, inclusive institutional design faces a direct trade-off between equity and collective action, which could have significant implications for how urban commons are governed in diverse societies. Understanding how cooperation can be sustained in such heterogeneous contexts is therefore crucial.

A central idea underlying this paper is, therefore, that inclusion operates as an institutional signal, conveying information about fairness, recognition, and the distribution of concern within a public good. When an institution explicitly acknowledges that a shared resource is intended to benefit marginalized or underrepresented groups, this may alter how individuals perceive the legitimacy and purpose of the collective good. Such signals can influence the extent of cooperation through several channels (Bénabou & Tirole, 2011). For instance, inclusion may affect the perceptions of distributive fairness: individuals who belong to marginalized groups may view inclusive institutions as more equitable and, therefore, be more willing to cooperate, which is consistent with models of inequality aversion and fairness concerns (Fehr & Schmidt, 1999). On the contrary, individuals who belong to the majority non marginalised group may interpret inclusive framing either as a commitment to fairness or also as a departure from universalism, potentially influencing their contributions. Moreover, inclusion may shape normative expectations, by redefining what constitutes appropriate behavior within the group. If cooperation is framed as supporting inclusion, contributing may become a way of expressing adherence to pro-social norms, consistent with theories of conditional norm compliance (Bicchieri, 2006). In addition, inclusion may interact with social identity, activating motives related to recognition and trust, for instance when, for members of disadvantaged groups, higher cooperation may reflect efforts to affirm that they are part of and belong within the wider community.

This paper tests this experimentally through a common-pool resource game across four European cities (Córdoba, Lucca, Nitra, and Riga) embedded in a Horizon 2020 project focused on inclusive urban development. Participants decide how much to invest in a real local amenity over three successive stages. The key experimental manipulation is simple: we randomly vary whether the amenity is described as benefiting the general community or as specifically benefiting a locally relevant marginalized group, such as sexual minorities in Riga, ethnic minorities in Nitra, elderly residents in Lucca, and residents of low socio-economic background in a deprived neighborhood in Córdoba. Monetary incentives, group composition, and game rules are held constant across conditions. Only the institutional narrative changes. Using the strategy method, we elicit participants' full contribution schedules conditional on others' behavior at each stage, as well as their beliefs about others' behaviour, allowing us to classify individuals into cooperative strategy profiles, such as unconditional cooperators, conditional cooperators, and compensators, and examine how these

evolve over time. We additionally collect detailed socio-demographic information, allowing us to explore heterogeneous effects by gender, minority status, and strategic orientation.

We find three results. First, inclusive framing has no average effect on contribution levels or on beliefs about others' behavior across all stages and specifications. This null result has important policy-relevance: cooperation among a heterogeneous population is not crowded out by explicitly naming marginalized groups as beneficiaries of a collective good. The equity-efficiency trade-off central to policy debates is not supported in this setting. Second, the null average effect masks substantial heterogeneity. Minority participants increase their contributions significantly under inclusive framing, with effects growing over time and reaching over fifteen tokens by the final stage. Women show a similar pattern, with significant increases in Stages 2 and 3. Majority participants and men exhibit no corresponding change. Crucially, these behavioral differences are not accompanied by shifts in beliefs about others' contributions, suggesting that inclusive framing operates through identity-based motivation rather than updated expectations about others' behavior. Third, inclusive framing differentially activates cooperative strategy profiles. Conditional cooperators and compensators respond positively to inclusive framing, particularly in later stages, while unconditional defectors are unresponsive. Strategy profiles remain largely stable across stages: the inclusive framing reshapes behavior within existing strategic orientations rather than converting individuals from one motivational type to another.

Our paper therefore makes two main contributions. Substantively, we provide experimental evidence that EDI is not orthogonal to cooperation in social dilemmas, but instead shapes how cooperative effort is distributed across social groups. Conceptually, we reframe inclusion as an institutional feature that influences norms and identities rather than as a purely redistributive intervention. More broadly, our findings speak to ongoing debates about the governance of diversity in collective action problems. In heterogeneous societies, sustaining cooperation may depend not only on enforcing rules or aligning incentives, but also on designing institutions that are perceived as inclusive and fair. Understanding these dynamics is essential for economists interested in the behavioural foundations of institutions and for policymakers seeking to promote collective welfare in diverse urban settings

2 Literature review

This paper sits at the intersection of two bodies of experimental and theoretical work. The first examines how institutional framing and social identity shape the legitimacy of collective action in heterogeneous populations. The second examines how the dynamics of cooperation in common-pool resource settings is affected by behavioral heterogeneity and the possible coexistence of distinct motivational profiles. Reading these literatures together appears to suggest a shared gap. To our knowledge, neither of them appear to have examined how inclusive institutional signals interact with motivational heterogeneity to reshape the distribution and dynamics of cooperative effort over time. We review each in turn before stating the contribution of the present paper.

A large experimental literature establishes that cooperation in social dilemmas depends not only on material incentives but on the perceived legitimacy and fairness of the institutional context. Fehr and Gächter, 2000 and Ostrom, 2000 show that communication, norm enforcement, and institutional design can sustain cooperation well above the free-rider equilibrium. Subsequent work demonstrates that these effects operate through framing and perceived appropriateness rather than incentives alone and that individuals respond to the social meaning of the situation, not just its payoff structure (Ferraro & Price, 2013; Gächter et al., 2010). Bicchieri, 2006 formalizes this insight by arguing

that social norms are activated when individuals perceive that a situation calls for a particular behavior and expect others to comply. On this account, institutional framing shapes cooperation by determining which norms are salient and which behaviors are socially expected.

These mechanisms become more complex in socially heterogeneous settings. A substantial literature documents that diversity can complicate cooperation by weakening shared norms, increasing social distance, and generating perceptions of inequity (Alesina & La Ferrara, 2000; Glaeser et al., 2000). When group members differ in income, ethnicity, or social status, the shared normative foundations that sustain cooperation may be thinner or more fragile. This observation has generated concern that policies explicitly targeting or recognizing minority groups may further fragment cooperative norms by signaling a departure from universalism.

The economics of identity provides a theoretical framework for thinking about how institutional signals interact with heterogeneous populations. Akerlof and Kranton, 2000, 2010 model identity as a component of utility that depends on social categories and the norms associated with them. Institutions affect behavior by making particular identities salient and by defining what behavior is consistent with those identities. Experimental evidence confirms that identity matters for cooperation: even minimal group assignments increase in-group generosity, and identity linked to social status shapes expectations and participation in collective tasks (Chen & Li, 2009). Critically, these effects are heterogeneous as they depend on which identities are activated and how the institutional context relates to group membership. This suggests that inclusive framing that explicitly acknowledges marginalized groups as beneficiaries of a collective good may have differential effects across individuals depending on which identities it activates.

Despite these insights, experimental research has paid limited attention to equality, diversity and inclusion (EDI) as a specific institutional feature in cooperation settings. Existing studies have examined heterogeneity as an exogenous source of variation, in-group favoritism as a consequence of group assignment, and framing as a general modifier of cooperative behavior. None has directly tested whether making marginalized groups visible as beneficiaries of a collective good, which we argue to be the defining feature of EDI-oriented institutional design, affects cooperation in a mixed population. Therefore, we do not know much about whether inclusive framing undermines aggregate cooperation by alienating majority participants, or whether it is compatible with the maintenance of collective action.

Regarding the second strand of literature, sustainable governance of common-pool resources has been a central concern in economics and the social sciences since Ostrom's foundational work (Ostrom, 2000; Ostrom et al., 1994). Ostrom's institutional analysis framework emphasizes that successful CPR governance depends on institutional legitimacy, the congruence between rules and local conditions, and the recognition of users' rights to organize collective arrangements. These principles were developed in the context of natural resource commons but extend almost naturally to urban commons, such as community spaces, shared amenities, and collective infrastructure, where the governance challenge is sustaining contribution across a diverse population with heterogeneous interests and identities. For our purposes, a key insight from Ostrom is that institutional legitimacy is not merely a condition for initial cooperation but a foundation for the behavioral dynamics through which cooperation is maintained over time.

Moreover, the behavioral literature on public goods and CPR games has documented that cooperation in these settings is produced by a heterogeneous population of motivational types rather than a representative agent. Using the strategy method introduced by Selten, 1967 and applied to public goods by Fischbacher et al., 2001, researchers have consistently identified a distribution of cooperative profiles including unconditional cooperators, conditional cooperators, compensators,

and unconditional defectors. These profiles reflect fundamentally different behavioral logics: unconditional cooperators contribute regardless of others' behavior; conditional cooperators reciprocate others' contributions; compensators adjust contributions to stabilize collective provision at a perceived fair level; and defectors prioritize individual payoffs regardless of group outcomes. Fischbacher and Gächter, 2010 show that the dynamics of cooperation over time depend critically on this distribution; more specifically, declining cooperation in repeated games reflects the interaction between conditional cooperators, who lower contributions when they observe others contributing less, and defectors, whose low contributions drag the group toward free-riding equilibria.

This profile-based approach has important implications for CPR governance that have not been fully developed in the existing literature. If sustainable cooperation depends on the distribution and interaction of motivational types, then institutional design should be evaluated not only for its effects on average contribution levels but for its effects on which motivational types are activated and how they interact over time. Andreozzi et al., 2020 shows that the dynamics of cooperative profiles cannot be explained by belief updating alone, suggesting that something about the institutional or strategic environment shapes how profiles evolve. However, the role of specific institutional features, and in particular of inclusive framing, in shaping these dynamics has not been examined.

We aim to fill this gap by experimentally isolating the effect of inclusive institutional framing in a CPR environment. By holding payoffs constant and manipulating only how the beneficiaries of a collective good are described, we examine how inclusion operates regardless of material incentives. This approach allows us to assess whether inclusive framing alters cooperation at the aggregate level or whether it primarily reallocates cooperative effort across individuals with different identities and behavioral orientations.

3 Method and Data

This study investigates how institutional signals of inclusion affect cooperative behavior in heterogeneous groups facing a common-pool resource dilemma. To this end, we designed and implemented a field experiment combining a standard common pool resource game with a contextual framing that varies depending on whether the collective project is described as benefiting the entire community or explicitly benefiting a marginalized group. The experimental protocol was implemented in four small and medium-sized European cities as part of a Horizon 2020 project that focused on inclusive urban development. The experiment is designed to isolate the behavioural impact of inclusive institutional framing while holding incentives constant.

3.1 Experimental Design and Treatments

The experiment is based on a common-pool resource game framed as a multi-stage investment project, in which Participants are informed that they are part of a group jointly deciding how much effort to invest in the development, operation, and maintenance of a local urban amenity. Each amenity corresponds to a real facility that was discussed and co-designed with local partners and later implemented within the Horizon 2020 IN-HABIT project.

Participants are randomly assigned to one of two framing conditions in a between-subject design. The experimental manipulation consists in an information treatment where we randomly change the main beneficiary of some local amenity. Each treatment condition is composed in the same way. First, a paragraph describes the local amenity in a neutral and technical presentation. Then, a paragraph presents the common-pool resource situation related to the local amenity. This second

paragraph concludes with a sentence about the main beneficiary of the local amenity that randomly change depending on treatment conditions. In one, the general framing treatment, the local amenity is described as benefiting the entire community in a general way. In the other, the inclusive framing treatment, the amenity is described as specifically benefiting a locally relevant marginalized group.

Importantly, the treatment manipulation does not affect the payoff structure, group composition, or rules of the game. It only varies the institutional narrative surrounding the public good. This design allows us to interpret treatment effects as responses to inclusion signals rather than to material redistribution. Although the experimental procedures are identical across cities, the specific amenities and marginalized groups differ to reflect local priorities. In Riga, the amenity is a community stage and the marginalized group is sexual minorities; in Córdoba, a multifunctional green space benefiting residents of the Las Palmeras neighborhood, a notoriously deprived area; in Nitra, a picnic meadow with relevance for ethnic minorities; and in Lucca, a recreational area designed for animal-assisted therapy, with a focus on elderly residents.

For instance, the text for the experiment in Riga is as follows [1]:

This game is about investing in a community stage. It is a platform where the amateur and professional organizations, as well as local citizens of the neighbourhood, are able to offer and perform their initiatives in various forms to broaden the cultural exchange and accessibility of diverse knowledge and experiences. The community stage is planned in the outdoor territory as a wooden platform with roof and applied area around it with or without tables and chairs for visitors (depending on the format of the event).

At the moment, this community stage is a preliminary project that could come to life in the coming months in the Āgenskalns neighbourhood. Although you won't be asked to contribute financially to the realization of the final project, the decision you will make in this game should reflect your willingness to engage with the project. The project will benefit the entire community with general audience events, ***but will welcome in particular events aimed at fostering the inclusion of sexual minorities****.*

3.2 Game structure and elicitation process

Participants play a three-stage CPR game, followed by a payoff stage. They are randomly assigned to groups of five anonymous participants, with group composition remaining fixed throughout the game. Identities of other group members are never revealed. Each participant receives an endowment of 300 tokens to invest in the project, divided equally across the three decision stages (100 tokens per stage). In each stage, participants decide how many tokens to contribute to the collective project and how many to keep. Tokens invested in the project generate a return shared equally among all group members. Specifically, total group contributions across the three stages are multiplied by a factor of three and then divided equally among the five group members. A participant's payoff is therefore given by:

$$\text{Payoff}_i = 300 - \sum_{s=1}^{3} c_{i,s} + \frac{3}{5} \sum_{j=1}^{5} \sum_{s=1}^{3} c_{j,s} \tag{1}$$

[1] No formatting was applied in the participants' experimental material. The bold and underlined part corresponds to the EDI treatment. See the Appendix for full instructions.

where $c_{i,s}$ denotes participant i's contribution in stage s. These parameters create the standard social dilemma of public good games: from an individual perspective, keeping tokens is optimal, while from a group perspective, full contribution maximizes total welfare.

To capture heterogeneity in cooperative behaviour, we employ the strategy method (Fischbacher et al., 2001; Selten, 1967) and elicit participants' contribution conditional on potential levels of previous group cooperation. Therefore, in stage 1, participants choose their contribution and state their belief about the average contribution of other group members. In stage 2, they specify how much they would contribute if previous group contributions were low, medium, or high beliefs are elicited again. Finally, in stage 3, participants make conditional contribution decisions for five scenarios corresponding to very low, low, medium, high, and very high cumulative contributions in the previous stages and beliefs are elicited once more.

Beliefs are elicited as empirical expectations ("How many tokens do you think other members in your group contributed on average?") and are not incentivized. They serve as proxies for participants' expectations and stereotypes about others' cooperative behaviour. The use of the strategy method allows us to reconstruct individual reaction functions and examine how contributions respond to perceived cooperation by others, institutional framing, and identity-related characteristics.

3.3 Strategy profiles, heterogeneity and stability in behaviours

Using conditional contribution data elicited via the strategy method (Fischbacher et al., 2001; Selten, 1967), we classify participants into cooperative strategy profiles based on the shape of their response functions. Focusing on these profiles, rather than on average contribution levels, provides a more informative account of behaviour in heterogeneous groups. Similar average contributions can arise from fundamentally different behavioural logics, reflecting variation in motivations, normative orientations, and sensitivity to the institutional environment. Our classification follows a well-established experimental literature that interprets observed cooperation as the aggregate outcome of distinct behavioural types (Fischbacher & Gächter, 2010; Fischbacher et al., 2001).

Following the standard classification in the public goods literature, we first identify three core strategy types. Unconditional Defectors (Free-riders) contribute little or nothing regardless of others' behavior. Their contributions display no systematic relationship with expected group cooperation, consistent with preferences that prioritize individual monetary payoff or with a rejection of cooperative norms. Unconditional Cooperators contribute high amounts independent of others' contributions. This behavior is typically interpreted as reflecting strong internalized norms of cooperation, altruistic preferences, or moral commitments that are relatively insensitive to strategic considerations. Conditional Cooperators adjust their contributions positively with expected contributions by others. Their response functions exhibit a monotonic increasing relationship between own contributions and beliefs about group cooperation, consistent with reciprocity and conditional norm compliance. These three types are well documented and serve as a benchmark for understanding cooperative heterogeneity. However, restricting analysis to these categories leaves a substantial share of observed behavior either imperfectly classified or treated residually, particularly in richer designs that elicit multi-scenario response functions. For this reason, and to more accurately capture the diversity of response patterns observed in our data, we extend the canonical typology along two dimensions: the strength of response and the direction of adjustment. These extensions are also motivated by the need to distinguish behaviours linked to concerns for equality and inclusion. Therefore, Weak Conditional Cooperators adjust their contributions in the same direction as others but with a flatter slope. Compared to standard conditional cooperators, they exhibit muted respon-

siveness to changes in expected group behaviour. This pattern may reflect limited sensitivity to social norms or a cautious approach to reciprocity. Compensators increase their contributions when others contribute little and reduce their contributions when others contribute more. These individuals appear to target a desired collective outcome or perceived fair level of provision, a behaviour that is consistent with preferences that emphasize equality or burden-balancing. Weak Compensators display a similar compensatory logic, but with smaller adjustments. Their contributions counterbalance group's contributions in direction but not magnitude, suggesting only a partial concern for stabilizing collective outcomes. Humped (or Triangle) Cooperators increase contributions as the expected group cooperation rises up to a point, but reduce contributions when group cooperation becomes very high. This non-monotonic pattern is often interpreted as reflecting fairness concerns or resistance to over-contributing when others already shoulder a large share of the cooperative burden. V-shaped Cooperators contribute relatively more when expected group cooperation is very low or very high, but less at intermediate levels. This profile may capture mixed motivation and uncertainty about the appropriate level of cooperation, or even transitions between compensatory and conformist responses. Together, these profiles allow us to classify the vast majority of observed response functions without relying on an undifferentiated "unclassifiable" category.

Essentially, the profiles described above are a reaction function to other players' contributions at the previous stage. We are discretizing the players' contributions to match the levels proposed in each scenario, which are explicitly labelled low (L), medium (M), and high (H) in addition to explicit numerical values. For instance, if players decide to contribute 35 tokens in the low scenario (i.e. group contribution lower than 200 tokens, or 40 tokens per person), 50 tokens in the medium scenario (i.e. group contribution between 200 and 300 tokens, or between 40 and 60 tokens per person), and 70 tokens in the high scenario (i.e. group contribution higher than 300 tokens, or 60 tokens per person), their reaction function would be LMH, when ordering reactions from Low to High scenarios, and they would be classified as Conditional Cooperators. We apply a similar strategy for Stage 3, grouping the high and very high scenarios in a high category and similarly for the very low and low scenarios. Preserving five scenarios in Stage 3 yields qualitatively similar results. This approach is similar to the one by Andreozzi et al. (2020).

To study the dynamic stability of the strategy profiles, we exploit the differences in classification between Stage 2 and Stage 3 and construct a Sankey diagram, which represents transitions in strategy profiles by listing every transition and counting how common one transition between two categories is among participants. Each flow is weighted by the number of participants transitioning between specific categories, therefore producing a relatively compact and visually attractive representation of movements between strategy profiles. Stability is therefore assessed by looking at the share of participants following one strategy in both Stage 2 and Stage 3.

3.4 Outcome variables and model specification

The two outcome variables are contribution levels at each stage and beliefs about others' contributions. Because the strategy method yields full best-response functions, we follow Fischbacher et al., 2001 and aggregate conditional contributions to construct a single expected contribution measure for each stage.

Equation 2 is employed to estimate treatment effects:

$$Y_i = \alpha + \beta_1 T_i + \beta' X_i + \gamma_c + \varepsilon_i \tag{2}$$

where Y_i denotes either contributions or beliefs, T_i is a treatment indicator, X_i is a vector of controls, and γ_c captures city fixed effects.

Furthermore, to explore heterogeneous effects, we estimate:

$$Y_i = \alpha + \beta_1 T_i + \beta_2 H_i + \beta_3 (T_i \times H_i) + \beta' X_i + \gamma_c + \varepsilon_i \tag{3}$$

where H_i captures individual characteristics such as gender, minority status, or strategy profile. Standard errors in all specifications are clustered at the session-city level and adjusted for a small number of clusters using the CR2 Bell–McCaffrey correction. In some specifications, we also replace γ_c with city-by-session fixed effects γ_{cs}.

In Equation 2, the parameter of interest is the average treatment effect β_1, while in Equation 3, the parameter of interest is the heterogeneous treatment effect β_3. Given our context and research focus, β_1 measures the average difference in cooperation (or beliefs) between participants exposed to an inclusive institutional framing and those exposed to a neutral framing, holding constant observable characteristics, session effects, and city-specific context. It captures the net effect of making inclusion salient as an institutional signal on cooperative behaviour, averaged across a heterogeneous population. Importantly, a zero or small β_1 indicates that inclusive framing does not undermine aggregate cooperation, even when institutions explicitly recognize marginalized groups. From an EDI perspective, β_1 answers a question central to policy debates: "Does explicitly embedding inclusion into the narrative of a collective good crowd out cooperation among the population at large?" Therefore, a statistically insignificant β_1 provides evidence that inclusive framing is compatible with the maintenance of collective action.

β_3 captures how the treatment effect differs for individuals with characteristic $H_i = 1$ relative to the baseline group. It measures whether inclusive institutional framing has differential effects across identities or behavioral types. In particular, when H_i is minority status, a positive β_3 indicates that individuals belonging to a marginalized group increase their cooperative contributions more under inclusive framing than non-minority participants. Similarly, when H_i is a strategy profile, β_3 reveals how much more or less responsive profile k is to inclusion, relative to the baseline, and therefore it tells us the extent to which inclusive institutional framing differentially activates or suppresses the cooperative logic associated with strategy profile k. This is crucial as it addresses the question of which cooperative motivations are responsive to inclusion, and which are not; in other words, it identifies the behavioural channels through which EDI operates, rather than treating cooperation as a single outcome.

3.5 Descriptive statistics and randomization balance

The experiment was conducted between November 2022 and March 2023 in four European cities. Recruitment was coordinated by local teams using convenience sampling, with explicit instructions to oversample women and members of locally relevant marginalized groups. All participants were at least 18 years old. Experimental sessions were conducted in neutral indoor venues that ensured adequate privacy. Participants received a fixed participation fee as well as a variable payment based on their decisions in the common-pool resource game. Monetary incentives were adjusted using regional price-level indices at the NUTS-3 level, based on pre-COVID labor productivity, in order to ensure comparability of incentives across cities. Payment methods varied across locations due to institutional and legal constraints (cash or vouchers), but these differences are absorbed by city fixed effects in all regression analyses. All procedures were approved by the University of Reading Research Ethics Committee.

Table 1 reports the main socio-demographic characteristics of participants by city, as well as balance statistics across treatment conditions. Women are overrepresented in all four city samples, reflecting both the recruitment strategy and higher availability of women for daytime experimental sessions. Gender balance is comparatively closer to parity in Córdoba and Lucca. Members of marginalized groups constitute a minority of the overall sample, ranging from 7% in Lucca to approximately 20% in Nitra and Riga. Despite active collaboration with local NGOs, recruiting marginalized participants alongside non-marginalized participants proved challenging. The relatively higher shares observed in Nitra and Riga are consistent with city-specific recruitment strategies, including dedicated sessions held in the Dražovce neighborhood in Nitra and the focus on sexual minorities in Riga, whose minority status is not externally visible. In Córdoba, the targeted minority group consists of residents of the stigmatized Las Palmeras neighborhood; achieving close to 10%t representation is therefore already substantial. Similar constraints apply in Lucca. Average age is broadly comparable across cities, at around 40 years. Córdoba stands out with a higher proportion of university-educated participants, reflecting the fact that sessions were hosted on university premises and advertised within university networks. Reported income levels and employment rates are generally consistent with national patterns, although employment is somewhat lower in Córdoba and Nitra, plausibly reflecting recruitment strategies aimed at marginalized groups. Household size, disability status, care responsibilities, marital status, and religiosity are broadly similar across locations.

Table 1 also reports balance tests comparing observable characteristics across treatment and control groups. Overall, covariates are well balanced. The only statistically significant difference concerns the proportion of respondents attending religious services more than once per month, which is slightly higher in the control group and significant at the 10% level. Given the marginal level and isolated nature of this imbalance, randomization appears to have been implemented successfully.

Additional desxriptive statistics are provided in Annex C. In particular, Figure C.1 displays the overall distribution of cooperative strategy profiles derived from participants' response functions. The most prevalent profile is Unconditional Cooperators, followed by Weak Conditional Cooperators and Humped (Triangle) Cooperators. Unconditional Defectors constitute only a small fraction of the sample, indicating that outright non-cooperation is rare in this context. Compensatory profiles, including both Compensators and Weak Compensators, are also relatively infrequent but more common than unconditional defection. Overall, the distribution shows that most participants exhibit some willingness to cooperate. Figure C.2 and Figure C.3 break down strategy profiles by gender and minority status, respectively. The distribution is broadly similar across genders, with two notable differences: women are slightly more likely to be Conditional Cooperators than men (7% versus 4%), while Weak Compensators are more prevalent among men than women. When comparing minority and majority participants, minority members are significantly more likely to be classified as Unconditional Cooperators (58%t versus 47%), and no minority participants are classified as Weak Compensators. Finally, Figure C.4 shows average contribution levels by strategy profile. Contributions differ substantially across profiles. Unconditional Cooperators exhibit the highest average contributions (84.6 tokens), while Unconditional Defectors contribute the least (26 tokens), a difference that is mechanically linked to the profile definitions. Compensators display the second-lowest mean contribution levels, contributing significantly less on average than Unconditional Cooperators, Conditional Cooperators, and Weak Conditional Cooperators. V-shaped Cooperators exhibit the largest variance in contributions, consistent with the non-monotonic nature of their response functions.

4 Results

We structure our findings into three parts. We first report average treatment effects of inclusive institutional framing, which address a viability question, namely whether cooperative behaviour is affected by explicit reference to inclusion and diversity. We then report heterogeneous treatment effects, both by identity and strategy profile, which address the distributional issue, namely who responds to inclusion, and through which behavioural patterns. Finally, we show the stability of cooperative strategies over time, which address the dynamic institutional issue, namely whether inclusion reshapes cooperation behaviours over time, even if aggregate levels remain unchanged.

4.1 Average treatment effects of inclusive institutional framing

Table 2 reports average treatment effects on contributions at each stage of the game, while Table 3 reports effects on beliefs about others' contributions, estimated from equation 2.

Regarding contributions, across all specifications and stages, we find no statistically significant average treatment effect on contribution levels. Similarly, inclusive framing does not significantly affect beliefs about others' cooperation. This result holds both in specifications without controls (Panel A) and in specifications including individual-level controls for gender, education, income, and minority status (Panel B). In the most parsimonious specification, without city or session fixed effects, the estimated treatment effect is -0.39 tokens in Stage 1, 1.53 tokens in Stage 2, and 1.67 tokens in Stage 3, none of which are statistically distinguishable from zero. Introducing city fixed effects, session fixed effects, or both does not materially alter either the magnitude or precision of the estimates. In all cases, standard errors remain large relative to point estimates, and no systematic pattern emerges across stages.

Regarding beliefs about others' contributions, inclusive framing does not have a statistically significant effect on beliefs at any stage of the game. Adding individual-level controls and fixed effects does not materially affect the results. The absence of an average treatment effect on beliefs suggests that inclusive framing does not systematically shift participants' expectations about how much others contribute.

Under the EDI framing of the paper, this null result is substantive. It indicates that explicitly acknowledging marginalized groups as beneficiaries of a collective good does not undermine aggregate cooperation, even in a heterogeneous population. Inclusive framing neither crowds out contributions nor induces systematic withdrawal by majority participants. Taken together, these results suggest that inclusive institutional design is compatible with the maintenance of collective action, but they do not imply that inclusion is behaviourally neutral. To uncover how inclusion operates, it is necessary to move beyond average effects and examine heterogeneity.

Table 1: Descriptive statistics and balance between treatment groups

	Descriptive statistics				Randomization		
	Córdoba	Lucca	Nitra	Riga	Control	Treated	Difference
Male (%)	0.42	0.45	0.35	0.16	0.36	0.33	0.03
	(0.50)	(0.50)	(0.48)	(0.37)	(0.48)	(0.47)	(0.04)
Minority (%)	0.09	0.07	0.20	0.20	0.13	0.15	-0.02
	(0.28)	(0.26)	(0.40)	(0.40)	(0.34)	(0.36)	(0.03)
Age	42.46	39.94	35.54	36.79	38.66	38.61	0.05
	(16.46)	(15.12)	(14.74)	(14.74)	(15.54)	(15.42)	(1.43)
University degree (%)	0.76	0.02	0.07	0.04	0.20	0.23	-0.04
	(0.43)	(0.13)	(0.25)	(0.19)	(0.40)	(0.42)	(0.04)
Net monthly income	1230.09	1274.79	708.02	1058.41	1094.28	1021.19	73.09
	(905.80)	(938.97)	(539.90)	(840.86)	(848.88)	(839.56)	(77.72)
Working (%)	0.47	0.69	0.57	0.72	0.63	0.60	0.03
	(0.50)	(0.46)	(0.50)	(0.45)	(0.48)	(0.49)	(0.04)
Having a disability (%)	0.03	0.02	0.08	0.04	0.03	0.06	-0.03
	(0.16)	(0.16)	(0.27)	(0.19)	(0.17)	(0.23)	(0.02)
Having care duties (%)	0.07	0.07	0.07	0.08	0.08	0.06	0.02
	(0.26)	(0.25)	(0.25)	(0.28)	(0.27)	(0.24)	(0.02)
Household size	.	2.85	3.02	2.57	2.86	2.79	0.07
		(1.35)	(1.55)	(1.27)	(1.59)	(1.20)	(0.15)
Relationship status							
Married (%)	0.42	0.31	0.25	0.29	0.32	0.31	0.00
	(0.50)	(0.46)	(0.44)	(0.45)	(0.47)	(0.47)	(0.04)
Cohabiting (%)	0.00	0.17	0.12	0.32	0.15	0.15	-0.01
	(0.00)	(0.38)	(0.32)	(0.47)	(0.35)	(0.36)	(0.03)
Divorced (%)	0.07	0.04	0.08	0.09	0.08	0.06	0.01
	(0.26)	(0.20)	(0.27)	(0.29)	(0.26)	(0.24)	(0.02)
Separated (%)	0.00	0.05	0.00	0.02	0.02	0.01	0.01
	(0.00)	(0.22)	(0.00)	(0.14)	(0.14)	(0.11)	(0.01)
Single (%)	0.46	0.29	0.53	0.22	0.38	0.39	-0.01
	(0.50)	(0.46)	(0.50)	(0.42)	(0.49)	(0.49)	(0.04)
Widowed (%)	0.01	0.01	0.02	0.05	0.02	0.02	-0.00
	(0.09)	(0.09)	(0.12)	(0.21)	(0.13)	(0.14)	(0.01)
Other (%)	0.04	0.13	0.01	0.01	0.05	0.05	-0.00
	(0.18)	(0.34)	(0.09)	(0.10)	(0.21)	(0.21)	(0.02)
Cities							
Córdoba (%)	.	.	.	.	0.23	0.25	-0.02
					(0.42)	(0.43)	(0.04)
Lucca (%)	.	.	.	.	0.27	0.24	0.04
					(0.45)	(0.43)	(0.04)
Nitra (%)	.	.	.	.	0.27	0.28	-0.01
					(0.44)	(0.45)	(0.04)
Riga (%)	.	.	.	.	0.23	0.23	-0.00
					(0.42)	(0.42)	(0.04)
Religious attendance							
Less often (%)	.	0.05	0.11	0.25	0.11	0.15	-0.04
		(0.22)	(0.31)	(0.44)	(0.31)	(0.36)	(0.04)
More than once a week (%)	.	0.02	0.02	0.00	0.02	0.01	0.01
		(0.13)	(0.15)	(0.00)	(0.13)	(0.11)	(0.01)
Never, practically never (%)	.	0.63	0.46	0.38	0.47	0.51	-0.04
		(0.49)	(0.50)	(0.49)	(0.50)	(0.50)	(0.05)
Once a month (%)	.	0.06	0.04	0.06	0.07	0.03	0.04*
		(0.23)	(0.19)	(0.23)	(0.26)	(0.17)	(0.02)
Once a week (%)	.	0.02	0.14	0.03	0.06	0.07	-0.01
		(0.16)	(0.35)	(0.17)	(0.24)	(0.26)	(0.03)
Once a year (%)	.	0.09	0.07	0.12	0.09	0.10	-0.01
		(0.29)	(0.25)	(0.33)	(0.28)	(0.30)	(0.03)
Only on special holy days (%)	.	0.13	0.17	0.17	0.19	0.12	0.06
		(0.34)	(0.38)	(0.37)	(0.39)	(0.33)	(0.04)
Religious practice							
Less often (%)	.	0.07	0.18	0.04	0.11	0.10	0.01
		(0.26)	(0.39)	(0.19)	(0.31)	(0.30)	(0.03)
Never, practically never (%)	.	0.62	0.35	0.50	0.48	0.49	-0.01
		(0.49)	(0.48)	(0.50)	(0.50)	(0.50)	(0.05)
Once a day (%)	.	0.04	0.00	0.04	0.02	0.03	-0.02
		(0.20)	(0.00)	(0.19)	(0.13)	(0.18)	(0.02)
Once a year (%)	.	0.02	0.04	0.11	0.04	0.07	-0.03
		(0.13)	(0.19)	(0.32)	(0.19)	(0.25)	(0.02)
Only on special holy days (%)	.	0.03	0.08	0.01	0.04	0.05	-0.01
		(0.18)	(0.27)	(0.10)	(0.19)	(0.21)	(0.02)
Only when attending religious services (%)	.	0.11	0.02	0.07	0.08	0.05	0.04
		(0.31)	(0.12)	(0.26)	(0.28)	(0.21)	(0.03)
Several times a day (%)	.	0.04	0.00	0.07	0.04	0.03	0.02
		(0.20)	(0.00)	(0.26)	(0.21)	(0.17)	(0.02)
Several times each week (%)	.	0.07	0.34	0.16	0.19	0.19	-0.00
		(0.25)	(0.48)	(0.37)	(0.39)	(0.40)	(0.04)
N	114	121	131	108	238	236	474

Notes: The table presents descriptive statistics of each city sample (first four columns: Córdoba, Lucca, Nitra, Riga) and reports quality of the random assignment to treatment conditions in the three last columns (Control, Treated, and Difference). Specifically, the mean for the control (resp. treatment) group is reported in the Control (resp. Treated) column, and their difference (Control-Treated) is reported in the last (Difference) column. Standard deviations are reported with their respective means for every column except for differences where we report standard errors. For more details about how variables are constructed, see Section 3. Results of the T-tests for differences between the treatment and control groups are reported at the standard 1%, 5%, and 10% significance levels, which are respectively indicated by $***$, $**$ and $*$.

Table 2: Average treatment effect on contributions

Outcome Var:	Stage 1	Stage 2	Stage 3	Stage 1	Stage 2	Stage 3	Stage 1	Stage 2	Stage 3
Panel A: no controls									
Treatment effect	-0.391	1.525	1.668	-0.835	1.117	1.212	-1.055	1.127	1.225
	(2.917)	(2.397)	(1.695)	(2.645)	(2.204)	(1.514)	(2.555)	(2.173)	(1.594)
City FE	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Session FE	No	No	No	No	No	No	Yes	Yes	Yes
Obs.	474	474	474	474	474	474	474	474	474
Panel B: with controls									
Treatment effect	-0.338	1.052	1.148	-0.409	0.986	1.121	-0.612	0.929	1.096
	(2.899)	(2.403)	(1.552)	(2.692)	(2.331)	(1.503)	(2.675)	(2.337)	(1.612)
City FE	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Session FE	No	No	No	No	No	No	Yes	Yes	Yes
Obs.	469	469	469	469	469	469	469	469	469

Notes: The table reports the average treatment effect from equation 2 for specifications including city fixed-effects, city-by-session fixed-effects, or none over the different stages of the common-pool resources game. It has two panels for distinguishing between specifications including controls (Panel B) or not (Panel A). Control variables include a dummy variable for gender equal to 1 if respondent is male, income categories where the reference category is "no income" (see Section 3 for more details), a dummy variable for minority status equal to 1 if respondent belonging to one of the four minority groups identified in each city (sexual minorities, ethnic minorities, residents of a deprived and stigmatized neighbourhoud, and the Elderly. See Section 3 for more details), and a dummy variable equal to 1 if respondent is having a university degree. Standard errors are clustered at the city-by-session level and are adjusted for small sample correction using the (CR2) Bell-McCaffrey adjustment (Huang & Li, 2022). Results are reported at the standard 1%, 5%, and 10% significance levels, which are respectively indicated by $***$, $**$ and $*$.

Table 3: Average treatment effect on beliefs about others' contributions

Outcome Var:	Stage 1	Stage 2	Stage 3	Stage 1	Stage 2	Stage 3	Stage 1	Stage 2	Stage 3
Panel A: no controls									
Treatment effect	0.657	0.632	0.585	0.318	0.348	0.242	0.102	0.470	0.190
	(2.092)	(2.931)	(2.103)	(1.907)	(2.898)	(2.056)	(1.820)	(2.906)	(2.111)
City FE	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Session FE	No	No	No	No	No	No	Yes	Yes	Yes
Obs.	472	468	464	472	468	464	472	468	464
Panel B: with controls									
Treatment effect	1.015	0.258	0.038	1.057	0.303	0.083	0.890	0.339	-0.075
	(2.307)	(2.973)	(1.970)	(2.155)	(2.965)	(1.899)	(2.097)	(2.943)	(1.961)
City FE	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Session FE	No	No	No	No	No	No	Yes	Yes	Yes
Obs.	467	463	459	467	463	459	467	463	459

Notes: The table reports the average treatment effect from equation 2 for specifications including city fixed-effects, city-by-session fixed-effects, or none over the different stages of the common-pool resources game. It has two panels for distinguishing between specifications including controls (Panel B) or not (Panel A). Control variables include a dummy variable for gender equal to 1 if respondent is male, income categories where the reference category is "no income" (see Section 3 for more details), a dummy variable for minority status equal to 1 if respondent belonging to one of the four minority groups identified in each city (sexual minorities, ethnic minorities, residents of a deprived and stigmatized neighbourhoud, and the Elderly. See Section 3 for more details), and a dummy variable equal to 1 if respondent is having a university degree. Standard errors are clustered at the city-by-session level and are adjusted for small sample correction using the (CR2) Bell-McCaffrey adjustment (Huang & Li, 2022). Results are reported at the standard 1%, 5%, and 10% significance levels, which are respectively indicated by $***$, $**$ and $*$.

4.2 Heterogeneous effects

4.2.1 Minority status and gender

Table 4 reports heterogeneous treatment effects by minority status, and Table 5 reports heterogeneous effects by gender as estimated by equation 3, both using participants' contributions as an outcome. For beliefs about others' contributions, results are reported in Table 6 and Table 7 for minority status and gender respectively.

For minority participants, inclusive framing leads to significantly higher contributions, particularly in later stages of the game. The magnitude of the heterogeneous effect increases over time, reaching over 15 tokens in the final stage. By contrast, contributions by majority participants remain largely unchanged. This pattern suggests that inclusion operates through identity-based responsiveness, enhancing cooperation among those who are explicitly recognized as beneficiaries of the collective good. Similarly, women respond more strongly to inclusive framing than men. Overall, the difference in responses induced by the treatment is about 10 tokens between genders. While no gender differences emerge in the initial stage, women's contributions increase significantly in Stages 2 and 3 under inclusive framing. This delayed response is consistent with an interpretation in which inclusion affects norm alignment and fairness salience, rather than immediate behavioural impulses.

Notably, we find no corresponding heterogeneous effects on beliefs about others' contributions (Table 6 and Table 7). This indicates that the observed behavioural differences are unlikely to be driven purely by changes in expectations and instead reflect differential normative or identity-based responses to institutional framing.

Table 4: Heterogeneous treatment effect by minority status

Outcome Var:	Stage 1	Stage 2	Stage 3	Stage 1	Stage 2	Stage 3	Stage 1	Stage 2	Stage 3
Panel A: no controls									
Treated × Minority	6.28	11.34*	18.06**	3.84	9.99	16.88**	2.37	7.98	15.36*
	(5.66)	(5.47)	(6.80)	(4.93)	(6.05)	(7.29)	(4.71)	(6.15)	(7.61)
City FE	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Session FE	No	No	No	No	No	No	Yes	Yes	Yes
Obs.	474	474	474	474	474	474	474	474	474
Panel B: with controls									
Treated × Minority	6.54	11.40*	17.79**	4.19	9.80	16.42**	2.79	7.52	14.67*
	(4.87)	(5.51)	(6.64)	(4.26)	(5.78)	(6.92)	(4.11)	(6.21)	(7.52)
City FE	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Session FE	No	No	No	No	No	No	Yes	Yes	Yes
Obs.	469	469	469	469	469	469	469	469	469

Notes: The table reports heterogeneous average treatment effect by minority status, where minority status is one of the four minority groups identified in each city (sexual minorities, ethnic minorities, residents of a deprived and stigmatized neighbourhoud, and the Elderly. See Section 3 for more details.), from equation 3 for specifications including city fixed-effects, city-by-session fixed-effects, or none over the different stages of the common-pool resources game. It has two panels for distinguishing between specifications including controls (Panel B) or not (Panel A). Control variables include a dummy variable for gender equal to 1 if respondent is male, income categories where the reference category is "no income", and a dummy variable equal to 1 if respondent is having a university degree. See Section 3 for more details. Standard errors are clustered at the city and session level and are ajdusted for small sample correction using the (CR2) Bell-McCaffrey adjustment (Huang & Li, 2022). Results are reported at the standard 1%, 5%, and 10% significance levels, which are respectively indicated by $***$, $**$ and $*$.

Table 5: Heterogeneous treatment effect by gender

Outcome Var:	Stage 1	Stage 2	Stage 3	Stage 1	Stage 2	Stage 3	Stage 1	Stage 2	Stage 3
Panel A: no controls									
Treated × Women	0.42	9.35**	10.68**	0.07	8.71**	9.78**	1.45	10.01**	10.55**
	(4.34)	(3.99)	(4.18)	(4.19)	(4.02)	(4.27)	(4.41)	(4.10)	(4.50)
City FE	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Session FE	No	No	No	No	No	No	Yes	Yes	Yes
Obs.	471	471	471	471	471	471	471	471	471
Panel B: with controls									
Treated × Women	0.29	9.36**	10.01**	0.32	9.31**	9.86**	1.76	10.57**	10.46**
	(4.43)	(3.78)	(3.91)	(4.51)	(4.05)	(4.22)	(4.68)	(4.01)	(4.41)
City FE	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Session FE	No	No	No	No	No	No	Yes	Yes	Yes
Obs.	469	469	469	469	469	469	469	469	469

Notes: The table reports heterogeneous average treatment effect by gender from equation 3 for specifications including city fixed-effects, city-by-session fixed-effects, or none over the different stages of the common-pool resources game. It has two panels for distinguishing between specifications including controls (Panel B) or not (Panel A). Control variables include income categories where the reference category is "no income" (see Section 3 for more details), a dummy variable for minority status equal to 1 if respondent belonging to one of the four minority groups identified in each city (sexual minorities, ethnic minorities, residents of a deprived and stigmatized neighbourhoud, and the Elderly. See Section 3 for more details), and a dummy variable equal to 1 if respondent is having a university degree. Standard errors are clustered at the city-by-session level and are adjusted for small sample correction using the (CR2) Bell-McCaffrey adjustment (Huang & Li, 2022). Results are reported at the standard 1%, 5%, and 10% significance levels, which are respectively indicated by $***$, $**$ and $*$.

Table 6: Heterogeneous treatment effect by minority status (Beliefs)

Outcome Var:	Stage 1	Stage 2	Stage 3	Stage 1	Stage 2	Stage 3	Stage 1	Stage 2	Stage 3
Panel A: no controls									
Treated × Minority	4.88	-9.94	1.48	3.36	-9.57	0.99	0.89	-9.80	0.95
	(4.95)	(8.96)	(6.09)	(4.23)	(8.77)	(5.19)	(3.61)	(8.46)	(5.11)
City FE	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Session FE	No	No	No	No	No	No	Yes	Yes	Yes
Obs.	472	468	464	472	468	464	472	468	464
Panel B: with controls									
Treated × Minority	5.50	-9.76	1.76	3.68	-9.86	0.88	1.10	-10.64	0.67
	(5.37)	(8.64)	(6.26)	(4.58)	(8.43)	(5.57)	(4.01)	(8.20)	(5.59)
City FE	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Session FE	No	No	No	No	No	No	Yes	Yes	Yes
Obs.	467	463	459	467	463	459	467	463	459

Notes: The table reports heterogeneous average treatment effect on participants' beliefs about others' contributions by minority status, where minority status is one of the four minority groups identified in each city (sexual minorities, ethnic minorities, residents of a deprived and stigmatized neighbourhoud, and the Elderly. See Section 3 for more details.), from equation 3 for specifications including city fixed-effects, city-by-session fixed-effects, or none over the different stages of the common-pool resources game. It has two panels for distinguishing between specifications including controls (Panel B) or not (Panel A). Control variables include a dummy variable for gender equal to 1 if respondent is male, income categories where the reference category is "no income", and a dummy variable equal to 1 if respondent is having a university degree. See Section 3 for more details. Standard errors are clustered at the city-by-session level and are adjusted for small sample correction using the (CR2) Bell-McCaffrey adjustment (Huang & Li, 2022). Results are reported at the standard 1%, 5%, and 10% significance levels, which are respectively indicated by $***$, $**$ and $*$.

Table 7: Heterogeneous treatment effect by gender (Beliefs)

Outcome Var:	Stage 1	Stage 2	Stage 3	Stage 1	Stage 2	Stage 3	Stage 1	Stage 2	Stage 3
Panel A: no controls									
Treated × Women	4.14	2.46	5.78	3.94	1.44	4.90	4.64	2.15	6.27
	(5.51)	(4.68)	(5.70)	(5.32)	(4.70)	(5.54)	(5.56)	(4.81)	(6.00)
City FE	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Session FE	No	No	No	No	No	No	Yes	Yes	Yes
Obs.	469	465	461	469	465	461	469	465	461
Panel B: with controls									
Treated × Women	4.83	2.50	5.68	4.89	1.90	5.20	5.68	2.88	6.57
	(5.29)	(4.31)	(5.74)	(5.28)	(4.33)	(5.59)	(5.55)	(4.51)	(6.00)
City FE	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Session FE	No	No	No	No	No	No	Yes	Yes	Yes
Obs.	467	463	459	467	463	459	467	463	459

Notes: The table reports heterogeneous average treatment effect on participants' beliefs about others' contributions by gender from equation 3 for specifications including city fixed-effects, city-by-session fixed-effects, or none over the different stages of the common-pool resources game. It has two panels for distinguishing between specifications including controls (Panel B) or not (Panel A). Control variables include income categories where the reference category is "no income" (see Section 3 for more details), a dummy variable for minority status equal to 1 if respondent belonging to one of the four minority groups identified in each city (sexual minorities, ethnic minorities, residents of a deprived and stigmatized neighbourhoud, and the Elderly. See Section 3 for more details), and a dummy variable equal to 1 if respondent is having a university degree. Standard errors are clustered at the city and session level and are ajdusted for small sample correction using the (CR2) Bell-McCaffrey adjustment (Huang & Li, 2022). Results are reported at the standard 1%, 5%, and 10% significance levels, which are respectively indicated by $***$, $**$ and $*$.

4.2.2 Strategy profiles

Table 8 examines heterogeneous effects by strategy profile as estimated by equation 3 for contributions to the common-pool resource. For heterogeneous treatment effects on participants' beliefs about others' contributions, results are reported in Table 9. The reference category for strategy profiles is Unconditional Defectors since they are the one contributing the least.

A statistically significant reduction in contributions is observed among triangle cooperators in Stage 1 when the common-pool resource benefits the minority. This effect is robust across specifications but does not persist in subsequent stages. Conditional cooperators increase their contributions under inclusive framing, particularly in later stages, consistent with norm reinforcement and enhanced legitimacy of the collective project. Compensatory profiles also respond positively, suggesting that inclusion activates concerns for fairness and burden sharing. In contrast, some non-monotonic profiles display negative or insignificant effects in early stages, which dissipate or reverse over time. This pattern is consistent with initial uncertainty about appropriate contribution levels under inclusive framing, followed by adjustment as group norms stabilize. Overall, these results indicate that inclusive framing does not induce uniform behavioural patterns, but instead appear to activates cooperative behaviours in some kind of selective ways, which are possibly aligned with norms of recognition and collective responsibility.

When it comes to beliefs, the only statistically significant relationship concerns V-shaped Cooperators. Those exposed to an inclusive framing expect others to contribute less in Stage 3 only, which suggests a compensatory motivation as they contribute a lot when others are contributing small amounts, possibly related to concerns for fairness.

Table 8: Heterogeneous treatment effect by strategy profile

Outcome Var:	Stage 1	Stage 2	Stage 3	Stage 1	Stage 2	Stage 3	Stage 1	Stage 2	Stage 3
Panel A: no controls									
Treated × U. Coop.	-16.92*	-1.73	-0.80	-14.84	-1.13	0.32	-14.18	-0.85	2.26
	(9.58)	(5.03)	(7.96)	(10.44)	(4.90)	(8.05)	(10.55)	(4.96)	(8.39)
Treated × Cond. Coop.	-10.69	0.36	13.43	-10.22	0.80	14.46*	-7.36	1.93	16.37*
	(7.97)	(4.74)	(7.87)	(9.35)	(4.45)	(7.68)	(9.90)	(4.49)	(8.37)
Treated × Comp.	10.00	4.19	-3.86	10.91	5.05	-1.88	11.94	2.88	0.00
	(16.29)	(4.99)	(8.72)	(15.88)	(4.93)	(8.27)	(16.74)	(5.24)	(8.58)
Treated × Wk. C. Coop.	-15.52	3.70	4.76	-14.33	4.25	6.09	-13.64	4.83	8.56
	(9.30)	(6.41)	(9.32)	(9.58)	(6.08)	(9.17)	(9.96)	(6.22)	(9.51)
Treated × Wk. Comp.	-14.90	-2.30	-9.27	-11.42	-0.55	-6.91	-11.33	1.78	-3.53
	(13.66)	(6.76)	(11.87)	(14.54)	(6.12)	(11.31)	(14.84)	(6.91)	(12.22)
Treated × Tr. Coop.	-22.62**	10.31	14.78	-22.29**	10.19	15.26	-21.04*	9.29	16.82
	(9.24)	(7.38)	(14.38)	(9.40)	(7.04)	(14.59)	(9.94)	(7.29)	(15.15)
Treated × V-shaped	5.00	17.08	-2.05	9.60	18.96	0.71	10.36	20.98**	4.77
	(26.83)	(12.78)	(9.14)	(24.54)	(11.29)	(8.83)	(23.59)	(9.58)	(10.94)
City FE	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Session FE	No	No	No	No	No	No	Yes	Yes	Yes
Obs.	474	474	474	474	474	474	474	474	474
Panel B: with controls									
Treated × U. Coop.	-18.07*	-1.07	-1.34	-14.57	-0.24	-0.68	-14.40	-0.64	0.67
	(10.18)	(4.66)	(7.63)	(10.88)	(4.92)	(8.04)	(11.00)	(5.09)	(8.56)
Treated × Cond. Coop.	-13.90	1.25	12.54	-12.02	1.90	13.17*	-9.90	2.36	14.37
	(8.86)	(4.50)	(7.33)	(10.40)	(4.76)	(7.45)	(10.88)	(5.05)	(8.51)
Treated × Comp.	8.63	3.28	-4.92	12.90	4.72	-2.93	13.02	1.82	-1.27
	(16.00)	(6.40)	(9.73)	(15.86)	(6.18)	(9.59)	(16.24)	(6.50)	(10.37)
Treated × Wk. C. Coop.	-17.23	3.76	4.18	-14.54	4.55	5.15	-14.38	4.58	7.41
	(10.24)	(6.50)	(8.93)	(10.42)	(6.46)	(9.04)	(10.77)	(6.84)	(9.57)
Treated × Wk. Comp.	-18.21	-1.32	-10.57	-13.68	0.46	-8.45	-14.10	2.39	-5.32
	(14.49)	(7.19)	(10.37)	(15.27)	(6.92)	(10.28)	(15.59)	(7.66)	(11.02)
Treated × Tr. Coop.	-25.99**	10.82	13.20	-24.11**	11.03	13.32	-23.62*	9.79	14.47
	(10.52)	(7.67)	(14.69)	(10.37)	(7.85)	(15.16)	(11.12)	(8.35)	(15.91)
Treated × V-shaped	2.33	19.08	-2.54	7.72	20.57*	-0.75	8.75	22.52**	3.94
	(28.16)	(12.38)	(8.02)	(25.53)	(11.12)	(8.36)	(25.38)	(9.95)	(10.22)
City FE	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Session FE	No	No	No	No	No	No	Yes	Yes	Yes
Obs.	469	469	469	469	469	469	469	469	469

Notes: The table reports heterogeneous average treatment effect by strategy profile from equation 3 for specifications including city fixed-effects, city-by-session fixed-effects, or none over the different stages of the common-pool resources game. It has two panels for distinguishing between specifications including controls (Panel B) or not (Panel A). Control variables include a dummy variable for gender equal to 1 if respondent is male, income categories where the reference category is "no income" (see Section 3 for more details), a dummy variable for minority status equal to 1 if respondent belonging to one of the four minority groups identified in each city (sexual minorities, ethnic minorities, residents of a deprived and stigmatized neighbourhoud, and the Elderly. See Section 3 for more details), and a dummy variable equal to 1 if respondent is having a university degree. Standard errors are clustered at the city-by-session level and are adjusted for small sample correction using the (CR2) Bell-McCaffrey adjustment (Huang & Li, 2022). Results are reported at the standard 1%, 5%, and 10% significance levels, which are respectively indicated by $***$, $**$ and $*$.

U. Coop.: Unconditional Cooperators; Cond. Coop.: Conditional Cooperators; Comp.: Compensators; Wk. C. Coop.: Weak Conditional Cooperators; Wk. Comp.: Weak Compensators; Tr. Coop.: Humped/Triangle Cooperators; V-shaped: V-shaped Cooperators / mixed.

Table 9: Heterogeneous treatment effect by strategy profile (Beliefs)

Outcome Var:	Stage 1	Stage 2	Stage 3	Stage 1	Stage 2	Stage 3	Stage 1	Stage 2	Stage 3
Panel A: no controls									
Treated × U. Coop.	-13.60	-6.67	4.35	-11.45	-6.03	5.39	-12.13	-6.63	6.00
	(14.97)	(13.39)	(14.44)	(14.81)	(13.44)	(14.62)	(14.54)	(13.59)	(14.61)
Treated × Cond. Coop.	-1.44	3.20	13.12	-0.96	4.76	14.18	-0.50	5.21	16.06
	(14.42)	(12.07)	(15.82)	(13.98)	(12.64)	(16.08)	(13.83)	(13.01)	(16.29)
Treated × Comp.	-16.26	-3.88	-14.22	-15.16	-0.94	-12.92	-15.16	-2.65	-13.74
	(14.72)	(18.28)	(16.53)	(14.20)	(18.39)	(16.75)	(14.30)	(18.19)	(17.10)
Treated × Wk. C. Coop.	-7.98	-2.93	1.47	-6.47	-1.33	2.82	-6.62	-0.97	3.99
	(14.12)	(10.23)	(12.89)	(14.02)	(11.07)	(13.41)	(14.10)	(11.26)	(13.33)
Treated × Wk. Comp.	-4.87	-3.63	-14.63	-3.01	-1.82	-11.77	-5.11	-3.73	-10.83
	(19.27)	(13.36)	(15.47)	(19.11)	(13.05)	(15.89)	(18.85)	(12.84)	(16.44)
Treated × Tr. Coop.	-5.47	2.65	11.02	-4.02	3.35	11.08	-4.73	1.57	13.20
	(13.95)	(12.00)	(14.08)	(12.84)	(12.35)	(14.36)	(13.39)	(12.71)	(15.08)
Treated × V-shaped	-9.58	7.08	-35.97**	-6.20	8.91	-29.40**	-4.32	13.50	-20.17
	(27.75)	(19.28)	(13.60)	(26.52)	(19.81)	(12.79)	(24.79)	(21.98)	(13.46)
City FE	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Session FE	No	No	No	No	No	No	Yes	Yes	Yes
Obs.	472	468	464	472	468	464	472	468	464
Panel B: with controls									
Treated × U. Coop.	-14.26	-6.06	5.14	-11.05	-6.58	6.71	-12.20	-7.05	7.80
	(15.20)	(13.63)	(12.05)	(14.69)	(13.36)	(11.89)	(14.89)	(13.77)	(11.95)
Treated × Cond. Coop.	-4.43	3.01	13.47	-2.74	3.43	14.66	-3.11	4.34	17.76
	(14.13)	(12.43)	(12.98)	(13.38)	(12.55)	(13.00)	(13.75)	(13.16)	(13.73)
Treated × Comp.	-21.64	-5.62	-15.38	-18.05	-3.41	-12.19	-19.08	-4.73	-11.54
	(15.32)	(19.13)	(14.53)	(14.45)	(18.95)	(14.15)	(15.41)	(18.74)	(14.30)
Treated × Wk. C. Coop.	-9.78	-2.26	0.90	-7.39	-1.56	2.93	-8.48	-1.29	4.91
	(15.08)	(11.51)	(10.55)	(14.72)	(11.63)	(10.99)	(15.51)	(12.19)	(11.04)
Treated × Wk. Comp.	-8.34	-4.35	-15.83	-5.26	-1.89	-11.80	-8.44	-4.30	-10.61
	(19.90)	(13.53)	(14.06)	(19.46)	(13.52)	(14.62)	(19.69)	(13.46)	(15.28)
Treated × Tr. Coop.	-7.44	3.55	10.62	-5.21	2.74	11.28	-6.75	0.48	13.07
	(14.08)	(12.54)	(11.49)	(12.42)	(12.59)	(11.53)	(13.22)	(13.17)	(12.27)
Treated × V-shaped	-11.67	5.36	-37.25***	-6.80	6.37	-29.75**	-6.38	10.83	-21.90*
	(28.80)	(20.79)	(11.19)	(26.86)	(21.30)	(10.59)	(26.20)	(23.33)	(11.27)
City FE	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Session FE	No	No	No	No	No	No	Yes	Yes	Yes
Obs.	467	463	459	467	463	459	467	463	459

Notes: The table reports heterogeneous average treatment effect on participants' beliefs about others' contributions by strategy profile from equation 3 for specifications including city fixed-effects, city-by-session fixed-effects, or none over the different stages of the common-pool resources game. It has two panels for distinguishing between specifications including controls (Panel B) or not (Panel A). Control variables include a dummy variable for gender equal to 1 if respondent is male, income categories where the reference category is "no income" (see Section 3 for more details), a dummy variable for minority status equal to 1 if respondent belonging to one of the four minority groups identified in each city (sexual minorities, ethnic minorities, residents of a deprived and stigmatized neighbourhoud, and the Elderly. See Section 3 for more details), and a dummy variable equal to 1 if respondent is having a university degree. Standard errors are clustered at the city-by-session level and are adjusted for small sample correction using the (CR2) Bell-McCaffrey adjustment (Huang & Li, 2022). Results are reported at the standard 1%, 5%, and 10% significance levels, which are respectively indicated by $***$, $**$ and $*$.
U. Coop.: Unconditional Cooperators; Cond. Coop.: Conditional Cooperators; Comp.: Compensators; Wk. C. Coop.: Weak Conditional Cooperators; Wk. Comp.: Weak Compensators; Tr. Coop.: Humped/Triangle Cooperators; V-shaped: V-shaped Cooperators / mixed.

4.3 Stability of Strategy profiles

The Sankey diagram in Figure 1 illustrates the transitions between strategy profiles across stages.[2]

Unconditional Defectors are the most stable group: 80% (12/15) retain the same strategy across stages. Amongst them, those who switch do so transitioning to Weak Conditional Cooperators. Unconditional cooperators constitute the second most stable profile, with 77.3% (177/229) maintaining the same strategy across stages. Among those who switch, most transition to Weak Conditional Cooperator (69.2% of switchers), followed by Triangle Cooperators (17.3%). Weak Conditional Cooperators represent the third most stable group, with 59.5% (69/116) remaining consistent. Switchers most frequently transition to Conditional Cooperator (42.6% of switchers), then to unconditional cooperation (27.7%), and less commonly to unconditional defection (12.8%). All remaining profiles exhibit stability rates below 50%.

Overall, this analysis shows no evidence that inclusive framing directly alters the stability of strategy profiles. However, the heterogeneous treatment effects documented above suggest that inclusion shapes behaviour within existing strategic logics rather than inducing wholesale transitions between them. Inclusion operates by intensifying or dampening contributions conditional on strategy type, rather than by converting individuals from one type to another. This interpretation is reinforced with regressions analyses reported in Table D.1.

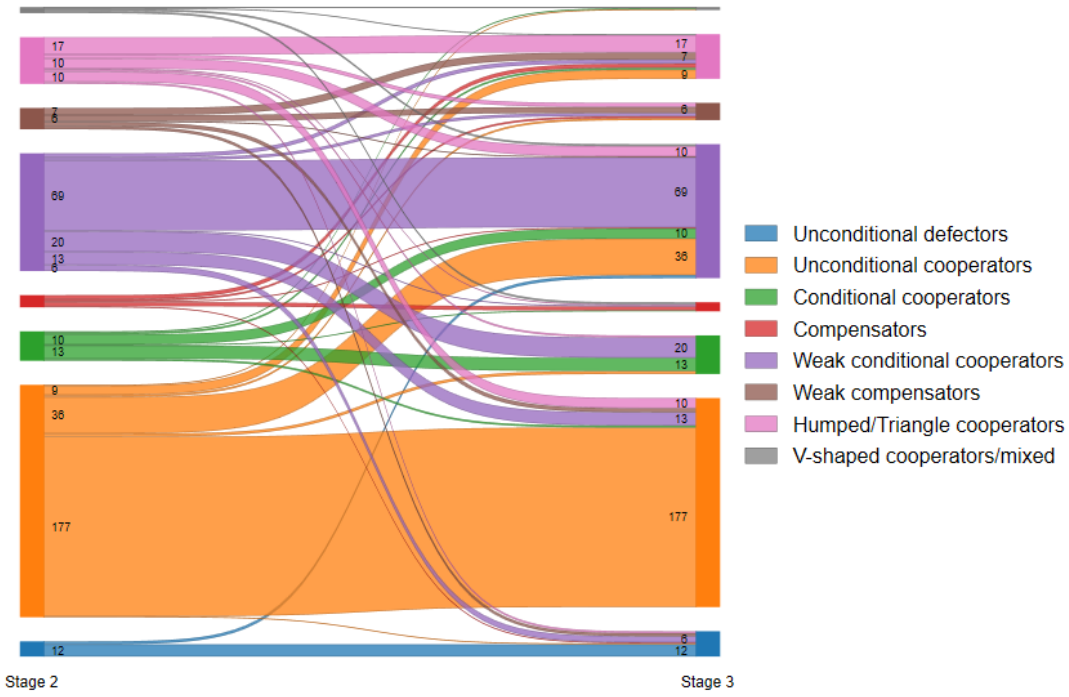
Figure 2 extends the analysis of strategy-profile stability by disaggregating transitions between Stage 2 and Stage 3 by gender (Panels a and b) and by minority status (Panels c and d). Regarding gender differences, the analysis reveals broadly similar patterns of stability for women and men, with unconditional strategies being the most persistent for both groups. Among women, Unconditional Cooperators exhibit a high degree of stability, with the majority remaining in the same profile across stages. When transitions occur, they are most often towards Weak Conditional Cooperation or Triangle Cooperation, rather than toward defection. Weak Conditional Cooperators among women also display moderate stability, with transitions primarily towards more strongly cooperative profiles. Among men, Unconditional Defectors are particularly stable, with relatively few transitions to alternative strategies. Unconditional Cooperators among men are also highly stable, though slightly less so than among women. Compared to women, men exhibit a higher prevalence of transitions involving Weak Compensator and Compensator profiles, reflecting greater movement toward compensatory or burden-balancing behaviors. Overall, while the broad structure of stability is similar across genders, men display slightly greater dispersion across non-monotonic and compensatory strategies.

Panels (c) and (d) highlight more pronounced differences between minority and majority participants. Among minority participants, Unconditional Cooperation is both the dominant and the most stable profile. A large share of minority participants classified as Unconditional Cooperators in Stage 2 retain this strategy in Stage 3, with relatively few transitions to conditional or compensatory profiles. Transitions toward defection are virtually nonexistent in this group. By contrast, majority participants exhibit greater heterogeneity and mobility across profiles, as evident by the various lines from Stage 2 to Stage 3. While Unconditional Cooperation remains common and stable, majority participants are more likely than minority participants to transition between conditional, weak conditional, and non-monotonic profiles. Weak Compensator and Triangle strategies are present almost exclusively among majority participants, and transitions into and out of these profiles contribute to greater overall dynamism in the distribution.

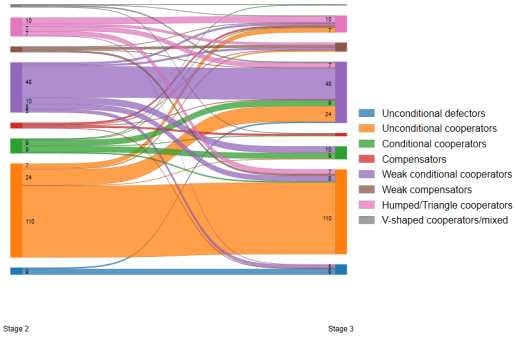
[2] In Appendix D, we explore whether the treatment has an effect on this dynamics but framing inclusively investments in public goods does not affect the probability to switch strategy. Results are reported in Table D.1.

In summary, this subgroup analysis reinforces the earlier conclusion that strategy stability varies systematically across participant characteristics. While unconditional cooperation and unconditional defection are the most stable strategies overall, minority participants display markedly higher concentration and stability in unconditional cooperation, whereas majority participants exhibit more frequent transitions across intermediate and compensatory strategies. Gender differences are more subtle, with women showing slightly greater persistence in cooperative profiles, and men showing greater dispersion toward compensatory and weakly cooperative strategies. These patterns mirror the heterogeneous treatment effects documented earlier, suggesting that differences in responsiveness to inclusive framing operate primarily within existing strategic logics, rather than by inducing large-scale shifts between different cooperation types.

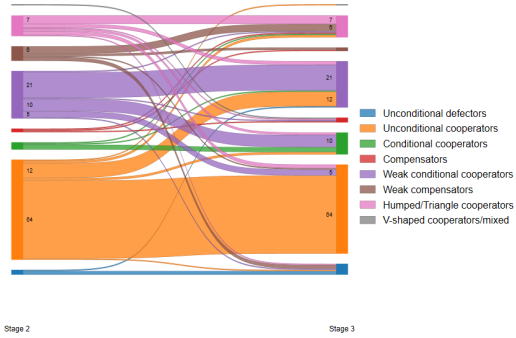
Figure 1: Stability of strategy profiles



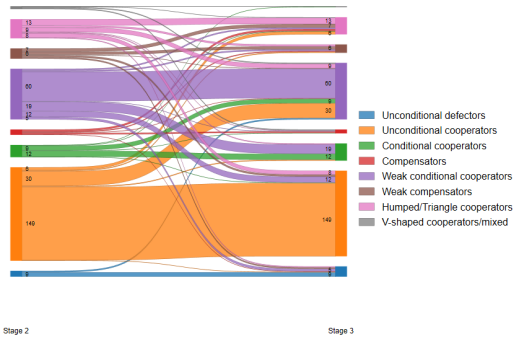
Notes: The figure describes transitions between different strategy profiles between Stage 2 and Stage 3 of the common-pool resources game.



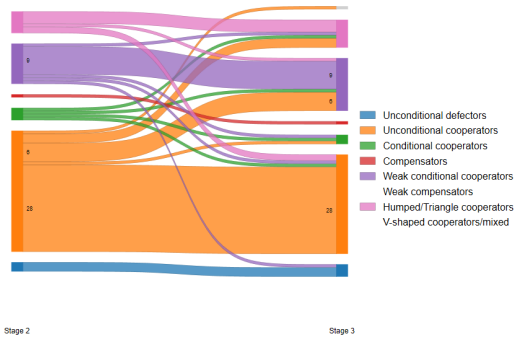
(a) Female



(b) Male



(c) Majority



(d) Minority

Figure 2: Stability of strategy profiles by gender and minority status

Table 10: Heterogeneous treatment effect by 2nd order beliefs

Panel A: Stage 1

Treatment effect	1.10	-1.03	-1.83	-0.45	-2.58	-2.97
	(4.68)	(4.12)	(4.06)	(4.47)	(4.03)	(4.18)
Belief Stage 1	0.75***	0.71***	0.70***	0.74***	0.71***	0.70***
	(0.05)	(0.04)	(0.05)	(0.05)	(0.04)	(0.05)
Treated x Belief Stage 1	-0.03	-0.00	0.01	-0.01	0.02	0.02
	(0.06)	(0.05)	(0.05)	(0.06)	(0.06)	(0.06)
Intercept	24.26***	25.98***	25.35***	25.28***	28.22***	28.36***
	(4.31)	(2.97)	(3.17)	(3.49)	(3.23)	(5.31)
City FE	No	Yes	Yes	No	Yes	Yes
Session FE	No	No	Yes	No	No	Yes
Past Beliefs	No	No	No	No	No	No
Controls	No	No	No	Yes	Yes	Yes

Panel B: Stage 2

Treatment effect	13.57	16.03	9.21	13.07	9.17	12.78	13.42	14.19	8.91	11.43	8.54	11.50
	(10.60)	(9.25)	(9.92)	(8.59)	(9.75)	(8.71)	(10.32)	(8.83)	(9.40)	(8.11)	(9.26)	(8.32)
Belief Stage 2	0.51***	0.28**	0.46***	0.26**	0.44***	0.25**	0.50***	0.27**	0.46***	0.26**	0.43***	0.25**
	(0.09)	(0.11)	(0.09)	(0.11)	(0.09)	(0.11)	(0.10)	(0.12)	(0.09)	(0.12)	(0.10)	(0.12)
Belief Stage 1		0.40***		0.38***		0.36***		0.39***		0.36***		0.35***
		(0.10)		(0.10)		(0.10)		(0.10)		(0.10)		(0.10)
Treated x Belief Stage 2	-0.18	-0.05	-0.12	-0.02	-0.12	-0.03	-0.18	-0.06	-0.12	-0.03	-0.11	-0.03
	(0.14)	(0.15)	(0.13)	(0.14)	(0.12)	(0.13)	(0.13)	(0.15)	(0.12)	(0.14)	(0.12)	(0.13)
Treated x Belief Stage 1		-0.18		-0.18		-0.16		-0.16		-0.14		-0.15
		(0.11)		(0.10)		(0.10)		(0.10)		(0.10)		(0.09)
Intercept	34.80***	24.49***	40.09***	29.66***	49.28***	39.18***	34.09***	25.43***	39.16***	28.10***	46.12***	36.39***
	(6.89)	(5.74)	(7.42)	(6.17)	(7.29)	(5.90)	(6.28)	(5.56)	(7.37)	(6.61)	(8.90)	(8.86)
City FE	No	No	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Session FE	No	No	No	No	Yes	Yes	No	No	No	No	Yes	Yes
Past Beliefs	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Controls	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes

Panel C: Stage 3

Treatment effect	3.88	12.05	1.76	9.15	2.59	10.31	2.29	10.04	1.09	8.41	2.38	10.08
	(9.00)	(10.99)	(8.96)	(10.51)	(8.73)	(10.69)	(8.22)	(9.99)	(8.27)	(9.91)	(8.32)	(10.14)
Belief Stage 3	0.46***	0.25*	0.42***	0.24*	0.43***	0.27**	0.44***	0.25**	0.42***	0.24**	0.43***	0.26**
	(0.08)	(0.12)	(0.08)	(0.12)	(0.08)	(0.11)	(0.09)	(0.11)	(0.08)	(0.11)	(0.09)	(0.11)
Belief Stage 2		0.15		0.13		0.11		0.14		0.14		0.12
		(0.16)		(0.16)		(0.16)		(0.16)		(0.16)		(0.16)
Belief Stage 1		0.25**		0.23**		0.21*		0.24**		0.23**		0.21*
		(0.10)		(0.11)		(0.11)		(0.10)		(0.10)		(0.10)
Treated x Belief Stage 3	-0.04	0.12	-0.01	0.11	-0.02	0.11	-0.02	0.13	-0.00	0.13	-0.02	0.11
	(0.12)	(0.16)	(0.12)	(0.16)	(0.12)	(0.17)	(0.12)	(0.15)	(0.12)	(0.15)	(0.12)	(0.16)
Treated x Belief Stage 2		-0.22		-0.18		-0.18		-0.23		-0.21		-0.21
		(0.21)		(0.21)		(0.21)		(0.21)		(0.21)		(0.21)
Treated x Belief Stage 1		-0.05		-0.05		-0.06		-0.04		-0.02		-0.04
		(0.11)		(0.10)		(0.09)		(0.09)		(0.09)		(0.08)
Intercept	34.47***	21.82***	41.55***	29.28***	48.64***	37.90***	33.87***	22.73***	37.27***	24.84***	43.53***	33.38***
	(5.44)	(5.21)	(6.68)	(6.78)	(5.62)	(5.99)	(5.02)	(5.52)	(6.77)	(7.62)	(8.31)	(8.67)
City FE	No	No	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Session FE	No	No	No	No	Yes	Yes	No	No	No	No	Yes	Yes
Past beliefs	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Controls	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	464	459	464	459	464	459	459	454	459	454	459	454

Notes: The table reports heterogeneous average treatment effect by 2nd order beliefs about contributions from equation 3 for specifications including city fixed-effects, city-by-session fixed-effects, or none over the different stages of the common-pool resources game. It has three panels for each stage of the common-pool resources game (Panel A: Stage 1; Panel B: Stage 2; and Panel C: Stage 3). Control variables include a dummy variable for gender equal to 1 if respondent is male, income categories where the reference category is "no income" (see Section 3 for more details), a dummy variable for minority status equal to 1 if respondent belonging to one of the four minority groups identified in each city (sexual minorities, ethnic minorities, residents of a deprived and stigmatized neighbourhoud, and the Elderly. See Section 3 for more details), and a dummy variable equal to 1 if respondent is having a university degree. Past beliefs refers to beliefs about others' contributions at previous stages relative to the Stage used as dependent variable. There is never past beliefs relative to Stage 1. Standard errors are clustered at the city-by-session level and are adjusted for small sample correction using the (CR2) Bell-McCaffrey adjustment (Huang & Li, 2022). Results are reported at the standard 1%, 5%, and 10% significance levels, which are respectively indicated by $***$, $**$ and $*$.

5 Discussion

Our aim is to investigate how inclusive institutional framing affects cooperation in common-pool resource settings characterized by social heterogeneity. Motivated by debates on whether explicit recognition of marginalized groups undermines or supports collective action, we combined a standard CPR experiment with a contextual manipulation that made inclusion salient without altering incentives. Our findings provide a nuanced answer: inclusive framing does not change aggregate levels of cooperation, but it systematically reshapes who cooperates, how individuals cooperate, including how they do so over time. Here, we reflect on the broader implications of these findings, in relation not just to the existing evidence on cooperation and heterogeneous identities, but also on the role of institutions and the way inclusion may operate in heterogeneous societies.

A first result of the paper is the absence of average treatment effects on both contributions and beliefs. Explicitly framing a collective project as benefiting marginalized groups does not crowd out cooperation, nor does it induce systematic withdrawal by non-targeted participants. From the perspective of the public goods and CPR literature, this finding is noteworthy. While past research has documented strong framing effects on cooperative behaviour, particularly when norms are activated or violated (Bicchieri, 2006; Ferraro & Price, 2013), our results show that inclusion *per-se* does not destabilize cooperative equilibria. This finding directly addresses a recurring concern in policy debates, related to the potential trade-off between efficiency and equity, namely that institutions emphasizing equality or diversity may reduce efficiency by alienating majority members. Our findings suggests that such concerns are not supported in this setting. Inclusive framing, when implemented as an institutional signal rather than a distributive intervention, is compatible with the maintenance of collective action. Crucially, however, the absence of an average effect does not imply behavioural neutrality. Rather, it points to the importance of looking beyond representative-agent models and average outcomes when studying cooperation in diverse environments. Understanding how inclusion operates requires looking beyond averages and unpacking heterogeneity, which leads to our second point.

Indeed, the most salient effects of inclusive framing emerge in the heterogeneous analyses. Minority participants and women increase their contributions under inclusive framing, particularly in later stages of the game, while majority participants and men exhibit little change in average behaviour. These patterns align closely with identity-based theories of economic behaviour. In social identity theory, institutional contexts shape behaviour by determining which identities are salient and which norms are associated with them. In identity economics, recognition and legitimacy enter utility indirectly, through identity-consistent behaviour. Our results are consistent with these frameworks. By explicitly acknowledging marginalized groups as beneficiaries of the collective project, inclusive framing appears to increase the perceived legitimacy and fairness of cooperation for those whose identities are being recognized. Moreover, the fact that we do not find differential effects on expectations about others' contributions, suggest that the increase in cooperation among minority participants and women is not simply driven by changes in empirical expectations. Therefore, inclusion seems to operate through altering the meaning of cooperation rather than beliefs about others' behaviour. This may have important implications on the interpretation of inclusion in institutional design. In our setting, inclusion shapes the underlying motivations for specific groups.

A core contribution of the paper lies in linking inclusive framing to heterogeneous strategy profiles. Consistent with prior work on response functions in public goods games (Fischbacher & Gächter, 2010; Fischbacher et al., 2001), we document substantial diversity in how individuals condition their behaviour on others' contributions. Extending this typology allows us to identify

which behavioural motivations are responsive to inclusion. Inclusive framing has little effect on unconditional defectors, indicating that payoff-oriented behaviour is largely immune to identity-based institutional cues. By contrast, conditional cooperators, unconditional cooperators, and compensatory profiles respond positively, particularly at later stages. This pattern suggests that inclusion primarily activates equality-oriented motivations. Compensatory behaviour is especially informative in this regard, because compensators adjust their contributions to balance the overall financial requirement and stabilize the collective outcome; therefore, they do not simply reciprocate what others do. This suggests that inclusive framing appears to strengthen distributive concerns and fairness rather than reciprocity alone. This resonates with models in which individuals care about equitable outcomes and moral self-image (Bénabou & Tirole, 2011) and suggests that inclusionary signals can be effective in working through and amplifying existing cooperative motivations, more so than creating new ones or converting free-riders into contributors.

This point is further reinforced by the findings from the analysis of stability of strategy profiles. Across the sample, unconditional cooperation and unconditional defection are the most stable behaviours, consistent with deeply internalized norms or strong payoff orientation. Other, non-monotonic, strategies are less stable and exhibit greater movement across stages. Also, disaggregating stability by gender and minority status uncovers systematic differences. Minority participants display particularly high stability in unconditional cooperation, while majority participants exhibit greater movement across intermediate and compensatory profiles. Gender differences are more modest but suggest slightly greater persistence in cooperative strategies among women. Notably, inclusive framing does not appear to induce large-scale transitions between strategy types. Instead, it affects behaviour within stable strategic orientations, intensifying or dampening contributions conditional on profile. This finding reinforces the interpretation that inclusion operates through norm activation rather than preference transformation. Inclusionary signals affect how individuals act given who they already are.

All together, our findings offer three broader implications for the study of cooperation in heterogeneous societies. First, they highlight the limitations of focusing solely on average effects. Inclusive institutional design may leave aggregate cooperation unchanged while substantially redistributing cooperative effort across social groups. Second, they contribute to a growing literature that treats institutions not only as incentive structures, but also as carriers of meaning, shaping identity salience and norm compliance. In diverse societies, the success of collective action may depend less on homogenizing preferences and more on recognizing and accommodating identity-based heterogeneity. Finally, our results suggest embedding EDI as an instituional signal, rather than a redistributive rule, can result in reallocation of cooperative effort toward individuals whose motivations are most aligned with fairness, recognition, and collective responsibility.

Several limitations of the present study point to avenues for future research. First, while our experimental design isolates the framing effect of inclusion, it does not allow us to disentangle all underlying psychological mechanisms, such as prestige concerns, stereotype threat, or expressive motivations. Combining similar designs with incentivized belief elicitation could shed further light on these channels. Second, our experiment captures short-run dynamics in a controlled setting. Whether similar patterns emerge in long-term or high-stakes collective action remains an open question. Field applications with repeated real-world interactions would be a valuable complement. Finally, the strategy-profile approach adopted here could be extended to other institutional interventions, such as punishment, communication, or participatory governance, to assess whether different institutional tools activate different cooperative behaviours.

However, our findings do show that inclusive institutional design does not undermine cooperation

in common-pool resource settings, but it does reshape the distribution and dynamics of cooperative behaviour in systematic ways. We therefore provide a framework for understanding how cooperation can be sustained in diverse and unequal societies.

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Appendix

A Full instructions

1

Anonymous questionnaire n° 1.

Please answer this questionnaire in private and as accurately as possible.

There are neither right nor wrong answers.

Thank you for taking part in this survey. This survey is entirely anonymous and voluntary. You are free to withdraw at any time. Would you choose to do so, please raise your hand to call a member of the organizing team and state clearly your desire to leave. You have been allocated a random number at the top of the questionnaire and on the corner of the sheet. Please detach the number in the corner of the sheet. You will receive your payment which will be calculated based on your answers in this questionnaire, at the end of the session upon presentation of this number.

A sum of 28 euros has been allocated to you for this event: 19 euros to cover for your participation and 9 euros to be used as tokens in the game below, which could be either invested towards the community or that you can keep for yourself. If you invest tokens, you can earn from up to 46 euros (27 euros in addition to your 19 euros). Or you can choose to not invest tokens and end the game with 28 euros. This decision is entirely yours and we guarantee anonymity. The privacy of your decision is ensured by the number you have been allocated.

You have 300 tokens (1 token = 0.03€) to play the game.

You will play this game in group of 5, but you will not know who is playing with you. At the end of the game, you will be randomly matched to 4 other participants.

This game is about investing in a community stage. It is a platform where the amateur and professional organizations, as well as local citizens of the neighbourhood, are able to offer and perform their initiatives in various forms to broaden the cultural exchange and accessibility of diverse knowledge and experiences. The community stage is planned in the outdoor territory as a wooden platform with roof and applied area around it with or without tables and chairs for visitors (depending on the format of the event).

At the moment, this community stage is a preliminary project that could come to life in the coming months in the Agenskalns neighbourhood. Although you won't be asked to contribute financially to the realization of the final project, the decision you will make in this game should reflect your willingness to engage with the project. The project will benefit the entire community with general audience events, but will welcome in particular events aimed at fostering the inclusion of sexual minorities.

There are 4 stages in this game:

-Stage 1: starting the project.

-Stage 2: running the project.

-Stage 3: maintenance stage.

-Stage 4: benefit from the project.

At the end of the game, depending on your decisions as well as decisions from other people in your group, you will receive the benefit from the project. This benefit will depend on the state of the project, which relies on your decision and your group decision over the 3 stages. Each group is made of 5 individuals. You all have 300 tokens each.

At stage 4, the total number of tokens invested in the project from all members of the group is tripled, and then shared out equally between the group members. The tokens you have not invested will be added to your share of the group investment to constitute your final reward for this part of the study. For example, if you invest 240 tokens over the 3 stages and that, when added to the other amount invested of the group, you sum up 1200 tokens altogether over the 3 stages, you will each receive a gain of 720 tokens (1200*3/5 participants) in addition to your participation fee and what remains from your game endowment (300-260 tokens), so 42€ euros total (780 tokens = 23€ from the game + 19€). We provide another detailed example below.

You have 300 tokens in total and you can invest up to 100 tokens at each stage. Your final gain will depend from the state of the project.

-Stage 1: Starting the project. *Please answer all the questions marked by a bullet point.*

- How many tokens you invest at this stage: _____(from 0 to 100)
- How many tokens, on average, do you think other people in your group have invested in stage 1? _____(from 0 to 100)

-Stage 2: Running the project. *Please answer all the questions marked by a bullet point.*

- For this second stage, we ask you to invest tokens depending on how many tokens other members of the group have invested in stage 1.

  Example: Imagine, you have invested 33 out of your 100 tokens at the first stage. Now, what would you do if your group had collectively invested, let's say 177 tokens at the first stage? What if your group had instead invested 377 tokens? In the latter case, it would be a high collective amount, whereas in the former it would be rather low. We want you to consider how many tokens you would invest if you were in each of these situations.

  Once we will have collected all the questionnaires, we will consider what has really been invested to compute your final payoff. So, for instance, imagine that you would invest 67 (out of 100) tokens if your group would make a high initial investment, but only 50 tokens for a medium group investment, and barely 10 tokens for a low group investment. Your table for the second stage would look like the one below:

Total tokens invested in Stage 1 by your group	How many tokens you invest at stage 2 (0-100)
(a) High: >300	____67_____
(b) Medium: 200-300	____50_____
(c) Low: <200	____10_____

  If the 33 tokens you would have invested in the first stage would add up to a high investment overall (like the 377 tokens mentioned initially), we would then use your 67 tokens to compute the group investment at this stage and proceed like this for all the subsequent stages and your final payoff.

  Now, please answer to all of the three different situations marked (a), (b), (c).

Total tokens invested in Stage 1 by your group	How many tokens you invest at stage 2 (0-100)
(a) High: >300	_____
(b) Medium: 200-300	_____
(c) Low: <200	_____

- How many tokens, on average, do you think other people in your group have invested in stage 2? _____(from 0 to 100)

-Stage 3: The maintenance stage. *Please answer all the questions marked by a bullet point.*

- For this third stage, we ask you to invest tokens depending on how many tokens other members of the group have invested over stage 1 & stage 2. *Please answer to all of the five different situations marked (a), (b), (c), (d) and (e), as you previously did in stage 2.*

Total tokens invested by your group – Stage 1 + Stage 2	How many tokens you invest at stage 3 (0-100)
(a) Very High: >800	_____
(b) High: 600-800	_____
(c) Medium: 400-600	_____
(d) Low: 200-400	_____
(e) Very Low: <200	_____

- How many tokens, on average, do you think other people in your group have invested in stage 3? _____(from 0 to 100)

-Stage 4: Benefits from the project.

This shows how your individual earnings will be computed depending on how many tokens you have invested as a group

The total contribution will be calculated by adding up the sum invested in stage 1 and the corresponding sum collected as a group in stage 2 and 3. For example, if the total group contribution at Stage 1 is 250, then the corresponding amount invested in Stage 2 (for the 'Medium' level) will be added up for the 5 members of the group.

Following this logic, imagine you would invest 32 tokens at stage 2 for this 'Medium' level, as would do the four other participants of your group. Then, you would have 250 tokens from stage 1 and 160 tokens from stage 2, which would place you in the 'Low' level for stage 3 with a group investment of 410 tokens. If you and all the four other participants would invest 10 tokens each in this case. You would end up with a total invested amount of 250+160+50 = 460 tokens.

*Then, this amount is tripled, 460*3 = 1380, and split equally between the participants, 1380/5 = 276. Added to the tokens you kept, 300-(50+32+10)=208, you would have 484 tokens, which converted and rounded into euros would make 484*0.03 = 15€, to add up to your participation fee (19€), hence 34€.*

B Treatments

B.1 Córdoba

Description of the public good

It is a green area where you can walk, do outdoor activities, carry out collective or artistic initiatives, walk with pets or do environmental activities and activities to improve mental and physical health. This space combines two leisure and socialization areas (with benches, tables and equipment) through a path developed with materials sustainable, permeable soils and native vegetation that provides shade. It is accessible to everyone and has benches designed to sit in a group along the path and be able to chat or perform concentration and relaxation exercises, and it is specially designed to be a safe and protected space for women who decide to walk through said area, with public lighting adapted to the environment and signage.

Control condition

At the moment, this is a preliminary project that could come to life in the coming months somewhere in the city of Córdoba.

Treatment condition

At the moment, this is a preliminary project that could come to life in the coming months in the neighbourhood of Las Palmeras de Córdoba, a vulnerable area of social transformation.

B.2 Lucca

Description of the public good

This game is about investing in activities with animals that aim to improve relationships between humans, and between humans and animals, and improve health and well-being. These activities will take place in fenced areas equipped with shaded spaces and benches, called "Relational Areas" which will be built in the River Park along the Animal Lines. To make them accessible to anyone, even those who don't have pets, professionals will organize specific educational and recreational play events with their appropriately trained animals. The activities could, for example, consist of throwing a dog's "treat" into a container and, if it hits the mark, the dog can be sent to fetch it.

Control condition

At the moment, activities with animals are at a preliminary stage and could come to life in the coming months. Although you won't be asked to contribute financially to the realization of the final project, the decision you will make in this game should reflect your willingness to engage with the project. The project will benefit the entire community with its recreational and educational activities with animals.

Treatment condition

At the moment, activities with animals are at a preliminary stage and could come to life in the coming months. Although you won't be asked to contribute financially to the realization of the

final project, the decision you will make in this game should reflect your willingness to engage with the project. The project will benefit the entire community with its recreational and educational activities with animals, but initiatives aimed at the inclusion of the elderly (¿65 years) will be developed in particular.

B.3 Nitra

Description of the public good

This game is about investing in a public green space – a picnic meadow. The picnic meadow will be created next to the cycle path connecting the Dražovce district, the North Industrial Park and the Sihoť City Park in an open area just before the entrance to the Dražovce district. The picnic meadow will be created by planting 40 trees, half of which will be cherry and pear fruit trees. Spaces will be created in the area of the picnic meadow, which will be planted with meadow plants, flowers and grasses. Two public fire pits with benches for sitting will be built in the mowed parts of the picnic meadow. In addition, bicycle racks, garbage cans and play elements will be provided. On the meadow it will be possible to have a picnic, to grill, play games, relax, collect herbs.

Control condition

At the moment, this picnic meadow is a preliminary project that could come to life in the coming months in Nitra. Although you won't be asked to contribute financially to the realization of the final project, the decision you will make in this game should reflect your willingness to engage with the project. The project will benefit the entire community, from cyclists to families with children.

Treatment condition

At the moment, this picnic meadow is a preliminary project that could come to life in the coming months in Nitra. Although you won't be asked to contribute financially to the realization of the final project, the decision you will make in this game should reflect your willingness to engage with the project. The project will benefit the entire community, from cyclists to families with children, but will be designed so that it can also be used by ethnic minorities.

B.4 Riga

Description of the public good

This game is about investing in a community stage. It is a platform where the amateur and professional organizations, as well as local citizens of the neighbourhood, are able to offer and perform their initiatives in various forms to broaden the cultural exchange and accessibility of diverse knowledge and experiences. The community stage is planned in the outdoor territory as a wooden platform with roof and applied area around it with or without tables and chairs for visitors (depending on the format of the event).

Control condition

At the moment, this community stage is a preliminary project that could come to life in the coming months in the Āgenskalns neighbourhood. Although you won't be asked to contribute financially

to the realization of the final project, the decision you will make in this game should reflect your willingness to engage with the project. The project will benefit the entire community with general audience events.

Treatment condition

At the moment, this community stage is a preliminary project that could come to life in the coming months in the Āgenskalns neighbourhood. Although you won't be asked to contribute financially to the realization of the final project, the decision you will make in this game should reflect your willingness to engage with the project. The project will benefit the entire community with general audience events, but will welcome in particular events aimed at fostering the inclusion of sexual minorities.

C Additional descriptive statistics

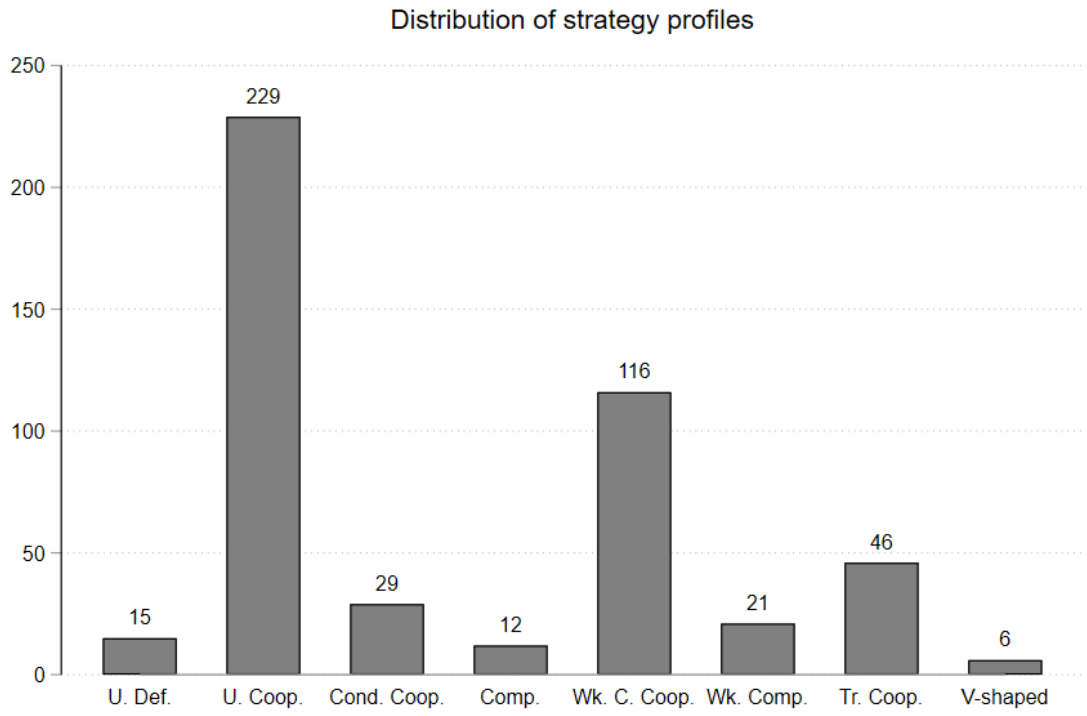

Figure C.1: Distribution of the different types of cooperators

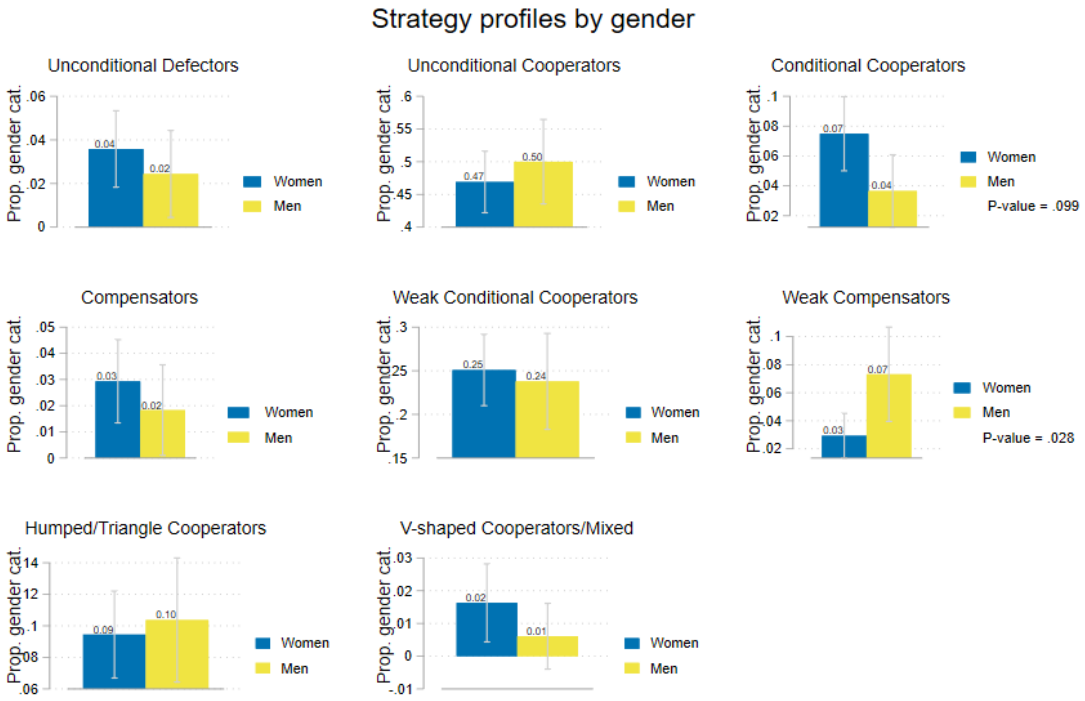

Figure C.2: Gender distribution of the different types of cooperators. We report 95% confidence intervals and P-values of a test of equality of proportions between genders (conditional on strategy profiles) when a significant difference exists at the 10% level at least.

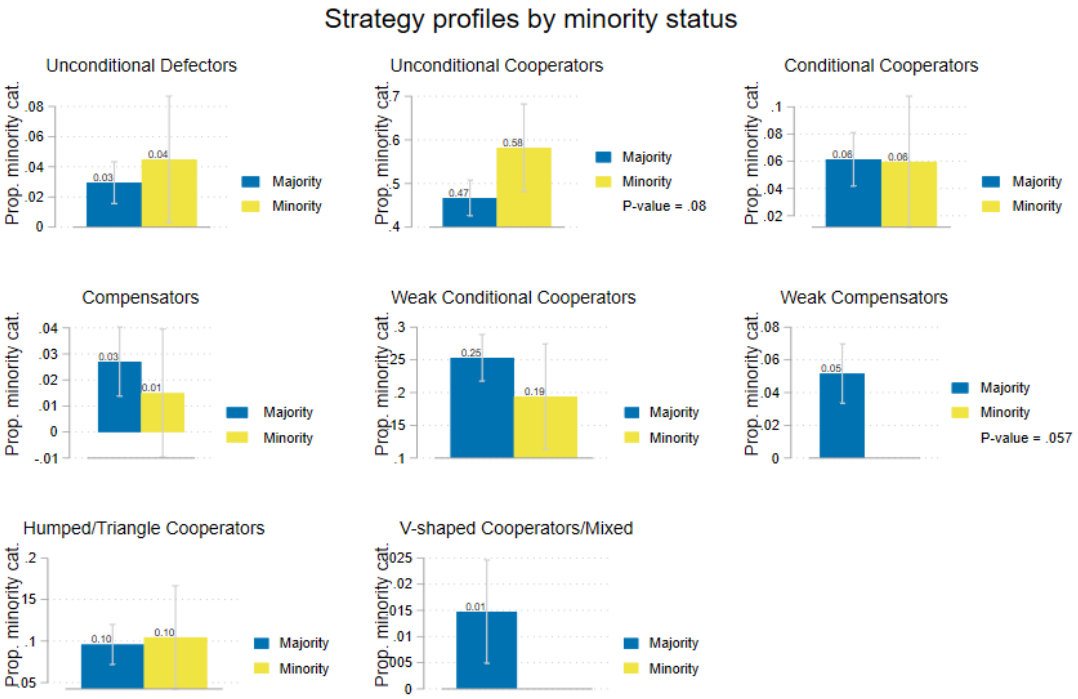

Figure C.3: Minority distribution of the different types of cooperators. We report 95% confidence intervals and P-values of a test of equality of proportions between minority groups (conditional on strategy profiles) when a significant difference exists at the 10% level at least.

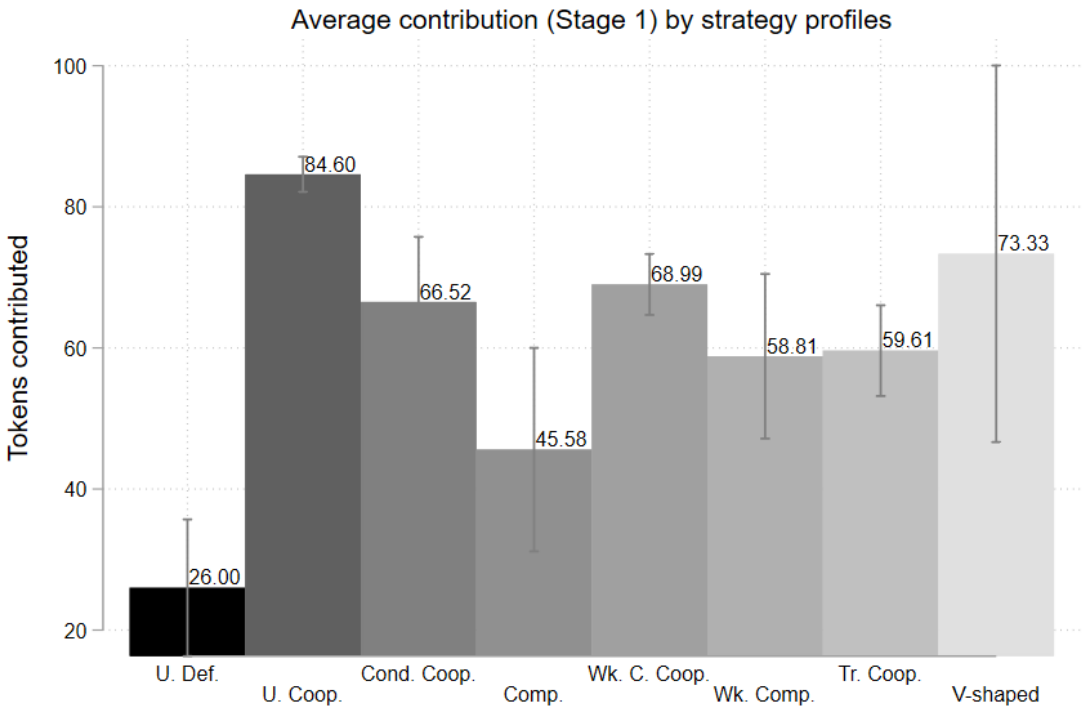

Figure C.4: Average contribution by strategy profile

D Additional stability analysis

Table D.1: Probability to switch strategy

	LPM	LPM	LPM	LPM	LPM	LPM	Logit	Logit	Logit
Treatment effect	0.041	0.045	0.050	0.055	0.055	0.062	0.277	0.085	0.251
	(0.040)	(0.041)	(0.043)	(0.038)	(0.039)	(0.041)	(0.180)	(0.345)	(0.183)
Treated × Women								0.294	
								(0.508)	
Treated × Minority									0.206
									(0.473)
City FE	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
Session FE	No	No	Yes	No	No	Yes	Yes	Yes	Yes
Controls	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
P-value (Score bootstrap)	.	.	.	.	.	.	.	0.81	0.19
P-value (Score bootstrap) - Heterogeneity	.	.	.	.	.	.	.	0.59	0.68
Obs.	474	474	474	469	469	469	466	466	466

Notes: The table reports average treatment effects and heterogeneous average treatment effects on the probability to switch strategy by gender and minority status from equation 2 and equation 3 for specifications including city fixed-effects, city-by-session fixed-effects, or none. The outcome variable is a dummy variable taking the value 1 if people switched strategy between Stage 2 and Stage 3, 0 otherwise. Control variables include a dummy variable for gender equal to 1 if respondent is male, income categories where the reference category is "no income" (see Section 3 for more details), a dummy variable for minority status equal to 1 if respondent belonging to one of the four minority groups identified in each city (sexual minorities, ethnic minorities, residents of a deprived and stigmatized neighbourhoud, and the Elderly. See Section 3 for more details), and a dummy variable equal to 1 if respondent is having a university degree. Standard errors are clustered at the city-by-session level and are adjusted for small sample correction using the (CR2) Bell-McCaffrey adjustment (Huang & Li, 2022) in Linear Probability Models (LPM). For Logit models, a score bootstrap (Kline & Santos, 2012) is applied instead. The P-values corresponding respectively to average treatment effects and heterogeneous average treatment effects are reported in the rows labelled "P-value (Score bootstrap)" and "P-value (Score bootstrap) - Heterogeneity". Standard errors reported in the table for Logit models corresponds to clustered standard errors at the city-by-session level. Results are reported at the standard 1%, 5%, and 10% significance levels, which are respectively indicated by $***$, $**$ and $*$.