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Evidence from an experiment**

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# Language and intergroup discrimination

## *Evidence from an experiment*

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### **Abstract**

Language is one of the most salient dimensions of ethnocultural identity and clearly marks who is and who is not a member of the group. We conduct an experiment to investigate the role of language in intergroup discrimination in the creation of social capital, here operationalised as a measure encompassing trust, trustworthiness, cooperation, and coordination. We observe the behaviour of the members of a minority language community when they receive the instructions written in their own idiomatic language and when they receive them written in the surrounding language. We find a language effect on behaviour, but this effect is gender specific. When deciding in the surrounding language, participants do not treat ingroup and outgroup members differently. When deciding in their own idiomatic language, females show intergroup discrimination and treat ingroup members more favourably compared to how they treat them when deciding in the surrounding language. We also observe that the behaviour participants exhibit in the experiment positively correlates with their attitudes as measured by the standard trust survey question used as a proxy for social capital.

*JEL Classification:* C9

*Keywords:* language, intergroup discrimination, social capital, experiment

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# 1 Introduction

Intergroup discrimination is one of the most documented findings in psychological and economic research. It refers to the tendency to treat the members of own group more favourably than those who do not belong to the group. Research has demonstrated that this discriminatory behaviour is primarily driven by a preferential treatment of ingroup members rather than derogation of outgroup members, in line with the argument that “ingroups are “psychologically primary,” in the sense that familiarity, attachment, and preference for one’s ingroups come prior to development of attitudes towards specific outgroups.” (Brewer, 1999, p.430) Intergroup discrimination has been experimentally investigated not only in natural but also in artificially created groups, demonstrating the ease with which this discriminatory behaviour can be triggered.

In this paper, we experimentally investigate intergroup discrimination among the members of a naturally existing group, namely a linguistic minority community settled in Northern Italy. The major novel contribution of this study is the controlled manipulation of language to enhance group identity salience.

Language spoken is one basic identifier of who is and who is not a member of the group (Brown and Ganguly, 2003; Dovidio and Gluszek, 2012) and is one of the most salient dimensions of ethnic identities (Krauss and Chiu, 1998). Research in developmental psychology has shown that children exhibit selective prosociality, and language is one basis for this selectivity: in a giving game, young children exhibit a preference for giving to the speaker of their native language over a foreign speaker (Kinzler et al., 2012). A recent stream of psychological research has shown that language has a strong effect on individual decision-making: the use of a foreign rather than a native language reduces a series of decision biases and increase utilitarianism in moral decisions (Keysar et al., 2012; Costa et al., 2014a,b). This study adds to this body of literature by investigating whether language influences decision-making also in situations that involve strategic interaction.

We believe that samples such as the one analysed in this research are particularly suitable to study the effect of language in intergroup dynamics, as they are non-hostile and do not present identity conflict. Compared to contexts characterized by conflicts that often revolve around issues of language, and in which language might have a stronger effect in defining the boundaries of groups, studying the role of language in these groups offers the opportunity to have a cleaner, baseline effect, not amplified by political antagonism.

To investigate the impact of language on decisions in our experiment, in addition to partner’s group affiliation we manipulate the language (either own idiomatic language or the surrounding language, i.e., Italian) in which the experimental instructions handed to participants are written. The behaviour on which we focus to investigate intergroup discrimination is the individual propensity to contribute to the accumulation of social capital, which we operationalise as a measure encompassing trust, trustworthiness, cooperation, and coordination.

Although social capital has been variously defined, factors such as civic at-

titudes, trust, and prosocial behaviour are generally recognised as essential to the social capital concept. Social capital has attracted much attention in the last twenty years. As pointed out by Bowles and Gintis (2002), this concept has a wide appeal, to the leftists because it emphasizes the importance of prosocial behaviour to solve social problems and to the rightists because it supports the idea that government intervention is not necessary to correct market failures. Particular attention has been directed to the relation between social capital and economic performance. Social capital has been found to positively correlate with growth in per capita income and investment rates (Knack and Keefer, 1997) and with financial development (Guiso et al., 2004), and trust, which is a key component of social capital, has been found to positively correlate with participation in stock markets (Guiso et al., 2008) and tax compliance (Scholz and Lubell, 1998). However, lower levels of social capital and economic performance have been registered in heterogeneous societies, i.e., fractionalised in ethnic, linguistic, religious, and economic terms (Alesina and Ferrara, 2000, 2002; Alesina et al., 2003; Costa and Kahn, 2003; Miguel and Gugerty, 2005; Putnam, 2007). Intergroup discrimination contributes to the fragmentation of social capital: while it is beneficial within the boundaries of the group, it can have detrimental effects at an aggregate level, fostering division, competition, or even conflict (Balliet et al., 2014). It becomes increasingly important to understand the intergroup dynamics, in the light that economic difficulties increase competition for resources, which in turn intensifies intergroup discrimination (e.g., Esses et al., 2001), and that globalization and processes of migration increase interactions with people that can be categorized as outgroups under several dimensions. Also understanding the role of language in intergroup dynamics becomes critical, as globalization and migration increasingly create multilingual contexts. Language issues are important also from the perspective of policy-makers, who face the trade-off between preserving languages as core values of people's identity and pursuing economic efficiency by reducing the direct and indirect economic costs of language diversity.

The results of our experiment show that, when using the surrounding language, the members of the minority language community do not exhibit intergroup discrimination. Importantly, we find that language has an impact on the propensity of people to create social capital, but this effect is gender specific: when interacting with an ingroup member, females are more prone to contribute to the creation of social capital when deciding in their own language than when deciding in the surrounding language; in addition, females exhibit intergroup discrimination when using their own language. We also observe that the behaviour participants exhibit in the experiment positively correlates with their attitudes as measured by the standard trust survey question used as a proxy for social capital.

The remainder of the paper is organized as follows: the next section reviews some related work; Section 3 provides details of the experimental design and procedures; Section 4 presents the results; Section 5 discusses the findings and reports some concluding remarks.

## 2 Related Literature

Although people display cooperative behavior with and other-regarding concerns for anonymous strangers, even in one-shot interactions, they particularly do so with those they feel socially close to, perceive as similar to themselves, and share group membership. Extensive research in both social psychology and, more recently, economics has shown that people tend to treat ingroup and outgroup members differently.

There is evidence suggesting that this discriminatory behaviour has deep developmental roots. Psychologists have shown that members of socially advantaged groups show implicit ingroup bias at a very young age, independently of the diversity in their everyday environment (Newheiser and Olson, 2012), and that this implicit preference remains stable throughout development (Baron and Banaji, 2006). Implicit ingroup preference, ingroup favouring resource allocation, and harsher third-party punishment of outgroups' selfishness have been observed in children even when group membership is randomly assigned (Dunham et al., 2011; Jordan et al., 2014). Also, economists have observed that the difference in costly egalitarian choices when sharing with ingroups and outgroups increases with age, with a strong ingroup bias at age 7 – 8 (Fehr et al., 2008) and 10 – 11 (Fehr et al., 2013).

The differential behaviour towards ingroups and outgroups appears to be reflected at neural level (see Molenberghs (2013) and Cikara and Bavel (2014) for recent reviews). Increased neural activity in brain regions associated with affective empathy (Xu et al., 2009; Hein et al., 2010) and cognitive empathy (Mathur et al., 2010) is observed when seeing an ingroup relative to an outgroup member in pain, and the differential activation is positively correlated with subsequent costly helping of ingroups (Hein et al., 2010). In addition, as indicated by increased activation in brain regions involved in action-perception, people actually see and, thus, judge ingroup actions more positively than the same outgroup actions (Molenberghs et al., 2013). Further, a specific brain area known to be involved in the personal self is significantly more active in subjects displaying ingroup bias in a money distribution task, suggesting that social and personal identity processes have a close relationship also at neural level (Volz et al., 2009). Finally, third-party punishment of ingroup versus outgroup perpetrators draws on different cerebral networks, with increased involvement of brain areas associated with perspective-taking when punishing ingroups, which suggests an attempt of third-parties to understand and justify ingroups' behaviour (Baumgartner et al., 2012, 2014).

The influence of group membership on individual economic behaviour has been experimentally investigated utilizing three main techniques. The first one is to prime identity in naturally-occurring groups. Ruffle and Sosis (2006) compared the behaviour of Israeli kibbutz members in a common-pool resource dilemma game when paired with a member of the same kibbutz and when paired with a Israeli city resident and found higher levels of cooperation in the former than in the latter situation. Whitt and Wilson (2007) conducted a dictator game experiment in Bosnia with three ethnic groups and observed that

dictators send higher amounts to co-ethnics than to non co-ethnics. In a study on third-party punishment, Bernhard et al. (2006) registered stronger punishment when the victim belongs to the third party's indigenous group than when the victim is from a different tribe. Relying on real social groups formed on a random basis, Goette et al. (2006) detected higher cooperation with ingroups than with outgroups and stronger protection of ingroup victims by third parties.

The second technique is to artificially create groups in the laboratory and enhance subjects' group identification through team-building tasks or pre-play group communication. Eckel and Grossman (2005) implemented several procedures to induce different degrees of group identification, from weak identity (with no pre-play interaction among group members) to strong identity (with group members engaging in a pre-play group task), and observed a significant increase in contributions to a public good as group identification becomes stronger. In a study on the impact of group identity on leading-by-example, Drouvelis and Nosenzo (2013) enhanced group identification by allowing the members of randomly formed groups to work together on a pre-play problem solving task and found that leaders sharing a common identity with all their followers set higher contributions, which positively affect the level of cooperation in the group. In a public goods experiment with endogenous group formation, Charness et al. (2014) reported that participating in a pre-play group-word task leads to higher amounts contributed to the public good and lower rates of exclusion from a group. Chen and Li (2009) assigned participants to groups based on true painting preferences or random assignment and allowed them to communicate via a chat program before completing an individual quiz and the core experimental tasks. They found that distribution, reciprocity, and social welfare maximising preferences are influenced by the partners' affiliation: when matched with ingroup partners, people exhibit an increase in charity concerns, positive reciprocity, and social welfare maximising choices, and a decrease in envy and negative reciprocity. They also run a treatment where the chat stage was removed and observed that pre-play group interaction increases group attachment, while has a moderate effect on behaviour. Chen and Chen (2011) created random groups and introduced the same group communication stage as in Chen and Li (2009) to increase the salience of group identity in a minimum-effort coordination game and reported that enhanced group salience is associated with the choice of higher effort levels and with higher rates of coordination when participants are matched with ingroup members. In contrast, no such effects are observed when the group communication stage is removed.

The third technique is to induce artificial identity through labelling or minimal categorization. Ahmed (2007) created trivial groups based on participation in the same or a different experimental session and on head or tail outcome of a coin flipping and observed that this was sufficient to generate ingroup favoritism in Prisoner's dilemma, Stag Hunt, and money allocation tasks, while no intergroup bias was observed in the battle of the sexes game. In a study on intergroup bias in oligopoly market transactions, Li et al. (2011) grouped participants on the basis of their painting preferences (in addition to a treatment with natural groups distinguished by college majors) and documented that both buy-

ers and sellers exhibit ingroup favouritism in the selection of trading partners. Guala et al. (2013) divided participants randomly or based on trivial characteristics (guessing a similar number or evaluating paintings similarly) and found that, with the exception of the random assignment, those matched with ingroup members contributed significantly more to a public good but only when group affiliation was common knowledge.

Although one might think that natural identities have a stronger influence than artificially induced identities, a recent meta-analytic study did not find any significant difference in intergroup discrimination in cooperation between studies using natural or experimentally created groups (Balliet et al., 2014).

As to why intergroup discrimination occurs, two theoretical perspectives, one related to preference and one related to expectations, are prevalent in the literature. The preference-based explanation is centered on Social Identity Theory (Tajfel, 1974; Tajfel and Turner, 1986), which posits that individuals derive part of their self-identity from the group they identify with. Group identification increases the salience of group goals and outcomes and, by maintaining a positive image of their group through ingroup-favouring actions, individuals contribute to their own self-esteem. The expectation-based perspective, in contrast, proposes that group membership influences individuals' beliefs about others' actions: people expect greater (generalised) reciprocity from ingroup than from outgroup members (Yamagishi et al., 1999). Support to the former perspective comes primarily from minimal group experiments on other-other allocation decisions (e.g., Tajfel et al., 1971) and other distribution tasks (e.g., Chen and Li, 2009). However, evidence such as the absence of ingroup bias when games are played sequentially rather than simultaneously (Yamagishi and Kiyonari, 2000) and when knowledge of group membership is asymmetric rather than common (Guala et al., 2013; Ockenfels and Werner, 2014) supports the idea that expectations play an important role in ingroup favouritism.

In this study, we examine the behaviour of a natural group, specifically the members of a linguistic minority, to investigate whether ethnic affiliation promotes differential behaviour towards ingroup and outgroup members in the creation of social capital, measured as trust, trustworthiness, cooperation, and coordination.

Several definitions of social capital have been proposed in the existing massive literature. One of the most cited definitions comes from Putnam (1993), who uses the concept of social capital to refer to "features of social organization, such as trust, norms, and networks, that can improve the efficiency of society by facilitating coordinated actions" (p.167). Bowles and Gintis (2002) state that "Social capital generally refers to trust, concern for one's associates, a willingness to live by the norms of one's community and to punish those who do not." (p.F419) Both these definitions are representative of the most common approach to social capital, which treats it as a characteristic of a group, emphasizing the relevance of the structure of social interactions. An alternative approach considers social capital as an individual characteristic, which includes social abilities and networks that allow people to get economic and non-economic returns from interactions with others (Glaeser et al., 2002; Karlan, 2005). Whether con-

sidering it from an aggregate or an individual-level perspective, positive forms of social behaviour such as trust, trustworthiness, and cooperation are a key constituent social capital rests upon.

Research analysing experimental measures of social capital has primarily focused on trust (e.g., Glaeser et al., 2000; Bellemare and Kröger, 2007; Sapienza et al., 2013). However, several authors highlighted that for a more complete analysis of the multidimensional concept of social capital and its relation with economic performance it is important to consider also other aspects such as the propensity of individuals to cooperate (Thöni et al., 2012) and the ability to coordinate on efficient actions (Bosworth, 2013).

In this paper, we follow this stream of research and consider a composite experimental measure of social capital, which encompasses trust, trustworthiness, cooperation, and coordination.

Perhaps, the most original aspect of our study is the use of language to increase the salience of group affiliation. Specifically, in addition to the manipulation of the partner’s group membership, we vary the language with which participants interact, precisely whether they receive the experimental instructions written in their minoritarian language or in the surrounding (majority) language.

It has been argued that language is a crucial marker that defines the boundaries of and the membership in the group (Brown and Ganguly, 2003; Dovidio and Gluszek, 2012), and research in the fields of Communication and Psychology has shown that the language spoken is the most salient dimension of ethnic identities (see the works of Giles, Taylor, and colleagues reviewed in Krauss and Chiu, 1998).

In economics, language has been mainly considered in the empirical studies estimating the economic returns to language skills of either immigrants (Bleakley and Chin, 2004; Yao and van Ours, 2015) or natives (Ginsburgh and Prieto-Rodriguez, 2011). However, a recent behavioural economics study (Chen, 2013) explored the relation between language structures and intertemporal preferences. Specifically, it was tested the hypothesis that people who speak languages that grammatically separate the present and the future are less likely to engage in future-oriented behaviour. The author found support to his hypothesis for several kinds of behaviours, such as savings and health-related behaviours.

Recent contributions in the psychological literature showed that language has a strong effect on decision-making: people make different choices in several decision-making contexts depending on the language in which they face the problem. Keysar et al. (2012) demonstrated that when choices are made in a foreign language, the gain-loss asymmetry in risk preferences and loss aversion strongly decrease. Costa et al. (2014a) replicated Keysar et al.’s findings and, in addition, reported that the use of a foreign rather than a native language reduces the use of mental accounts, the number of inconsistent choice patterns and risk aversion in the Holt-Laury test, and ambiguity aversion in the Ellsberg paradox, while no foreign language effect is found on the Cognitive Reflection Test and on the violation of the independence axiom in the Allais paradox. Further, Costa et al. (2014b) observed that deciding in a foreign language leads

people to make significantly more utilitarian decisions in emotionally loaded moral dilemmas. The explanation to the observed language effect provided by the authors of these studies refers to the dual-process nature of decision-making (e.g., Kahneman, 2003). Specifically, as a foreign language is less grounded in the affective system and it is processed with more difficulty, its use promotes a more deliberate mode of thinking. Thus, a reduction in emotional responses seems to be a key factor in explaining reduced decision biases and increased utilitarianism in moral decision making observed when a foreign language is employed.

So far, the studies on the impact of language on preferences focused on decisions with no strategic interaction. This paper contributes to the literature by experimentally investigating the effect of language in strategic interactions, specifically those involving trust, trustworthiness, cooperation, and coordination.

In the next section, we provide the details of our experimental design.

## 3 Experimental Design

### 3.1 Participants and procedures

The experiment was conducted with students from a language-minority community, named Ladinia Dolomitica, composed of about thirty thousand people who live in five valleys in the central and eastern Alps in Northern Italy. They speak Ladin, a Romance language that is officially recognised as a minority language by provincial and national law. They have a significant media presence in the community, with daily TV news and weekly magazines and TV programs, and book publishing. They are also very active in language and culture promotion, also thanks to the financial support the local government provides for this purpose.

The experiment was run in one of the five valleys (Fassa Valley in Trentino region) in the upper secondary schools with an emphasis on sciences, languages, or art. To identify Ladins and non-Ladins, a brief questionnaire containing questions about topics as diverse as sport habits, Internet use, book reading, language proficiency, and attitude towards others, was administered two weeks before the experiment. The answers to two 4-point Likert Scale questions [range: very much (1) to not at all (4)] — namely whether they are able to read Ladin and how much they feel like a Ladin — were used. Participants responding 1 or 2 to each of the two questions were classified as Ladin, those responding 3 or 4 were classified as non-Ladin, and the remaining were discarded from the experiment. To ensure anonymity, participants were given a code. Two hundred eighty 14- to 19-year-old students completed the questionnaire: 143 were classified as Ladin, 96 as non-Ladin, and 41 were not classified. Of the 239 classified respondents, 165 participated in the experiment<sup>1</sup>.

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<sup>1</sup>74 classified respondents were discarded either because they did not retrieve their code or because they did not serve the matching requirements.

The experiment was administered paper-and-pencil, and each session lasted approximately one hour. Participants received written instructions and were asked to perform four decisional tasks, as detailed in Subsection 3.2. Only one randomly selected task was relevant for payment. The earnings were expressed in tokens (1 token = 5 Eurocents) and converted in gifts (i.e., pens, notebooks, USB keys, ...).

At the end of the experiment, participants were asked to complete a questionnaire to collect demographic data and several pieces of information about individual attitudes and behaviours generally measured in social capital surveys (e.g., participation in voluntary groups and associations, generalised trust attitude, trust attitude towards friends, perceived solidarity within the community),<sup>2</sup> perceived specificity of the Ladin minority, and measures of ethnocultural group identification (i.e., centrality, salience, attachment, ingroup ties, culture involvement, and generalised group attitude).<sup>3</sup> Median responses provided by Ladin participants, i.e., those the whole analysis is focused on, are reported in Table 4 in the Results section.

### 3.2 Interaction structure and treatments

In the experiment, each participant was randomly matched with another participant and was asked to perform four decisional tasks.

Task 1 is a linear Public Goods game. Each participant  $i$  in the 2-person group  $X$  is provided with an individual endowment  $e_i = 100$  tokens. Each individual  $i \in X$  is asked to choose the number of tokens  $c_i$  (such that  $0 \leq c_i \leq 100$ ) she wants to allocate to a group account that yields a marginal percapita return of 0.75. The amount  $(100 - c_i)$  not contributed to the group account is kept in the individual's private account, which earns a constant return of 1. Thus, the payoff function of each individual is  $\pi_i = 100 - c_i + 0.75(\sum_{i \in X} c_i)$ . The social optimum is reached when each group member contributes her entire endowment to the group account, but a self-interested individual has an incentive to contribute zero, since for each token placed in the group account she earns 0.75.

Task 2 and Task 3 are related to decisions in an Investment game. Each participant in the couple is endowed with 100 tokens and one is assigned to the role of trustor and the other is assigned to the role of trustee. The trustor is asked to choose the number of tokens  $s_i$  (such that  $s_i \in \{0, 25, 50, 75, 100\}$ ) to send to the trustee. The trustee, who receives the number of tokens  $s_i$  multiplied by 2, has to decide the number of tokens  $r_j$  (such that  $0 \leq r_j \leq 2s_i$ ) she wants to return to the trustor for each possible amount passed by the trustor. The payoff functions of the trustor and the trustee are, respectively,  $\pi_i = 100 - s_i + r_j$  and  $\pi_j = 100 + 2s_i - r_j$ . A self-interested trustor anticipates that a self-interested trustee has no economic incentives to return anything and, thus, would send zero

<sup>2</sup>Some items were adapted from Grootaert et al. (2004).

<sup>3</sup>Cultural group identification was assessed using items adapted from Cameron (2004), Duckitt et al. (2005), and Roberts et al. (1999). These items were included only in the questionnaire administered to the Ladin group members.

tokens. By sending a positive number of tokens, the trustor increases collective value and shows, if not motivated by altruism, that she expects the trustee to return something. When the trustee returns more than what invested by the trustor, the investment generates positive returns. Participants played both the role of trustor (Task 2) and trustee (Task 3).

Task 4 is a coordination game, specifically a Stag Hunt game. The two participants of each couple are asked to choose, individually and autonomously, between action A and action B. Their payoffs depend on the combination of actions they choose. Let denote the pairs of payoff of participant  $i$  ( $x_i$ ) and payoff of participant  $j$  ( $x_j$ ) in each couple as follows:  $(x_i^{AA}, x_j^{AA})$  when both choose action A;  $(x_i^{AB}, x_j^{AB})$  when participant  $i$  chooses action A and participant  $j$  chooses action B;  $(x_i^{BA}, x_j^{BA})$  when participant  $i$  chooses action B and participant  $j$  chooses action A; and  $(x_i^{BB}, x_j^{BB})$  when both participants choose action B. The values are such that  $x_i^{AA} > x_i^{BA} \geq x_i^{BB} > x_i^{AB}$  and  $x_j^{AA} > x_j^{AB} \geq x_j^{BB} > x_j^{BA}$ <sup>4</sup> so that there is a conflict between safety and social efficiency. Getting the mutually beneficial result requires that both participants trust their partner to cooperate on the riskier option.

We observed decisions in six between-subjects treatments, which differ in partner's membership (*NO INFO*, *IN*, *OUT*) and the language in which the experimental instructions are written (*Idiomatic*, *Non-Idiomatic*). In treatments *NO INFO*, participants were not informed about the linguistic group their partner in the interaction belongs to, while in treatments *IN* and *OUT* participants were told they were matched with someone who belongs to their own, respectively a different, linguistic group and that group affiliation was common knowledge. In treatments *Non-Idiomatic* participants received the instructions written in the surrounding language, i.e., Italian, while in treatments *Idiomatic*, Ladin participants received the instructions written in their minority idiom.<sup>5</sup> The treatments of our 3 (partner's membership: *NO INFO*, *IN*, *OUT*) X 2 (language: *Idiomatic* vs *Non-Idiomatic*) between-subject design are summarized in Table 1.

Table 1: Treatments

|                           | instructions in Ladin | instructions in Italian |
|---------------------------|-----------------------|-------------------------|
| no info                   | NO INFO (Idiomatic)   | NO INFO (Non-Idiomatic) |
| the other is an ingroup   | IN (Idiomatic)        | IN (Non-Idiomatic)      |
| the other is an out-group | OUT (Idiomatic)       | OUT (Non-Idiomatic)     |

<sup>4</sup>The specific values utilized in the experiments are  $x_i^{AA} = 100 > x_i^{BA} = 70 = x_i^{BB} > x_i^{AB} = 0$  and  $x_j^{AA} = 100 > x_j^{AB} = 70 = x_j^{BB} > x_j^{BA} = 0$ .

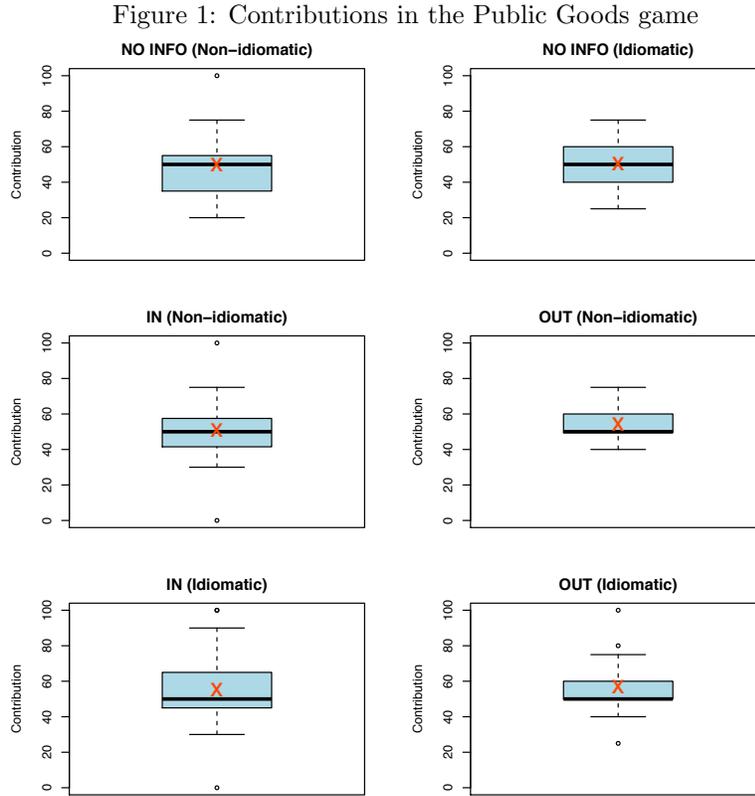
<sup>5</sup>Naturally, non-Ladin (Italian) participants, who only served the purpose of having out-group members and thus participated only in *OUT* and *NO INFO* treatments, always received the instructions written in Italian.

## 4 Results

In this section we first present a brief description of the behaviour of Ladin participants observed separately in the four decisional tasks. Then, we homogenise the four decisions to analyse the individual contributions to the accumulation of social capital and examine these measures in a regression analysis. Finally, we briefly describe the data collected in the post-experiment questionnaire.

### 4.1 Task 1: Public Goods game

Figure 1 provides a description of the distribution of contributions to the public good in the six experimental treatments. Conventionally, the boxplots provide a representation of the quartiles of the distribution and its range, while the “X” symbol captures the mean of the distribution.

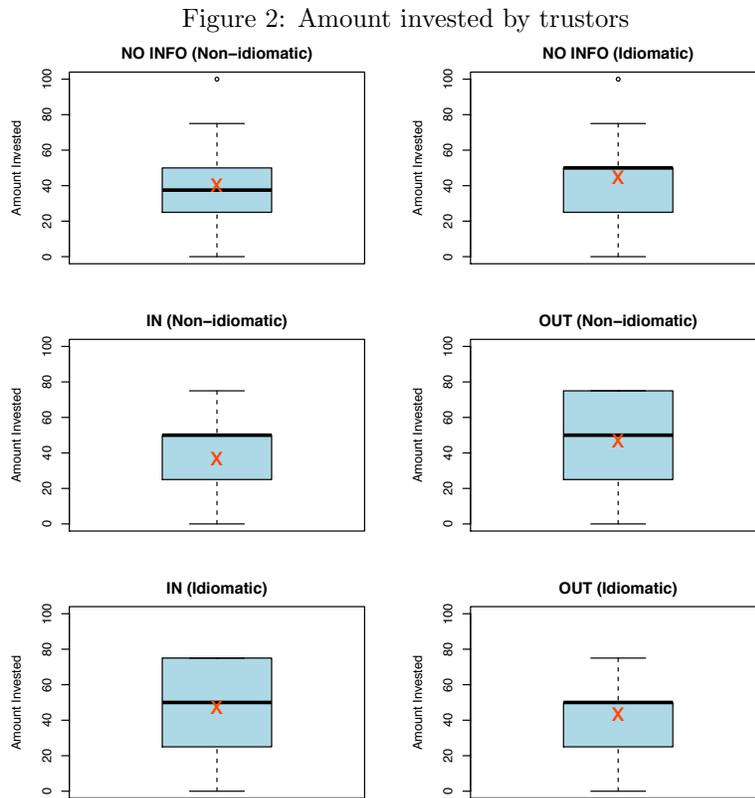


As shown by the graphs, across all experimental treatments the median contribution is always equal to 50, i.e., the median value of the choice support.

A series of Wilcoxon rank sum tests does not highlight any significant difference in contributions across alternative experimental treatments. Thus, overall contribution is quite sustained, even though very few individuals choose the full contribution level in the game and most anchor to intermediate levels of cooperation.

## 4.2 Task 2 and 3: Investment game

Figure 2 portrays the choices of trustors (Task 2) in the Investment Game across alternative experimental treatments.



All the median transfers are equal to 50, i.e., the median value of the choice support, and participants seem to strongly anchor to this intermediate trust level. A series of Wilcoxon rank sum tests does not detect any significant difference across treatments.

Figure 3 provides a description of the average return to trustor's investment (in %), for each possible amount invested. The graph provides a direct measure of trustee's behaviour, as the return to the investment is equal to the difference

between the amount received back and the amount sent as a proportion of the amount sent.

The darker bars identify positive average returns, while the lighter bars identify negative average returns. The dashed horizontal line captures average returns across alternative investment levels.

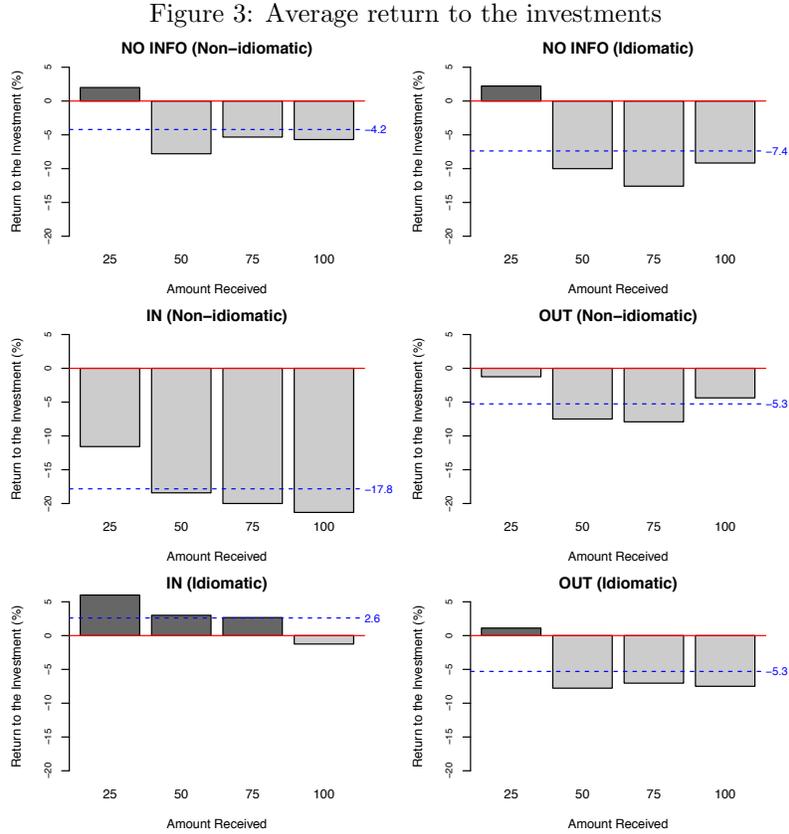
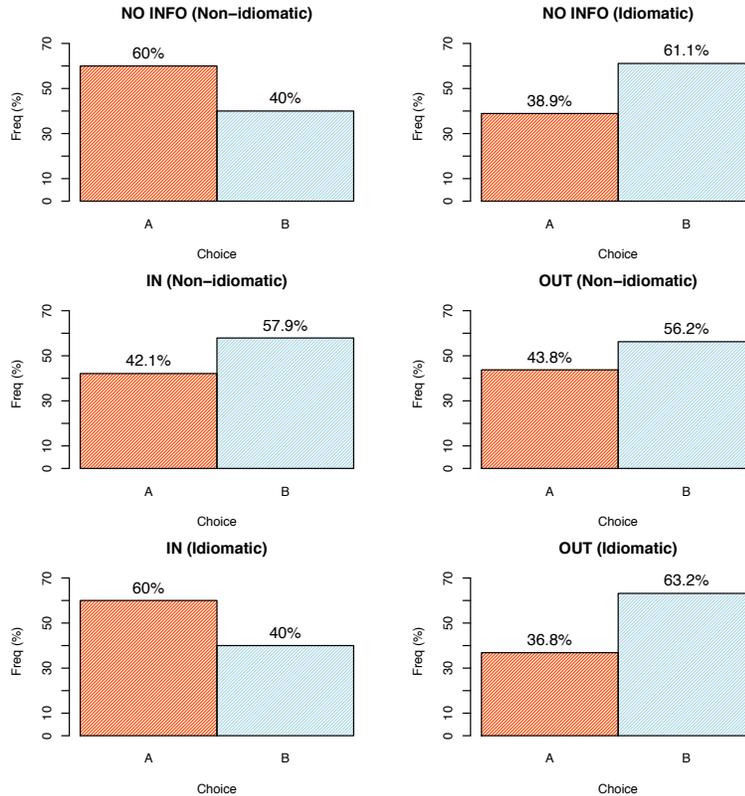


Figure 3 shows that larger investments are generally likely to result in negative returns. On average, in 4 out of the 6 treatments the smallest positive investment (i.e., 25) generates positive returns, while the largest investment (i.e., 100) generates negative returns in all treatments. When focusing on average returns across investment levels, the most profitable investments are those in treatment *IN (idiomatic)* and the least profitable are those in treatments *IN (Non-idiomatic)*. A Wilcoxon rank sum test on the average amounts returned at the individual level identifies a statistically significant difference between treatment *IN (Non-idiomatic)* and treatment *IN (Idiomatic)* (p-value=0.039). In contrast, in the *OUT* conditions the language used does not generate strong differences, with the same average in *OUT (Non-idiomatic)* and in *OUT (Idiomatic)*.

### 4.3 Task 4: Stag Hunt game

Figure 4 provides a graphical representation of the frequency of choices in the Stag Hunt game, with label A identifying the efficient but risky action and label B the inefficient but safe action.

Figure 4: Choices in the Stag Hunt game



As shown by the figure, B is the most frequently chosen action, but in treatments *NO INFO (Non-idiomatic)* and *IN (Idiomatic)*. However, a series of Fisher's exact tests does not identify any significant difference across treatments.

### 4.4 Contribution to the creation of social capital

The focus of this paper is on the effect of language and group affiliation on individual contribution to the accumulation of social capital. Here we say that people contribute to create social capital when display trust, trustworthiness, reciprocity, cooperation, and coordination. To analyse the determinants, especially language and group affiliation, of social capital contributions, we homogenise the four types of behaviour to create a synthetic measure of contributions to

the accumulation of social capital, which we label Social Capital Contribution Index (SCCI). Specifically, we dichotomise each of the four decisions into 0 or 1 according to whether the behaviour observed contributes to the accumulation of social capital. For each of them we set the value equal to 1 using the following cutpoints: in the Public Goods game, when the contributed amount is greater than the median contribution of 50; in the Investment game, when the amount invested by the trustor is greater than the median investment of 50; in the Investment game, when the amount returned by the trustee in correspondence to the maximum amount invested by the trustor generates a positive return for the trustor; in the Stag Hunt game, when the efficient but risky choice A is chosen.

Table 2 reports the proportion of decisions that contribute to the creation of social capital, as defined here above, in each experimental treatment.

Table 2: Social Capital Contribution Index (SCCI)

| Treatment               | SCCI = 1 (Freq %) |
|-------------------------|-------------------|
| NO INFO (Idiomatic)     | 25.0              |
| NO INFO (Non-Idiomatic) | 27.5              |
| IN (Idiomatic)          | 36.2              |
| OUT (Idiomatic)         | 26.3              |
| IN (Non-idiomatic)      | 19.7              |
| OUT (Non-idiomatic)     | 31.2              |

As shown by Table 2, the relative frequency of social capital contributions ranges from 19.7% to 36.2% in treatment IN (Non-idiomatic) and in treatment IN (Idiomatic), respectively. Thus, the use of the Ladin language seems to have an overall impact on the contribution to the creation of social capital, when interactions happen within group boundaries. A Wilcoxon rank sum test detects a statistically significant difference (p-value=0.023) between IN (Non-idiomatic) and IN (Idiomatic). For all the other comparisons, no significant differences are identified (all p-values  $\geq 0.136$ .)

To gain in the understanding of the determinants of contributions to the creation of social capital, we regress the Social Capital Contribution Index (SCCI), which takes either the value 0 or the value 1, on several variables. Table 3 reports on the outcome of Generalised Linear Mixed Model (Logit) regression controlling for potential dependency in the data due to repeated choices with random effects at the individual level.

Table 3: Regression Analysis (GLMM Logit)

|  | <i>Dependent variable:</i> |                  |
|--|----------------------------|------------------|
|  | SCCI                       |                  |
|  | (1)                        | (2)              |
| Intercept  | -1.039*** (0.283)          | -3.233** (1.510) |
| IN   | -0.453 (0.428)             | -0.533 (0.560)   |
| OUT  | 0.192 (0.417)              | 0.399 (0.542)    |
| Idiomatic  | -0.135 (0.417)             | 0.550 (0.611)    |
| IN x Idiomatic   | 1.023* (0.589)             | 0.674 (0.835)    |
| OUT x Idiomatic  | -0.122 (0.595)             | -1.635* (0.898)  |
| Male   |                            | 1.200** (0.582)  |
| Generalised trust  |                            | 0.430* (0.221)   |
| Civic participation  |                            | 0.205 (0.254)    |
| Ladin identification   |                            | -3.300** (1.409) |
| Native   |                            | 0.689* (0.372)   |
| Ladin parents  |                            | 0.196 (0.240)    |
| Age  |                            | 0.145** (0.074)  |
| IN x Male  |                            | 0.072 (0.843)    |
| Idiomatic x Male   |                            | -1.339 (0.840)   |
| OUT x Male   |                            | -0.634 (0.811)   |
| IN x Idiomatic x Male  |                            | 0.051 (1.146)    |
| OUT x Idiomatic x Male                                       |                            | 2.761** (1.240)  |
| Linear hypothesis test: Chisq test                           |                            |                  |
| 1) Idiomatic + IN x idiomatic = 0                            | 4.539**                    | 4.625**          |
| 2) Idiomatic + OUT x idiomatic = 0                           | 0.368                      | 2.520            |
| 3) IN + IN x idiomatic = OUT + OUT x idiomatic               | 1.591                      | 4.231**          |
| 4) IN=OUT  | 2.114                      | 2.582            |
| 1b) Idiomatic + IN x Idiomatic + IN x Idiomatic x Male = 0   |                            | 1.588            |
| 2b) Idiomatic + OUT x Idiomatic + OUT x Idiomatic x Male = 0 |                            | 2.570            |
| 3b) IN + IN x idiomatic + ... = OUT + OUT x idiomatic + ...  |                            | 1.730            |
| 4b) IN + IN x Male = OUT+ OUT x Male                         |                            | 0.146            |
| Observations   | 448                        | 448              |
| Log Likelihood   | -260.124                   | -246.132         |
| Akaike Inf. Crit.  | 534.249                    | 530.263          |
| Bayesian Inf. Crit.  | 562.982                    | 608.254          |

Note:

\*p&lt;0.1; \*\*p&lt;0.05; \*\*\*p&lt;0.01

In the analysis, the explanatory variables related to the experimental factors are labelled as follows: *IN* identifies treatments in which Ladin participants interact with other Ladin participants; *OUT* identifies treatments in which Ladin participants interact with non-Ladin (Italian) participants; *Idiomatic* identifies treatments in which Ladin participants receive the experimental instructions written in Ladin. Estimation (1) reported in Table 3 takes into account only the treatment variables and the interactions between them. The baseline in the regression is given by the treatment in which Ladin participants receive instructions in Italian and have no information about the group affiliation of their partner. In addition, relevant Linear hypothesis tests (LHT) based on a Chi-squared test are reported. Specifically, test 1) checks for differences when Ladin participants interact with fellow Ladins in Italian or in their own language; test 2) checks for differences when Ladin participants interact with non-Ladin participants in Italian or in their own language; test 3) checks for intergroup discrimination when Ladin participants use their own language; test 4) checks for intergroup discrimination when Ladin participants use the surrounding language, i.e., Italian.

As regression output (1) in Table 3 shows, the coefficients of the variables *IN* and *OUT* are not statistically significant, meaning that, when using the surrounding language, Ladin participants do not treat ingroup and outgroup participants differently from unclassified partners. The absence of generalised intergroup discrimination in our sample is further confirmed by the LH tests 3 and 4, which show that Ladin participants do not treat Ladin partners differently from non-Ladin partners neither when using their own language (test 3) nor when using the surrounding language (test 4). The insignificant coefficient of the variable *Idiomatic* shows that the use of the idiomatic language per se does not promote more contribution to the creation of social capital when dealing with unclassified partners. However, it does when dealing with ingroup partners: with respect to unclassified partners, the use of own language makes Ladin participants treat ingroup partners more favourably, as shown by the weakly significant coefficient of the variable *IN*×*Idiomatic*, without triggering outgroup derogation (the coefficient of *OUT*×*Idiomatic* is not significant). Further, the LH test 1 shows that when using their own language, Ladin participants treat ingroup partners more favourably compared to how they treat them when using the surrounding language, while according to the LH test 2, no differential behaviour towards outgroup partners is observed across language conditions.

Estimation (2), in addition to the treatment variables and their interactions, controls for a series of demographics and other idiosyncratic features of the participants. Specifically, *Male* and *Age* control for gender and age, respectively; *Native* is a dummy variable that takes the value 1 if the participant was born in the Ladin valley where the experiment was run and 0 otherwise; *Ladin parents* is a dummy variable that takes the value 1 if both participant’s parents are members of the Ladin linguistic group and 0 otherwise. *Generalised trust* captures responses to the trust question from the General Social Survey and the World Values Survey that was included in the post-experiment questionnaire. In the regression, the scale of the responses (from 1 = “definitely yes” to 4 = “definitely no”) is inverted, so that higher values correspond to higher levels of generalised trust. The dichotomous *Civic participation* denotes whether participants have a membership in a social/civic organization. Finally, *Ladin identification* is a measure of identification with the Ladin linguistic group computed on the responses to the group identification questions (Q14 to Q25) included in the post-experiment questionnaire. To compute the score, the scale of the responses (from 1 = “strongly agree” to 5 = “strongly disagree”) to positively formulated questions was inverted, so that higher values correspond to higher levels of identification with the group.

The reported LHT are interpreted as for estimation (1), with the only difference that the first four tests are related to females, while the second four tests refer to males.

As for estimation (1), the baseline in the regression is the treatment in which Ladin participants receive instructions in Italian and have no information about the group affiliation of their partner. As shown by the Akaike Information Criteria (AIC), specification (2) seems to provide a more efficient fit of the data than specification (1).

As regression output (2) shows, Ladin participants do not display generalised intergroup discrimination when deciding in Italian. Specifically, neither ingroup favouritism nor outgroup derogation is observed and this holds both for female participants (insignificant coefficients of *IN* and *OUT*) and for male participants (insignificant coefficients of *IN*×*Male* and *OUT*×*Male*). In addition, neither females (LH test 4) nor males (LH test 4b) treat ingroup partners differently from outgroup partners. These findings are summarized in Result 1.

**Result 1** *No intergroup discrimination is observed when participants use the surrounding language.*

About the effect of language on decisions, the use of own language does not have any effect on decisions when interacting with unclassified partners and this holds both for females (coefficient of *Idiomatic*) and for males (coefficient of *Idiomatic*×*Male*). However, it weakly reduces the propensity of females to create social capital when interacting with outgroup partners (coefficient of *OUT*×*Idiomatic*), while males are less prone to derogate outgroup partners in own language conditions (coefficient of *OUT*×*Idiomatic*×*Male*). Indeed, when comparing decisions of male participants across language conditions, no differential behaviour is observed neither towards outgroup partners (LH test 2b) nor towards ingroup partners (LH test 1b). In contrast, females are sensitive to the language used when deciding: not only they display ingroup-outgroup discrimination when they use their own language (LH test 3), but they are also more prone to contribute to the accumulation of social capital when they interact with their fellow Ladins in their own language compared to when they interact with them in the surrounding language (LH test 1). These findings are summarized in Result 2.

**Result 2** *The effect of language on behaviour is gender specific: deciding in their own language makes females treat (i) ingroup members more favourably than outgroup members and (ii) ingroup members more favourably compared to how they treat them in situations presented in the surrounding language.*

Considering the answers to the standard social capital survey questions provided by participants in the post-experiment questionnaire, we observe that stronger trusting attitudes, as captured by stronger agreement with the statement that most people can be trusted, positively correlate with our experimental measure of social capital creation (coefficient of *Generalised trust*,  $p$  – value = 0.0518), while being a member of a nonprofit organisation is not associated with the behaviour observed in the experiment (coefficient of *Civic participation*).

**Result 3** *The standard attitudinal survey question about trust predicts the experimental individual contribution to the accumulation of social capital.*

Looking at the remaining idiosyncratic features included in the regression, we note that higher scores of Ladin identification negatively impact on the decision to create social capital (coefficient of *Ladin identification*). In contrast, older

participants and, marginally, those who were born in the Ladin valley where the experiment was run tend to contribute more to creation of social capital. Also having both parents belonging to the Ladin linguistic minority group positively impacts on the decision to create social capital, but the effect is not statistically significant (coefficient of *Ladin parents*).

## 4.5 Post-experiment questionnaire

Table 4 provides a summary description of answers collected from the Ladin participants in the post-experiment questionnaire.

[Table 4 about here]

As shown by Table 4, the sample of Ladin participants is quite balanced in terms of gender, and the median age is 16 years. The majority of Ladin participants was born in Fassa Valley and has one parent that is a member of the Ladin language minority community.

Questions from Q7 to Q13 are questions commonly asked in social capital surveys. The answers show that the majority of participants belongs to a voluntary organization (Q7). The sample is characterized by a moderate-to-low level of generalised trust (Q9), while median trust in friends is higher (Q10).

Local community is generally perceived as a safe place (Q13) and help from members of the community is generally expected (Q11). At the same time, participants seem not to completely exclude potential opportunistic behaviour of other members of the community (Q12). We did not find any significant correlation between the answer provided to question Q11 and the SCCI collapsed at the individual level (Spearman's rank correlation,  $\rho = 0.046$ , p-value= 0.630) and between answer to question Q12 and the SCCI collapsed at the individual level (Spearman's rank correlation,  $\rho = 0.018$ , p-value= 0.855).

Regarding the Ladin group identification (questions from Q14 to Q25), participants report high levels of identification with the Ladin cultural group across all the factors investigated, but seem not to be concerned about cultural differences in general (Q21). We did not detect any significant difference between males and females in the importance attributed to cultural differences (Wilcoxon rank sum test,  $p - value = 0.5419$ ).

About helping among ingroup members, participants generally agree that Ladins help other Ladins (Q26). However, we did not find any significant correlation between the answer to this question and the SCCI, collapsed at the individual level, in *IN* conditions (Spearman's rank correlation,  $\rho = 0.0002$ , p-value= 0.999).

For what concerns the Ladin culture, participants tend to assess craft activities (Q29) and religious traditions (Q31) as less important than culture (Q27), language (Q28), and festivities (Q30) as specific characteristics of the Ladin minority.

Finally, among the minimal requirements to be considered a Ladin, features like language (Q35) and self-perception (Q34) are considered to have a

prominent role compared to innate features like birthplace (Q32) and partners' ethnocultural affiliation (Q33). This confirms that the two characteristics that we utilized to classify participants as Ladin or non-Ladin are indeed considered by the participants themselves the most relevant to define the group boundaries.

Table 4: Post-experiment questionnaire

| Q   | Tot. Participants<br>Ladins   | 165<br>112 (67.9%) |
|---|---|--------------------|
| <b>Demographics (only ladins)</b>                       |   |                    |
| 1   | Male <sup>a</sup>   | 47.3%              |
| 2   | Age <sup>b</sup>  | 16.0               |
| 3   | Father is Ladin <sup>a</sup>  | 79.5%              |
| 4   | Mother is Ladin <sup>a</sup>  | 65.2%              |
| 5   | Both parents are Ladin <sup>a</sup>   | 48.2%              |
| 6   | Born in Fassa Valley <sup>a</sup>   | 85.7%              |
| <b>Social Capital (only Ladins)</b>                     |   |                    |
| 7   | Membership in a voluntary organization <sup>a</sup>   | 59.8%              |
| 8   | Number of activities for the benefit of the community in the last 12 months <sup>b</sup>                | 7.0                |
| 9   | Generally speaking, the majority of people can be trusted <sup>c</sup>                                  | 3.0                |
| 10  | Generally speaking, friends can be trusted <sup>c</sup>   | 2.0                |
| 11  | Most people in your community are willing to help you if you need it <sup>d</sup>                       | 2.0                |
| 12  | In your community, one has to be alert or someone is likely to take advantage of you <sup>d</sup>       | 3.0                |
| 13  | When in your community, you "feel at home" <sup>d</sup>   | 1.5                |
| <b>Ladin Identity (only Ladins)</b>                     |   |                    |
| 14  | I really "fit in" with other Ladins <sup>d</sup>  | 2.0                |
| 15  | In general, being a Ladin is an important part of my self-image <sup>d</sup>                            | 2.0                |
| 16  | I have a good knowledge of the uses, customs, and history of the Ladin culture group <sup>d</sup>       | 2.0                |
| 17  | I would not care if children of mine never learned anything about the Ladin culture group. <sup>d</sup> | 4.0                |
| 18  | I have a strong sense of belonging to the Ladin cultural group <sup>d</sup>                             | 2.0                |
| 19  | I have a lot of pride in my cultural group <sup>d</sup>   | 2.0                |
| 20  | In most situations I am very aware of my Ladin cultural identity <sup>d</sup>                           | 2.0                |
| 21  | For me, cultural differences seem completely unimportant <sup>d</sup>                                   | 3.0                |
| 22  | Most of the time, I do not see myself as a "real" member of the Ladin cultural group <sup>d</sup>       | 4.0                |
| 23  | It really upsets me to hear anyone say anything negative about the Ladin people. <sup>d</sup>           | 2.0                |
| 24  | The Ladin people have some very bad characteristics. <sup>d</sup>                                       | 3.0                |
| 25  | I have a very positive attitude to the Ladin people. <sup>d</sup>                                       | 2.0                |
| <b>Ladin Culture (only Ladins)</b>                      |   |                    |
| 26  | In general, Ladins help other Ladins <sup>d</sup>   | 2.0                |
| The specificity of the Ladin minority is manifested ... |   |                    |
| 27  | in the special attachment to its culture <sup>d</sup>   | 2.0                |
| 28  | in the use of the Ladin language <sup>d</sup>   | 2.0                |
| 29  | in the special attachment to its craft activities <sup>d</sup>  | 3.0                |
| 30  | in the special attachment to its festivities <sup>d</sup>   | 2.0                |
| 31  | in the special attachment to its religious tradition <sup>d</sup>                                       | 3.0                |
| A minimal requirements to be considered a Ladin is ...  |   |                    |
| 32  | to be born in Fassa Valley <sup>a</sup>   | 27.7%              |
| 33  | to be born to Ladin parents <sup>a</sup>  | 24.1%              |
| 34  | "feel" to be a Ladin <sup>a</sup>   | 71.4%              |
| 35  | speak Ladin language <sup>a</sup>   | 72.3%              |
| 36  | know the uses, customs and history of the Ladins <sup>a</sup>   | 49.1%              |

<sup>a</sup>Frequency %.

<sup>b</sup>Median value.

<sup>c</sup>median value on the scale: 1=yes, for sure; 2=yes, in general; 3=not much, you are never too careful; 4=no, for sure.

<sup>d</sup>median value on the scale: 1=Strongly agree; 2=Agree; 3=Neither agree nor disagree; 4=Disagree; 5=Strongly disagree.

## 5 Discussion and concluding remarks

In this paper we investigated intergroup discrimination in an existing group, namely the Ladinia Dolomitica, a language minority community located in the central and eastern Alps in Northern Italy. To this end, we made participants interact alternatively with ingroup, outgroup, or unclassified partners in tasks involving trust, trustworthiness, cooperation, and coordination as dimensions of an experimental measure of individual contribution to the creation of social capital. As a major contribution of our study, we investigated how the language people use when deciding influences their behaviour. To this end, we manipulated the language in which the instructions handed to participants were written, so that the choice situations were presented either in participants' own idiomatic language or in the surrounding language, i.e., Italian.

Our results show that, when deciding in the surrounding language, the decision to contribute to the creation of social capital is not biased by the group affiliation of the counterpart. The absence of generalised intergroup discrimination in our sample could be explained by several factors. First, threat, which is recognized as a key moderator of intergroup bias (Hewstone et al., 2002) and here conceived as opposition to ingroup customs and traditions, does not play a role as the Ladin community is a non-threatened minority: it is officially recognized and receives financial support by the government for protecting cultural heritage and promoting language and culture activities. Second, group size is another key moderator of intergroup bias (Hewstone et al., 2002). Although they are a minority group at a provincial level, Ladins represent a majority in the region where they are settled. For example, in the valley where the experiment was run, about 82% of the population identify themselves as members of the Ladin minority group. Thus, factors such as higher levels of group identification or ingroup protective motives, which have been identified among factors that explain greater intergroup discrimination by members of minority groups compared to members of majority group (e.g., Leonardelli and Brewer, 2001), may play a smaller role if participants take the local geographical area as a reference. Third, although secondary, Italian is part of Ladins' identity. Either the instructions written in Italian or the context (i.e., the school) in which the experiment was run, which is officially Italian although Ladin language is a compulsory course, may have counterbalanced the effect of Ladin identity priming. Fourth, one of the main sources of income for the regions where the community is settled is tourism. The frequent interpersonal encounters with non-members of their own linguistic group may reduce the psychological distance to them. Finally, looking at the answers participants provided in the post-experiment questionnaire to the question about the importance they give to cultural differences, it seems that participants in our sample are not concerned about cultural differences in general. Thus, the membership to a linguistic group may not be a relevant comparison dimension in the ingroup-outgroup distinction. Although it has been shown that distinctions based on trivial (minimal) characteristics appear in some circumstances sufficient to generate parochial behaviour, there may be a U-shaped relation between the extent of intergroup bias and the rele-

vance of the comparison dimension, so that to be effective the distinction must be relevant enough or not relevant at all (to make a parallel with a famous finding in research on incentives Gneezy and Rustichini, 2000). Future research may investigate the shape of this relationship.

About the effect of language on behaviour, our results show that, in general, the use of idiomatic language positively impacts on the contribution to the accumulation of social capital, with the effect mainly reflected in an increase in prosocial behaviour towards members of own linguistic group. However, when controlling for gender and other idiosyncratic features, it emerges that the impact of language is highly gender specific and two-edged: on one hand, compared to the surrounding language, the use of own idiomatic language encourages females to engage in virtuous behaviour towards ingroup members; on the other hand, the use of own idiomatic language makes females exhibit intergroup discrimination. This is in contrast with the results Balliet et al. (2014) obtained in their meta-analytic study on ingroup favouritism in cooperation, which led them to state that “there is some reason to conclude that ingroup favoritism in cooperation is stronger among males than females” but also to leave room for new evidence: “there may be critical exceptions that warrant new research” (p. 19). This difference between males and females cannot be attributed to differential levels of importance attributed to cultural differences, since the analysis did not find any gender effect on this. A possible explanation could reside in differential emotional functioning. It has been proposed that the own native language, being more grounded in the emotion system, promotes a more intuitive, affective, as opposed to deliberate, mode of thinking (Keysar et al., 2012; Costa et al., 2014a). Thus, the gender specific response to the language manipulation could be related to gender differences in affective processes. Another possible explanation could be grounded in differential risk perception. The use of own language, to the extent that it strengthens the distinction between those who speak the same language (ingroup) and those who do not (outgroup), could make more pronounced the perceived risk involved in strategic interactions with outgroups than with ingroups, with a greater effect on females, who generally perceive higher risk than males (Slovic, 1999; Weber et al., 2002). Future research is needed to give support to these conjectures. Future work may also investigate whether the behaviour of females is driven by preferences or beliefs. In our setting, the group affiliation was common knowledge, making the two motivational drivers indistinguishable. Observing that the behaviour of females exhibited here persists even when the knowledge of group affiliation is asymmetric would signal the importance of preferences in shaping intergroup bias.

Our results also show that the standard social capital survey measure correlates with the behaviour participants exhibited in the experiment. This finding adds to the literature combining survey and experimental measures. Although the results on the correlation between attitudinal and experimental measures of trust are mixed (e.g., Glaeser et al., 2000; Holm and Danielson, 2005), a recent meta-analytic study confirmed a significant positive relationship between the two measures, while no relationship was found between the survey measure of trust and the experimental measure of trustworthiness (Johnson and Mislin,

2012). Additional evidence on the ability of standard survey measures to predict other key components of social capital in experimental settings comes from Bosworth (2013) in relation to coordination and from Anderson et al. (2004) and Thöni et al. (2012) in relation to contributions to public goods.

To conclude, this research reported evidence that language has the potential to influence decisions in contexts of strategic interaction and to alter intergroup dynamics in ways that might lead to an overall less desirable situation. Those interested in language, for example those responsible for developing language models for the school system in multilingual realities, might benefit from taking this into account. Preserving identities is an important issue, but so is also sustaining social cohesion. Managing diversity is a challenge organizations increasingly face, thus strategies such as emphasizing common superordinate group memberships or strengthen common goals (Chen et al., 2014; Gaertner and Dovidio, 2000) may be effective in combining needs for identification and efficient performance.

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## A Instructions

These are the instructions (originally in Italian or in Ladin depending on the treatments) that Ladin participants received in the *NO INFO* treatments. Differences in the instructions handed to non-Ladin participants and in the instructions utilized in the other treatments are indicated in the text.

Dear Participant,

thank you for taking part in this experiment, which is part of a study conducted by the University of Trento. Your cooperation is very important to us. From now on, we ask that you do not talk at all with other participants. If you have a question please raise your hand, and one of the assistants will answer your questions individually.

During the experiment you will be randomly matched with another participant, whose identity will not be revealed to you at any time. Similarly, the participant associated to you will never know your identity.

Based on the answers you provided in the brief questionnaire that you completed two weeks ago, it appears that you belong to the Ladin linguistic group. You will not be informed about the linguistic group affiliation of the participant matched with you. Similarly, he or she will not know the linguistic group you belong to.

*[Non-Ladin participants in the NO INFO treatments read: Based on the answers you provided in the brief questionnaire that you completed two weeks ago, it appears that you do not belong to the Ladin linguistic group. You will not be informed about the linguistic group affiliation of the participant matched with you. Similarly, he or she will not know the linguistic group you belong to. ]*

*[Ladin participants in the IN treatments read: Based on the answers you provided in the brief questionnaire that you completed two weeks ago, it appears that you belong to the Ladin linguistic group. Also the participant matched with you turned out to be a member of the Ladin linguistic group. Thus, the two of you belong to the same linguistic group. Also he or she knows that both of you belong to the Ladin linguistic group.]*

*[Ladin participants in the OUT treatments read: Based on the answers you provided in the brief questionnaire that you completed two weeks ago, it appears that you belong to the Ladin linguistic group. In contrast, the participant matched with you turned out not to be a member of the Ladin linguistic group. Thus, the two of you belong to two different linguistic groups. Also he or she knows that the two of you belong to two different linguistic groups.]*

*[Non-Ladin participants in the OUT treatments read: Based on the answers you provided in the brief questionnaire that you completed two weeks ago, it appears*

*that you do not belong to the Ladin linguistic group. In contrast, the participant matched with you turned out to be a member of the Ladin linguistic group. Thus, the two of you belong to two different linguistic groups. Also he or she knows that the two of you belong to two different linguistic groups.]*

In the experiment you will have the chance to earn some tokens, which will be converted in prizes at the following conversion rate: 20 tokens = 1 euro. You can choose the prizes you prefer, among those available (for example, stationery items), of a total value equal to the value of tokens you earned.

The number of tokens you earn depends both on the decisions you have individually and autonomously taken and on the decisions taken by the participant matched with you. In the following, you will find a detailed description of how your earnings and those of the participant matched with you are determined. In addition, independently of the decisions you have taken, you will get 20 tokens for participating in this experiment.

You will be asked to make a choice in each of four different situations. The choice you make in a specific situation influences only earnings in that situation and not earnings in the other situations. One of the four situations will be randomly selected and the number of tokens you earned in that specific situation will represent your final earnings. Your earnings will be computed after having collected the decisions of all the participants of this study, and the prizes you choose will be given to you in approximately a month.

Your choices will remain anonymous.

We remind you to keep your ID code as you will need it to collect your prizes.

## **Situation 1**

*[Ladin participants in the IN treatments read: You are matched with a participant who belongs to the Ladin linguistic group.]*

*[Ladin participants in the OUT treatments read: You are matched with a participant who does not belong to the Ladin linguistic group.]*

*[Non-Ladin participants in the OUT treatments read: You are matched with a participant who belongs to the Ladin linguistic group.]*

You are endowed with 100 tokens. You have to decide, individually and autonomously, how many tokens (from 0 to 100) you want to contribute to a project. Whatever you do not deposit on the project account will be deposited on your personal account.

The participant matched with you is asked to take the same decision.

The total amount of tokens that you and the participant matched with you deposit on the project account will be multiplied by 1,5 and equally divided

between the two of you.

Your earnings in this situation are the sum of:

- the tokens deposited on your personal account;
- your part of the tokens produced by the project.

The earnings of the participant matched with you are the sum of:

- the tokens deposited on his or her personal account;
- his or her part of the tokens produced by the project.

Your decision:

|  |                          |
|--|--------------------------|
| tokens to deposit on the project account   | <input type="checkbox"/> |
| tokens to deposit on your personal account | <input type="checkbox"/> |
| <hr/>                                      |                          |
| TOT  | 100                      |

## Situation 2

*[Ladin participants in the IN treatments read: You are matched with a participant who belongs to the Ladin linguistic group.]*

*[Ladin participants in the OUT treatments read: You are matched with a participant who does not belong to the Ladin linguistic group.]*

*[Non-Ladin participants in the OUT treatments read: You are matched with a participant who belongs to the Ladin linguistic group.]*

You and the participant matched with you are endowed with 100 tokens each.

You have the opportunity to transfer an amount of tokens to the participant matched with you. You can choose to transfer 0 tokens, or 25 tokens, or 50 tokens, or 75 tokens, or 100 tokens. The number of tokens you decide to transfer will be doubled and given to the participant matched with you. He or she will then have the opportunity to transfer to you any portion of this doubled amount.

Your earnings in this situation are computed as follows: your initial 100 tokens, minus the number of tokens you transferred to the other participant, plus the number of tokens you received from the other participant.

The earnings of the participant paired with you are computed as follows: his or her initial 100 tokens, plus the number of tokens (multiplied by 2) he or she received from you, minus the number of tokens he or she transferred to you.

Your decision (please tick ONLY ONE box):

- |   |            |                          |
|---|------------|--------------------------|
| I decide to transfer to the other participant | 0 tokens   | <input type="checkbox"/> |
|   | 25 tokens  | <input type="checkbox"/> |
|   | 50 tokens  | <input type="checkbox"/> |
|   | 75 tokens  | <input type="checkbox"/> |
|   | 100 tokens | <input type="checkbox"/> |

### **Situation 3**

*[Ladin participants in the IN treatments read: You are matched with a participant who belongs to the Ladin linguistic group.]*

*[Ladin participants in the OUT treatments read: You are matched with a participant who does not belong to the Ladin linguistic group.]*

*[Non-Ladin participants in the OUT treatments read: You are matched with a participant who belongs to the Ladin linguistic group.]*

You and the participant matched with you are endowed with 100 tokens each.

The participant matched with you has the opportunity to transfer an amount of tokens to you. He or she can choose to transfer 0 tokens, or 25 tokens, or 50 tokens, or 75 tokens, or 100 tokens. The number of tokens he or she decides to transfer will be doubled and given to you. You will then have the opportunity to transfer to him or her any portion of this doubled amount.

Your earnings in this situation are computed as follows: your initial 100 tokens, plus the number of tokens (multiplied by 2) you received from the other participant, minus the number of tokens you transferred to the other participant.

The earnings of the participant paired with you are computed as follows: his or her initial 100 tokens, minus the number of tokens he or she transferred to you, plus the number of tokens he or she received from you.

Since you do not know how many tokens the other participant actually transfers to you, you are asked to choose the number of tokens you want to transfer to him

or her for each possible amount of tokens he or she may decide to transfer to you.

Your decision (please insert a value in EACH box):

If the other participant transfer 0 tokens to me,  
and thus I receive 0 tokens, I decide to transfer to him or her  tokens

If the other participant transfer 25 tokens to me,  
and thus I receive 50 tokens, I decide to transfer to him or her  tokens

If the other participant transfer 50 tokens to me,  
and thus I receive 100 tokens, I decide to transfer to him or her  tokens

If the other participant transfer 75 tokens to me,  
and thus I receive 150 tokens, I decide to transfer to him or her  tokens

If the other participant transfer 100 tokens to me,  
and thus I receive 200 tokens, I decide to transfer to him or her  tokens

#### Situation 4

*[Ladin participants in the IN treatments read: You are matched with a participant who belongs to the Ladin linguistic group.]*

*[Ladin participants in the OUT treatments read: You are matched with a participant who does not belong to the Ladin linguistic group.]*

*[Non-Ladin participants in the OUT treatments read: You are matched with a participant who belongs to the Ladin linguistic group.]*

In this situation you are identified as **YOU** and the participant paired with you is identified as **OTHER**. **YOU** can choose between option A and option B, the **OTHER** can choose between option A and option B.

If **YOU** choose A and the **OTHER** chooses A: **YOU** earn 100 tokens and the **OTHER** earns 100 tokens.

If **YOU** choose A and the **OTHER** chooses B: **YOU** earn 0 tokens and the **OTHER** earns 70 tokens.

If **YOU** choose B and the **OTHER** chooses A: **YOU** earn 70 tokens and the **OTHER** earns 0 tokens.

If **YOU** choose B and the **OTHER** chooses B: **YOU** earn 70 tokens and the **OTHER** earns 70 tokens.

The following table provides a graphical representation of the situation.

|     |   | OTHER   |   |
|-----|---|---|---|
|     |   | A   | B   |
| YOU | A | <input type="text" value="100"/> <input type="text" value="100"/> | <input type="text" value="0"/> <input type="text" value="70"/>  |
|     | B | <input type="text" value="70"/> <input type="text" value="0"/>    | <input type="text" value="70"/> <input type="text" value="70"/> |

The cell  refers to your earnings and the cell  refers to the earnings of the **OTHER**.

Your decision (please tick **ONLY ONE** box):

option A

option B