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SOCIAL IDENTITY, ATTITUDES TOWARDS COOPERATION, AND SOCIAL PREFERENCES: EVIDENCE FROM SWITZERLAND

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Abstract

We investigate the role of social identity in explaining individual variation in social preferences in the domain of cooperation. We combine measures of social identity at both extensive and intensive margins with measures of social preferences elicited using a public goods game in the strategy method among a representative sample of Swiss households. We document a strong association between social identity and social preferences, which becomes stronger with the degree of social identity. Using different data sources, we show that social identity matters also for attitudes towards cooperation. Our results are not driven by differences in national or even local institutions, geography, historical, and economic conditions. Additional analyses show that grandparental and parental background shapes social identity, as well as social preferences. Our design allows us to go beyond behavior and disentangle social preferences from beliefs, highlighting the importance of social identity for deeper social preferences in a natural field setting.

JEL: C93, D03, D70, H41, Z13.

Keywords: Social identity, social preferences, conditional cooperation, attitudes towards cooperation, public goods game, Switzerland.

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I. Introduction

A large body of research shows that individuals vary widely in their social preferences and that this variation has implications for a wide variety of important economic outcomes¹. Examples range from the provision of public goods and functioning of markets to enforcement of contracts and design of incentives². These findings raise an important question – why do individuals vary in their social preferences, such that some are motivated only by their own payoff, but others also care about the payoffs of relevant reference individuals? In this paper, we investigate in a natural field setting the role of social identity in explaining individual variation in social preferences, as distinguished from both beliefs and institutions. While considering social preferences, we focus on the individual propensity to cooperate conditional on the contribution of others, which is considered crucial for cooperation outcomes³.

There is a growing consensus among economists that social preferences are to some extent determined by the social environment an individual inhabits (e.g., Bowles 1998, Fehr and Hoff 2011, Postlewaite 2011). One key area in which this environment has a bearing is social identity - defined as the sense of self an individual derives from perceived membership in a social group (Tajfel 1974). According to social identity theory (Akerlof and Kranton 2000), individuals gain utility by adopting behaviors consistent with group-specific prescriptions of appropriate conduct, but experience disutility when they deviate from these prescriptions. For instance, if a social group has a norm prescribing that *one should not take advantage of others*, then an individual from this group experiences disutility from defecting on the cooperation of others. Because social groups tend to be associated with particular prescriptions, social identity provides a natural way to explain variation in social preferences across social groups in response to these internalized prescriptions.

However, there is no field evidence on the importance of social identity for conditional cooperation. Previous field studies are based on a comparison of behavior and not social

¹ See for instance, Fehr and Schmidt (1999), Charness and Rabin (2002), Engelmann and Strobel (2004), and Camerer (2015).

² Fehr et al. (1993 and 1997), Fehr and Gächter (2000), Bandiera et al. (2005), Rustagi et al. (2010), Bowles and Polonia-Reyes (2012), Kosfeld and Rustagi (2015), and Camerer (2015).

³ Evidence suggests that many individuals behave as conditional cooperators and that this has major implications for laboratory cooperation outcomes (Fischbacher et al. 2001, Fischbacher and Gächter 2010), as well as field outcomes, such as charitable giving (Frey and Meier 2004), tax compliance (Gächter 2007), and commons management (Rustagi et al. 2010, Kosfeld and Rustagi 2015).

preferences⁴. But, because most individuals are conditional cooperators⁵, differences in behavior could be reflecting, besides social preferences, beliefs about the contribution of other players (Fischbacher and Gächter 2010). In fact, it is even plausible that social groups started with similar social preferences and yet end up displaying different behaviors due to differences in beliefs. Because of multiple equilibria, behavior may or may not be a good guide to individuals' deeper social preferences. It is therefore important to distinguish whether differences across social groups are due to differences in beliefs or differences in preferences (Alesina and Giuliano, *forthcoming*). Moreover, social identity is not the only factor that shapes social preferences. Other factors, such as institutions, might also play a role. However, previous field evidence is mostly unable to separate the effect of social identity from underlying national (Henrich et al. 2001 and 2006, Brandts et al. 2004, Herrmann et al. 2008, Gächter et al. 2014) or local institutions (Bernhard et al. 2006, Gächter and Herrmann 2011, Bigoni et al. 2015).

In this paper, we go beyond behavior and provide the first field evidence on the importance of social identity for conditional cooperation, as distinguished from both beliefs and institutions. Considering the importance of prescriptions in social identity theory, we also examine whether social groups differ in their directives of appropriate cooperative conduct. Throughout the paper, our emphasis is not on limited reciprocity but generalized reciprocity, which is considered fundamental for achieving better collective action outcomes, functioning of institutions, and economic development (Banfield 1958, Coleman 1990, Platteau 2000, Tabellini 2010)⁶.

Our study takes place in Switzerland, which provides a unique setting to identify the effect of social identity on social preferences. Switzerland is home to three major European linguistic groups that enjoy the same constitutional status: (Swiss) German, (Swiss) French, and (Swiss) Italian. Linguistic studies in Switzerland (Clyne 1995), as well as prominent studies in sociology (Gumperz 1982, Giles and Johnson 1987, Heller 1987) and economics (Aspachs-Bracons 2008,

⁴ See for instance, Henrich et al. (2001, 2006), Brandts et al. (2004), Bernhard et al. (2006), Herrmann et al. (2008), Kocher et al. (2012), Gächter et al. (2014), Angerer et al. (2015), and Bigoni et al. (2015). Chen and Li (2009) is the only study that we are aware of which studies the effect of social identity on social preferences. However, their focus is on distributional preferences among minimal groups in the lab, in the context of intergroup discrimination.

⁵ Laboratory and field studies find the share of conditional cooperators to be upwards of 40 percent (e.g., Fischbacher et al. 2001, Kocher et al. 2008, Herrmann and Thöni 2009, Thöni et al. 2012, Fischbacher and Gächter 2010, Rustagi et al. 2010).

⁶ In limited reciprocity (also called *amoral familism*), cooperation towards in-group members is encouraged while selfish behavior towards out-group members is considered socially acceptable. In generalized reciprocity, cooperative behavior is extended in all social situations, including toward strangers.

Eugster et al. 2011, Clots-Figueras and Masella 2013) show language to be a powerful marker of social identity. The Swiss setting thus allows us to study the association of social identity and social preferences using a *within* country variation, which holds national level institutions fixed. Another distinguishing feature of Switzerland is the variation in linguistic groups across a historically determined language divide called *roestigraben*. The language border passes through three bilingual cantons, allowing us to disentangle the role of social identity from that of local institutions using canton fixed effects.

We measure social identity among a representative population of Swiss households at both extensive and intensive margins. At the extensive margin, we use the native language of an individual as a measure of social identity. At the intensive margin, we assess individuals' degree of social identity using an established method from psychology (Aron et al. 1991, 1992) in which individuals choose among different degrees of overlapping Venn-like diagrams the one that describes best their social identity towards own and other social groups.

Measuring conditional cooperation in the field is challenging because of confounding with other motives and beliefs. To disentangle these from preferences for conditional cooperation, we follow the experimental design of Fischbacher et al. (2001) and Fischbacher and Gächter (2010) and use a one-shot anonymous linear public goods game in the strategy method. In the experiment, individuals have to decide on their contribution conditional on the contribution of another anonymous person, making beliefs irrelevant. A correlation between self and other players' contribution reveals the individual propensity for conditional cooperation.

Social groups tend to differ in prescriptions of appropriate cooperative behavior. Therefore, a natural step is to begin by investigating whether social groups differ in their attitudes towards cooperation. This analysis allows us to frame our hypotheses concerning the differences in conditional cooperation across social groups. We obtain data on attitudes towards cooperation using the Swiss Household Panel (2011), in which individuals are asked whether it is justifiable to *lie in own interest*, *cheat on tax declaration*, and *claim state benefits one is not entitled to*. Studies by Knack and Keefer (1997) and Herrmann et al. (2008) suggest that differences in answers to such questions could be considered as reflecting differences in prescriptions of appropriate conduct in social groups.

Our study takes mainly into consideration Swiss German and Swiss French social identities⁷. Our results reveal that Swiss Germans display stronger attitudes towards cooperation than Swiss French. We replicate these results using the first principal component underlying the three attitudes, as well as data from several waves of the World Values Survey. We proceed by testing whether, in line with the prescriptions of appropriate behavior, social groups also differ in their deeper preferences for conditional cooperation. Our experimental findings confirm that Swiss Germans indeed display a stronger propensity for conditional cooperation than Swiss French. The difference of over 0.25 points is not only statistically but also economically significant, especially given that the average propensity to cooperate conditionally is 0.64 in our sample.

One concern though is that our measure of social identity at the extensive margin might be reflecting the influence of omitted variables. Therefore, as a stronger test of social identity theory, we investigate the association of conditional cooperation with the intensive margin of social identity. Our findings reveal that the gap in conditional cooperation widens with the degree of Swiss German identity. This movement of conditional cooperation along the social identity gradient alleviates to some extent the scope of omitted variables bias. Nonetheless, we further stress test our results to show their robustness to a variety of socio-demographic covariates, religion, politics, proxies for the underlying geographical, economic, and historical environment, as well as membership in eight other groups, four attitudes other than cooperation, migration, and personality traits.

If prescriptions co-evolve with institutions, then it could be difficult to isolate empirically the effect of social identity from that of underlying institutions. We use data from bilingual cantons on the *roestigraben* to overcome this challenge. Using canton fixed effects to control for local institutions, we show that even within a canton, Swiss Germans display stronger attitudes towards cooperation and higher propensity for conditional cooperation than Swiss French.

Finally, we investigate how the variation in family background, over which individuals have no control, shapes individuals' social identity and how this in turn affects conditional cooperation. We proxy for family background using data on parental / grandparental *region of birth* and *region of stay*. Our results show that having stronger Swiss German family background

⁷ We exclude Swiss Italians from the main analysis but include them while conducting robustness checks due to several reasons. We have fewer Swiss Italians in our sample and almost all of them are confined to a single canton (Ticino), which additionally creates problems while clustering standard errors on the canton. In addition, as we will see later in the text, it is challenging to separate the effect of Swiss Italian identity from the underlying geographical, genetical, and institutional environment.

is associated with stronger degree of Swiss German identity, as well as with stronger propensity for conditional cooperation.

Besides contributing to the growing literature on social identity (Akerlof and Kranton 2000, 2002, 2005), our paper complements many strands of related research. The first strand generally relates to differences in cooperation and punishment behavior across natural social groups in the field. Seminal studies by Henrich et al. (2001, 2006), Brandt et al. (2004), Herrmann et al. (2008), and Gächter et al. (2014) examine this in the context of cross-cultural setting. Studies by Bernhard et al. (2006), Kocher et al. (2012), Angerer et al. (2015), and Bigoni et al. (2015) go one step further and study this by exploiting *within* country variation in social groups, which allows them to control for national institutions. Eugster et al. (2011) use the language divide in Switzerland to show the effect of social identity on attitudes towards redistribution, controlling for local institutions. We build on these studies by showing the effect of social identity on social preferences, as distinguished not only from both national and local institutions, but also from beliefs. We achieve this by going beyond behavior and documenting a deeper divide in social preferences. In addition, we focus on both the extensive and intensive margins of social identity.

The second strand relates to laboratory experimental studies with students that use the minimal group paradigm to study the influence of social identity on cooperative behavior (Charness et al. 2007, Sutter 2009, Hargreaves-Heap and Zizzo 2009) and distributional preferences (Chen and Li 2009). Our paper differs from these studies in several dimensions. To begin with, our focus is on preferences for conditional cooperation, as elicited in a public goods game, which is considered fundamental for cooperation outcomes (Rustagi et al. 2010). Moreover, in minimal groups individuals derive utility from membership in groups per se, even when it is just a label. However, in natural groups like ours, individuals may derive additional utility from conforming to group specific prescriptions. In this sense, minimal groups miss an important feature of natural groups (Goette et al. 2012). In fact, our study clearly demonstrates this by showing that social groups co-vary in both prescriptions and preferences. In this aspect, our study relates to the literature on priming that examines the effect of identity specific prescriptions on cooperative behavior (Benjamin et al. 2010). Besides these differences, the focus of studies based on the minimal group paradigm is almost exclusively on limited reciprocity, whereas we focus on generalized reciprocity.

Our results on the importance of family background relate to the literature on intergenerational transmission of preferences (see Bisin and Verdier 2011, Dohmen et al. 2012). Overall, our study also contributes broadly to the literature on the role of culture in shaping preferences (Guiso et al. 2006, Alesina and Giuliano, *forthcoming*).

The paper is organized as follows. Section II describes the field setting, sample construction, and data. Section III describes the experiment to measure conditional cooperation. Section IV documents differences in attitudes towards cooperation across social groups. Section V presents the effect of social identity on conditional cooperation at the extensive and intensive margins, including robustness checks. Section VI investigates the role of family background on social identity and conditional cooperation. Finally, section VII offers concluding remarks.

II. Field Setting, Sample Construction, and Data

A. Field Setting

Switzerland provides a unique setting for our study. It is home to three main social groups corresponding with the three main languages of Europe: German, French, and Italian⁸, which are also the official languages of Switzerland. This linguistic diversity of Switzerland dates back to the beginning of the 5th century, when Germanic tribes (*Alemannis*) occupied the northern and eastern part of Switzerland, and replaced Romance languages with German dialects. The subsequent westward movement of the Germanic tribes in the 6th century resulted in shaping of the language frontier between the German and the French (formerly Franco-Provencal) speaking parts present today. The addition of Italian speakers began in the 15th century when two German-speaking cantons, Uri and Obwald, added areas south of the Alps to their territories.

Of the three major languages of Switzerland, German is the most widely spoken (65 percent), followed by French (23 percent), and Italian (8.3 percent)⁹. This is also reflected at cantonal level: among the 26 cantons of Switzerland, 17 have German as their official language, four French, and one Italian. Three cantons (Berne, Fribourg, and Valais) are bilingual (German-

⁸ While Swiss French and Swiss Italian mostly speak and write standard French and Italian, Swiss Germans use standard German for writing but speak a strong dialect of German called ‘Swiss German’, which differs considerably from High German.

⁹ Another official language of Switzerland is Romance, which is spoken by 0.5 percent of the Swiss population. Source: Swiss Federal Statistical Office, 2012 (<http://www.bfs.admin.ch/bfs/portal/en/index/themen/01/05.html>, accessed on November 19, 2015).

French) and one canton (Graubunden) is even trilingual (German-Italian-Romance)¹⁰. Figure 1 shows the spatial distribution of these languages within Switzerland as well as across Swiss cantons. In the remainder of the paper, we refer to the speakers of these languages as belonging to three distinct social groups: Swiss German, Swiss French, and Swiss Italian.

A noteworthy feature of Switzerland is that the share of German, French, and Italian speakers has more or less remained stable since the foundation of modern Switzerland in 1848¹¹. This stability is also observed at the cantonal level suggesting that migration across the linguistic regions is low. Having such a stable composition allows us to map precisely the association between social identity and conditional cooperation. Another important dimension of stability comes from the absence of separation movement from any of the linguistic groups.

The spatial organization of linguistic groups in Switzerland is such that while Swiss Germans are largely confined to the north and east, Swiss French are confined to the west, and Swiss Italians to the south. In contrast, the main geographical border formed by the Alps runs along the Southwest-Northeast axis. A major implication of this feature is that with the exception of Swiss Italian, the language divide between Swiss German and Swiss French is not confounded with altitude. The transition from Swiss German to Swiss French is over a historically determined language border called *roestigraben* that passes through three bilingual cantons: Valais, Fribourg, and Bern (see Figure 1). This unique feature of Switzerland allows us to study the association of social identity and conditional cooperation by comparing individuals who were exposed to the same institutions within a canton but vary in their social identity. This is a necessary step to disentangle the effect of social identity from that of cantonal level institutions.

Another interesting feature of the Swiss setting is that the variation in linguistic social identity is not commensurate with genetic variation. Buhler et al. (2012) found that overall genetic differentiation in Switzerland is very small. In addition, this differentiation is not due to linguistic but rather geographical boundaries created by the Alps. As shown in Figure 1, with the exception of Swiss Italian, the language and geography divide are almost orthogonal to each other. In fact, the genetic variation within and between the two linguistic groups that form the focus of this study (Swiss German and Swiss French) is very similar.

¹⁰ Bern and Graubunden are mostly German speaking, while Fribourg and Valais are mostly French speaking.

¹¹ Historical records reveal that in 1850 the shares of German, French and Italian speakers were 70, 23 and 6 percent. In 1900 these were 70, 22, and 7 percent respectively. Source: Swiss Federal Statistical Office (<http://www.bfs.admin.ch/bfs/portal/de/index/dienstleistungen/history/02/00/01/01.html>, accessed on November 19, 2015).

B. Data Description

Our main data stem from three different sources: a) a behavioral experiment we conducted in 2012 to measure individuals' propensity to cooperate conditionally; b) household surveys covering social identity, family background, and socio-demographic characteristics conducted in 2010 and 2012; and c) wave 13 of the Swiss Household Panel to measure attitudes towards cooperation, which we subsequently substantiate using data from waves 2, 3 and 5 of the World Values Survey. In addition to these sources, we also use data from the Swiss Federal Statistical Office for municipal and cantonal level covariates, and yearbooks of Switzerland for historical data. In this section, we describe the construction of our sample and measures of social identity. The behavioral experiment to measure conditional cooperation is described in section III, while data on attitudes towards cooperation are discussed in section IV.

Sample Construction

Our sample comprises 304 Swiss households from the three linguistic groups of Switzerland. These households were randomly selected from an online panel of the institute for opinion research LINK¹². Panel members are representative of the adult Swiss population that uses the Internet at least once a week¹³. Our sample construction strategy proceeds in two steps. First, 1,022 randomly selected individuals were contacted by LINK in November 2010 to take part in a survey on behalf of Veronesi et al. (2014). In this survey, data were collected on individual socio-demographic characteristics. Taking advantage of this existing dataset, we contacted the same individuals again in November 2012 to take part in our study. Of the 1,022 individuals, 590 agreed to participate¹⁴. Second, via the survey agency we sent to the 590 individuals an email containing the link to our online experiment and post-experimental survey. In the email, the participants were requested to complete the study within a month and were sent two friendly reminders to do so. In the end, 321 individuals completed our study, implying a response rate of

¹² LINK is one of the largest survey agencies in Switzerland, which also conducted wave 5 (year 2007) of World Values Survey.

¹³ According to the latest household survey by the Swiss Federal Statistical Office (2014), 84 percent of adult German speakers and 82 percent of adult French speakers used Internet in the first quarter of 2014. However, the shares across both the regions are 100 percent if adult population only up to the age of 50 years is considered.

¹⁴ We verify that individuals who agreed to take part in our study ($n = 590$) are not significantly different from those who did not ($n = 432$) along many socio-demographic characteristics (Table A1, Appendix A, columns 1-3).

54.41 percent¹⁵. For our final sample, we drop 17 individuals who are non-Swiss, which leaves us with 304 observations covering 25 cantons¹⁶ and 203 municipalities of Switzerland.

Social Identity

The multidimensional nature of social identity requires considering dimensions that are cogent with the topic under consideration. Given our emphasis on propensity for conditional cooperation, we consider membership in a linguistic group as a relevant measure of social identity. Our approach is guided by studies in sociology (Gumperz 1982, Giles and Johnson 1987, Heller 1987) and economics (Aspachs Bracons et al. 2008, Clots-Figueras and Masella 2013) that highlight the instrumental role of language in the transmission of group specific norms. Studies by linguists, such as Clyne (1995), also note that within Switzerland language is “the most powerful marker of identity”. In fact, differences in norms across linguistic groups are regularly emphasized in the Swiss media. For instance, a daily newspaper called *Südostschweiz* (2000) wrote Switzerland has “two fronts that stand opposite to each other”. Reflecting a similar view, a few years later, a Swiss weekly magazine *Die Weltwoche* wrote (2004) “Switzerland consists of two halves: On the left hand side is the casual west, on the right hand side the stricter east”, and again (2007) “It is unequivocal among political geographers that there exists a dividing line which separates our country (Switzerland) into two mental regions”.

Besides membership in linguistic social groups, which is largely acquired by virtue of birth, evidence suggests that individuals may also choose the degree with which they identify with a particular social group (Tajfel and Turner 1986, Akerlof and Kranton 2000, Tropp and Wright 2001, Roccas and Brewer 2002, Bernard et al. 2015). Accordingly, we consider measures of social identity at both extensive and intensive margins.

Social identity at the extensive margin. To identify the social group to which an individual belongs, we use the native language(s) of an individual, elicited via the post-experiment survey, allowing for multiple answers. Individuals could choose from Swiss German, German, French, Italian, and other; while choosing the latter individuals had to state the language in an empty box.

¹⁵ The response rate by social groups is also very similar: 57 percent among Swiss Germans, 48 percent among Swiss French, and 55 percent among Swiss Italians. We again verify that those who did ($n = 321$) and did not ($n = 269$) take part in our experiment are not significantly different from each other (Table A1, Appendix A, columns 4-6), even within each linguistic group (Table A2, Appendix A).

¹⁶ The missing canton is Appenzell-Innerrhoden, a half-canton and also the smallest in Switzerland by population.

We find that 90 percent of the individuals in our sample speak only one native Swiss language. Among the remaining 10 percent (30 individuals), 20 individuals speak a native Swiss language as well as a non-Swiss native language (for example, Russian). We assign these individuals to the social group corresponding to their native Swiss language (19 Swiss German, and 1 Swiss Italian). The remaining ten individuals speak two native Swiss languages; we assign them to the social group corresponding with the official language of the canton where they reside¹⁷. Our sample includes 65 percent Swiss Germans (197 individuals), 21 percent Swiss French (65 individuals), and 14 percent Swiss Italians (42 individuals). These shares are in line with the representation of the linguistic social groups in the Swiss national population (section II.A), except for Swiss Italians who were oversampled by design.

To further verify that the native language indeed captures an individuals' social group, we asked individuals the question "With whom do you mostly share your beliefs and values?" including as possible answers Swiss German, Swiss French, Swiss Italian, and foreigner (multiple answers were not allowed). We find that about 88 percent of our respondents identify with the beliefs and values of their linguistic social group. In Table A3 of Appendix A, we show that the response to this question does not differ across Swiss Germans and Swiss French¹⁸.

Social identity at the intensive margin. We also measure the degree of social identity with respect to one's own and other social groups. Following the literature in psychology, we introduce in the post-experimental survey a modified pictorial scale developed by Aron et al. (1991, 1992) and used by Tropp and Wright (2001). In the survey, respondents are shown five Venn-like diagrams (Figure 2), whereby each diagram contains a pair of circles with different degrees of overlap, ranging from 1 (no overlap) to 5 (complete overlap). Within a pair of circles, the first circle represents the respondent ("you") while the other circle represents a social group. Respondents are asked to choose the extent of overlap that best represents their level of social identity with a given social group. Each respondent faces four such questions, one for each social group (Swiss German, Swiss French, Swiss Italian, or foreigner). Tropp and Wright (2001) show that this is a powerful measure to capture social identity, particularly because it is based on a visual

¹⁷ Subsequently, we verify that our assignment of these individuals to a social group is indeed the one with whom they report sharing their beliefs and values. Our results remain robust when we assign these ten individuals to the social group corresponding with their other native language or drop them altogether (Table A5, Appendix A).

¹⁸ Our main results hold even when we introduce a dummy variable for individuals who state that their beliefs and values differ with respect to their social group (Table A5, Appendix A, column 8).

representation rather than different worded items, which is ideal for studies administered in different languages and with limited time. Overall, 292 individuals answered this part of the survey, 194 Swiss Germans, 60 Swiss French, and 38 Swiss Italians.

We use this data to generate three measures to examine how the gap in conditional cooperation changes with the degree of social identity. We first consider the degree of social identity with respect to each social group, regardless of the native language of an individual. But, because these four measures are highly correlated, we use only one measure – the *degree of Swiss German identity*, as reported by each individual (Panel A, Table 1).

We next consider the degree of social identity with respect to the social group corresponding with an individual’s native language. For this purpose, we merge some of the categories to define the social identity of individuals as “strong” if the overlap in the Venn-like diagram is greater than or equal to four, otherwise “weak” (Venn-like diagrams less than or equal to three). In our experimental sample, 73 percent of Swiss Germans ($n = 141$) are classified as *strong* and 27 percent as *weak* ($n = 51$). In contrast, 97 percent of Swiss French are *strong* ($n = 58$), but only three percent are *weak* ($n = 2$). We then contrast the gap in conditional cooperation across *strong* Swiss Germans, and *weak* Swiss Germans with respect to *strong* Swiss French as a benchmark.

Subsequently, we consider the degree of social identity with respect to own, as well as other social groups. We define the social identity of individuals as “very strong” if individuals identify *strongly* with their social group (Venn-like diagrams greater than or equal to four) but *weakly* with other social groups (Venn-like diagrams less than or equal to three). In our sample, 65 percent of Swiss Germans ($n = 124$) and 80 percent of Swiss French ($n = 48$) are *very strong*.

III. Measuring Conditional Cooperation

In this section, we describe the behavioral experiment that we conducted online to elicit conditional cooperation among a representative sample of Swiss households.

A. Behavioral Experiments

In the field, individuals might cooperate due to a variety of reasons: other-regarding motives, opportunities to form reputation, repeated interaction, and optimistic beliefs about the contribution of others. The presence of such confounding motivations makes it challenging to

measure conditional cooperation using observational data in the field. One way to disentangle these motivations carefully is to use a behavioral experiment where researchers have control over the environment in which decisions are taken. Accordingly, we use an anonymous one-shot public goods game played in the strategy method. This feature allows us to separate propensity for conditional cooperation from cooperation due to reputation and repeated interaction incentives, as well as beliefs about others' cooperation.

Our experimental design follows that of Fischbacher et al. (2001). This method has been used in a variety of field settings (e.g., Kocher et al. 2008, Herrmann and Thöni 2009, Fischbacher and Gächter 2010, Thöni et al. 2012) and has been externally validated in studies by Rustagi et al. (2010) and Kosfeld and Rustagi (2015)¹⁹. In the game, two players are randomly assigned to an experimental group. Each player receives an endowment of 100 CHF (Swiss Francs) and has to decide on his contribution to the public good. Players could contribute any amount from 0 to 100 in units of 10 CHF. Any amount in the public good is increased by 1.5 times and then distributed equally between the two players, regardless of their contribution. Formally, the payoff of player i , where $i \in \{1, 2\}$, is given by:

$$(1) \quad \Pi_i = 100 - C_i + 0.75(C_1 + C_2),$$

where 100 is the endowment received at the start of the game, C_i is the contribution of player i to the public good, 0.75 is the marginal per capita return from the public good, and $C_1 + C_2$ is the total contribution to the public good. Because the marginal per capita return is 0.75, each Swiss Franc contributed by a player to the public good yields only 0.75 back. Thus, it is individually rational for a player to contribute nothing to the public good. However, because $2 \cdot 0.75 > 1$, it is socially optimal to contribute the entire endowment. This creates a social dilemma situation.

The game involved two decisions: unconditional and conditional. In the unconditional decision, players decided simultaneously on their contribution to the public good. In the conditional decision, we implemented the strategy method, whereby each player was shown 11 possible contribution decisions of the other player and then had to decide on his contribution for each of the other players' decision. A die was rolled to determine the player for whom the

¹⁹ These studies show that measures of conditional cooperation elicited using the public goods game in the strategy method are correlated with field cooperation outcomes.

conditional decision is relevant, which is then matched with the unconditional decision of the other player to determine payoffs.

In addition, we also conducted a second experiment, which is exactly similar to the aforementioned experiment except for one key difference - we now reveal the social identity of the other player. Specifically, we randomly matched an individual of a given social group to another individual either of the same social group or a different one. For example, some Swiss French were randomly matched with Swiss French, while other Swiss French were matched with Swiss Germans. Similarly, some Swiss Germans were randomly matched with Swiss Germans, while others were matched with Swiss French. In the end, one of the two experiments was randomly selected to determine the payoff²⁰. After the experiments, individuals took part in a post-experiment survey²¹.

B. Measuring conditional cooperation

Following Fischbacher et al. (2001) and Fischbacher and Gächter (2010), we use the Spearman correlation between self and the other players' contribution in the conditional decision. This provides us with a measure of conditional cooperation - the higher the Spearman correlation, the higher the propensity to cooperate conditionally. The average propensity to cooperate conditionally in the sample is 0.637 (s.d. 0.545) (Table 1). Figure 3 shows variation in conditional cooperation by social groups. On average, Swiss Germans display the highest propensity to cooperate conditionally (0.716, s.d. 0.473), followed by Swiss Italians (0.576, s.d. 0.549), and Swiss French (0.435, s.d. 0.682); these differences are highly significant (ANOVA, p -value = 0.001). Conditional cooperation is also positively correlated with the degree of Swiss German identity (p -value = 0.013).

IV. Social Identity and Attitudes Towards Cooperation

Before examining the effect of social identity on preferences for conditional cooperation, we investigate whether social groups differ in their attitudes towards cooperation. This analysis

²⁰ We pay a random sub-sample of participants following procedures by Bettinger and Slonim (2007) and Baltussen et al. (2012). 40 people were randomly selected for payment, of which 50 percent are Swiss Germans and 30 percent Swiss French. On average, subjects earned CHF 135.

²¹We pre-tested our experiment as well as the post-experiment survey to test respondents' understanding of the experiment and questions, and the duration of the study.

allows us to map the prescriptions of appropriate cooperative behavior in social groups and also guide our hypothesis on the direction of the gap in conditional cooperation across social groups.

We measure attitudes towards cooperation mainly using wave 13 (year 2011) of the Swiss Household Panel (SHP)²². In line with previous studies (Knack and Keefer 1997, Herrman et al. 2008), we focus on traits underlying such attitudes: *lying in own interest*, *cheating on tax declaration*, and *claiming state benefits not entitled to*. To assess each of these traits, we consider the following questions: “For each of the following items, tell me to what extent you think that it can be justified, if 0 means “never justified” and 10 “always justified”: (a) lying in own interest, (b) cheating on tax declaration, and (c) claiming state benefits not entitled to.” For the ease of interpretation, we invert the scale so that a higher score reflects stronger attitudes towards cooperation. This implies that 0 means “always justified” and 10 means “never justified.”

Swiss Germans and Swiss French differ significantly in each of the three attitudes. The average score for lying in own interest is 7.78 (s.d. 2.26) for Swiss Germans and 7.04 (s.d. 2.49) for Swiss French. For cheating on taxes and claiming states benefits not entitled to, the average scores are 8.79 (s.d. 2.04) and 9.70 (s.d. 1.02) for Swiss Germans, and 8.37 (s.d. 2.37) and 9.47 (s.d. 1.34) for Swiss French; these differences are highly significant (p -value = 0.000).

Result from a descriptive analysis presented thus far could be reflecting the influence of other covariates. Consequently, we contrast the gap in cooperative attitudes by social groups using OLS regressions. The main independent variable of interest is a dummy variable equal to one if an individual’s native language is Swiss German, and zero if Swiss French²³. We control for a vector of standard socio-demographic characteristics of the individual (age, education, gender, individual income, religion, and politics), and a vector of municipal and cantonal level variables (altitude, Gini index, GDP per capita, and the share of agricultural land as a proxy for urbanization). These variables are described in Table 2. We cluster standard errors at the cantonal level. Columns 1-3 in Table 3 report the results and show that the Swiss German dummy has a strongly positive association with each of the three attitudes, which is mostly significant at the 1 percent level. In particular, the gap is largest with respect to cheating on taxes

²² SHP is a yearly panel study started in 1999 of a random sample of Swiss households interviewed by telephone. We use data from wave 13 because other waves do not cover questions on attitudes towards cooperation. We exclude foreigners and Swiss Italians and keep only Swiss citizens who are older than 17 years, and with no missing information on the variables of interest for the analysis. The final sample includes 5,031 observations.

²³ While using SHP, we present results only using social identity at the extensive margin because SHP data does not contain questions necessary to build measures of social identity at the intensive margin.

and claiming state benefits one is not entitled to. We verify these results using data from waves 2 (1989), 3 (1996), and 5 (2007) of the World Values Survey (Table A5, Appendix A)²⁴.

Instead of relying on three different traits underlying attitudes towards cooperation and also to avoid the arbitrary choice of traits to measure cooperative attitudes, we conduct a principal component analysis on the three traits, and then construct a summary measure by extracting the first principal component. Table A4, Appendix A shows the correlation between the three traits and the summary measure of attitudes towards cooperation. The three traits are correlated with each other, as well as with the principal component. This suggests that the principal component can be considered a valid measure of attitudes towards cooperation. As expected, Swiss Germans have a significantly higher principal component of attitudes towards cooperation than Swiss French (p -value = 0.000). In column 4, Table 3 we show that this difference is robust to the inclusion of other covariates. On average, Swiss Germans display cooperative attitudes that are higher than the Swiss French by about 38 percent, thereby confirming that Swiss Germans exhibit stronger prescriptions of cooperative behavior than Swiss French.

In summary, these results document a strong gap in prescriptions of cooperative behavior across social groups even within a country. Next, we investigate whether differences in prescriptions translate into differences in preferences for conditional cooperation.

V. Social Identity and Conditional Cooperation

In this section, we assess the association between social identity and conditional cooperation. We first outline our empirical strategy to systematically establish the association between social identity and conditional cooperation. This is followed by main results obtained using social identity at the extensive and intensive margins. Subsequently, we show that our main results hold even when we control for membership in other groups and other attitudes, as well as when we include canton fixed effects to control for local institutions.

A. Empirical Strategy

We estimate the association between social identity and conditional cooperation using ordinary least squares (OLS) of the following form:

²⁴ Because the World Values Survey does not have data on the resident canton or municipality of individuals, we use it as robustness check and conduct most of the analysis using SHP data.

$$(2) \quad CC_{ik} = \alpha_0 + \alpha_1 SG_{ik} + \mathbf{X}_{ik} \alpha_2 + \mathbf{M}_k \alpha_3 + \varepsilon_{ik},$$

where CC_{ik} is the conditional cooperation of individual i from canton k , SG is a dummy variable which equals one if an individual i 's native language is Swiss German and zero otherwise (Swiss French). Subsequently, we also use the intensive margin of Swiss German identity as elicited using the Venn-like diagrams, which varies from 1-5. \mathbf{X} and \mathbf{M} are vectors of individual socio-demographic characteristics and municipality / canton specific variables respectively (Table 1); ε_{ik} is an idiosyncratic error term. Given the results on cooperative attitudes described in section IV, we expect α_1 to be positive, that is, being Swiss German or having a stronger degree of Swiss German identity to be positively associated with conditional cooperation. We also present results on Swiss Italians as a robustness check. We account for the spatial correlation of errors across individuals within a canton by clustering the standard errors at the cantonal level.

A key concern in the estimation of equation (2) is the bias due to omitted variables that could be correlated with both our measure of Swiss German identity and conditional cooperation. We adopt a five-fold approach to alleviate the scope of this bias. First, following social identity theory, we report our results at both extensive and intensive margins of the Swiss German identity. The latter is implemented in three ways, starting with the full scale of the variable degree of Swiss German identity. We then contrast the gap in conditional cooperation across *strong* Swiss German, *weak* Swiss German, and *strong* Swiss French. Finally, taking the identity with respect to other social groups into consideration, we contrast the gap in conditional cooperation across *very strong* Swiss Germans and *very strong* Swiss French. We believe that this combination of analysis at the extensive and intensive margin allows us to alleviate the scope of omitted variables bias because if an omitted variable is correlated with social identity, then it also needs to be correlated with the degree of social identity both with respect to one's own social groups as well as other groups to explain away the effect of social identity on conditional cooperation; this seems unlikely.

Second, we exploit our rich dataset and control for a host of important covariates listed in the literature on trust, social capital, and norms of civic cooperation. These include variables at individual level (age, education, gender, household income, urban residence, religion, and politics), municipal level (altitude and Gini index), and cantonal level (GDP per capita) in all our

estimations. The inclusion of these variables ensure that our measure of social identity is not capturing the effect of urban-rural cleavage, religious or political divide, or differences due to geography, income, and inequality.

Third, we introduce additional controls while conducting robustness checks. These include migration, naturalized citizen, and the Big Five personality traits at the individual level, and the share of foreigners, population density, and the share of individuals on social insurance at the municipal level. To ensure that our social identity variable is not capturing differences in historical conditions across Swiss German and Swiss French regions, which might have shaped both social preferences and social identity, we also control for historical variables at the cantonal level, such as the date of joining Switzerland, historical levels of economic development, and human capital in the 19th century.

Fourth, to alleviate the concern that our measure of social identity is capturing membership in other groups we control for, one at a time, membership in clubs, sports, cultural associations, syndicate, environmental, and parental associations, as well as for class identification and membership in other associations. In addition, we also consider four attitudes other than those towards cooperation, namely family and work attitudes, as well as trust in government, and generalized trust, to ensure that these are not driving our results.

Fifth, it could still be the case that the extensive and intensive margins of social identity are capturing differences in institutions, especially given that most policies in Switzerland are set at cantonal rather than federal level. We address this concern by exploiting a historically determined language divide between Swiss Germans and Swiss French called *roestigraben*. Large parts of the *roestigraben* run through the cantons of Berne, Fribourg, and Valais (see Figure 1) along north–south direction, in contrast to the main geographical border formed by the Alps that runs in west-east direction. Previous studies show that differences in attitudes across the linguistic regions on *roestigraben* are deeply rooted and stable (e.g., Eugster et al. 2011). Accordingly, we use the *roestigraben* setting to compare attitudes towards cooperation and propensity for conditional cooperation across individuals who face an identical institutional setting within a canton but differ in their social identity. We implement this by restricting our sample to *roestigraben* cantons ($n = 61$) and introducing canton fixed effects (α_k) in equation 2. To compensate for the loss of sample size, we conduct permutation tests.

B. *Social Identity and Conditional Cooperation*

We estimate equation (2) first using Swiss German identity at the extensive margin and contrast the gap in conditional cooperation by Swiss Germans and Swiss French, using the latter as a reference category. Table 4 presents the results. Column 1 is without control variables and shows that the Swiss German dummy has a strongly positive coefficient (0.281, s.e. 0.066), which is significant at the 1 percent level. In column 2, when we control for individual differences in demographic characteristics, the coefficient on the Swiss German dummy remains stable in magnitude, as well as in significance. Having a university degree has a positive association with conditional cooperation, which is significant at the 5 percent level.

Language is not the only dimension in which individuals build social identity. Other factors like religion and political affiliation might also play a role. Therefore, we control for religion using dummy variables for whether an individual is Catholic or Protestant. Similarly, we use dummy variables for political membership in *center* and *left* wing. The introduction of these variables in column 3 has little effect on the coefficient on the Swiss German dummy, which remains positive and significant at the 1 percent level. Both religion and political affiliation are individually as well as jointly statistically insignificant.

Separating the association of social identity with conditional cooperation from that of underlying geographical and economic environment is important. Accordingly, we proxy for these factors in column 4 using altitude, Gini index, and GDP per capita. The coefficient on the Swiss German dummy again remains stable and highly significant. The coefficients on altitude and Gini index are negative, while that on GDP is positive; however, none are significantly different from zero.

In column 5, we re-estimate the full model presented in column 4 by additionally including a dummy variable for Swiss Italians. Our results remain unchanged: both Swiss Germans and Swiss Italians have strongly positive coefficients, which are not only individually significant but also significantly different from each other at the 1 percent level. With respect to Swiss French as the benchmark category, being Swiss German and Swiss Italian is associated with a significant increase in conditional cooperation by 0.25 and 0.14 points, respectively; this is very similar to the coefficient on the Swiss German dummy obtained without controls in column 1. The gap in conditional cooperation across Swiss Germans and Swiss French is very large; in fact

it is about one-third of the average conditional cooperation in the full sample (0.64). Our results thus point towards a strong difference in conditional cooperation by social identity.

C. *The Degree of Social Identity and Conditional Cooperation*

Thus far, our results indicate a robust association of conditional cooperation with social identity at the extensive margin. We now test whether these results hold at the intensive margin by taking into consideration the degree of social identity with respect to one's own social group. We begin with the variable degree of Swiss German identity, which varies from 1 to 5. Columns 1-5, Table 5 show that this variable has a positive coefficient which is robust to the inclusion of covariates listed in Table 1, as well as when we consider the full sample including Swiss Italians (column 5)²⁵. In the full model (column 4), the coefficient is 0.055 (s.e. 0.022) which is significant at 5 percent, implying that one standard deviation increase in the degree of Swiss German identity (1.14) is associated with a significant increase in conditional cooperation by 0.063 points.

Next, we contrast the gap in conditional cooperation across *strong* Swiss German and *weak* Swiss German using *strong* Swiss French as a benchmark (column 6). In line with social identity theory, we find the coefficient on *strong* Swiss German (0.273, s.e. 0.071) is higher than the coefficient on *weak* Swiss German (0.187, s.e. 0.097); both are individually as well as jointly significant (p -value = 0.003).

Lastly, we consider the degree of social identity not only with respect to one's own social group but also with respect to the other social group. Column 7 reports the difference in conditional cooperation between *very strong* Swiss Germans and *very strong* Swiss French. Remarkably, the gap widens even further, such that conditional cooperation among *very strong* Swiss Germans is now higher by 0.348 points (s.e. 0.089); the difference is also highly significant at the 1 percent level. This large difference is both due to higher conditional cooperation among *very strong* Swiss Germans, as well as lower conditional cooperation among *very strong* Swiss French, relative to all Swiss Germans and Swiss French respectively²⁶.

Overall, in line with social identity theory, we show that the gap in conditional cooperation varies with the degree of social identity. This also mitigates to some extent the scope of omitted

²⁵ Our results hold even when we control for the degree of social identity with other social groups, namely Swiss Italians and foreigners.

²⁶ Our result holds even when we introduce Swiss Germans who identify strongly both with Swiss Germans and Swiss French ($n = 17$). The coefficient on this category while remaining positive (0.263) is not significant.

variable bias, as these variables would need to be correlated with social identity at both extensive and intensive margins to bias our results, which seems rather unlikely.

D. Robustness Analysis

We implement a number of approaches to test the robustness of our results using the specifications in column 4 of Tables 4 and 5, which further set to confirm the strong gap in conditional cooperation across Swiss German and Swiss French. Panel A reports results using the extensive margin of social identity, and Panel B the intensive margin²⁷. In addition, Panel A also reports the coefficient on the additional variable, which is excluded from Panel B to save space; instead, we report the p -value of the coefficient on the added variable.

As a first robustness check, we ensure that our results are not due to influential cantons such as Zurich and Geneva, both of which are highly globalized and attract immigrants from within and outside of Switzerland. In column 1 of Table 6, we drop individuals from the Swiss German speaking canton of Zurich, in column 2 from the Swiss French speaking canton of Geneva, and then in column 3 we drop individuals from both the cantons. Our results remain robust - the magnitude and significance of the coefficient on the Swiss German dummy is not affected by the exclusion of individuals from either one or both of these cantons. Our results hold even when we drop individuals from one Swiss canton at a time.

Next, we add one-by-one new municipal level covariates and check the sensitivity of our results to the inclusion of these additional controls. The results are reported in Table 6 and include the share of foreigners (column 4), population density per Km² (column 5), and the share of individuals seeking social assistance (column 6). As before, our results remain robust to the inclusion of these additional covariates, and corroborate the aforementioned differences in conditional cooperation by social identity.

One potential issue that could still bias our results is that social identity might be capturing differences in historical conditions across Swiss German and Swiss French regions. While we acknowledge the potential difficulty in capturing the historical environment, we use several proxies to mitigate this concern. We start by controlling for the historical period in which each canton joined Switzerland to account for the fact that, on average, Swiss German cantons joined

²⁷ All of our results hold even when we use the full sample that includes Swiss Italians.

Switzerland before Swiss French cantons²⁸. Thus, it could be that the longer duration of being under the Swiss confederation leads to differences in conditional cooperation. Column 7 of Table 6 reports the results and shows that the coefficient on the Swiss German identity declines slightly at both extensive and intensive margins but remains statistically significant. As expected, the coefficient on the date of joining Switzerland is negative and is even significant at the 10 percent level in panel B. Subsequently, we introduce one at a time other historical variables including population density in 1850 (just two years after Switzerland was formed) and primary and secondary school enrollment in 1888 as proxies for historical levels of economic development and human capital at the cantonal level. The inclusion of these variables does not lead to any major changes on the coefficient on Swiss German identity.

We also ensure that our results are not capturing differences in personality across social groups by controlling for the Big Five personality traits used in psychology (see Appendix A). Column 10 of Table 6 shows that the coefficient on the Swiss German identity remains stable and significant. The coefficients on the Big Five personality traits are individually as well as jointly statistically insignificant (p -value > 0.90).

Another concern is that differences in migration or naturalized Swiss citizens, in lieu of social identity, might be driving our results. We doubt that this is the case because models of conformist transmission show that social groups can maintain group specific prescriptions even when migration rates are high (Henrich and Boyd 1998)²⁹. Nevertheless, controlling for a dummy variable for whether individuals have migrated or not or whether an individual is a naturalized citizen or not has no effect on our results (Table A6, Appendix A, columns 1 and 2)³⁰. In contrast, the coefficients on dummy variables for migration (0.017) and naturalized citizen (-0.005) are not only very small but also statistically insignificant. Similar results are

²⁸ This happened over three broad periods: 10 cantons from 1291 to 1353, 7 cantons from 1481-1513, and 9 cantons from 1803-1833. Although Basel-Land and Basel City split in 1833 and Jura split from Bern in 1979, we assign them the original period in which they joined Switzerland.

²⁹ We first test if the shares are indeed different across the two linguistic groups using data on migration at individual (post-experimental survey) and municipal level (Swiss Federal Statistical Office - <http://www.bfs.admin.ch/bfs/portal/en/index/themen/01/07.html>; accessed on November 19, 2015). At the individual level, while the share of Swiss nationals who have migrated is not significantly different across Swiss Germans and Swiss French (Fisher's exact test, p -value = 0.31), the share of naturalized citizens is significantly higher for Swiss Germans (22.2 percent) than for Swiss French (8.5 percent) (p -value = 0.02).

³⁰ 52 percent of the respondents in our experimental sample migrated at least once in their life, that is, lived in a region different from their region of birth. Of these, over 90 percent moved internally within Switzerland and 84 percent migrated within the linguistic region. The share of naturalized citizens in our sample is 19 percent.

obtained when we use population change due to migration at the municipal level (Table A6, Appendix A, column 3).

An additional interpretation of our findings could be that our results are reflecting differences in the comprehension of the experiment. So, in column 4, Table A6, Appendix A, we control for game comprehension, measured as the number of correct responses to control questions. Our results clearly show that the coefficient on the Swiss German identity is very robust. The coefficient on game comprehension is small and statistically insignificant. Similar results are obtained when we use the time taken to complete the study as an alternative measure of game comprehension (column 5).

One remaining concern is that owing to a small number of clusters ($n < 41$), the p -values reported in Tables 4 and 5 could be biased downwards leading to a higher probability of Type I error. Following Cameron et al. (2008), we estimate standard errors from wild bootstrap procedure with varying number of replications for the main specification in column 4 of Tables 4 and 5. Regardless of the number of replications, we find that while the coefficient on the Swiss German dummy remains highly significant at 1 percent that on the degree of Swiss German identity is always significant at 10 percent³¹.

E. Social Identity or Membership in Other Groups or Other Attitudes?

As we mentioned before, the multidimensional nature of social identity raises a concern that membership in some other groups or other attitudes are driving the positive correlation of the Swiss German identity with attitudes towards cooperation and conditional cooperation. Consequently, we test whether our results are robust to the inclusion of several proxies for these variables obtained using wave 13 of SHP. In Table 7, we report separately results on the association of attitudes towards cooperation (columns 1-2) and propensity for conditional cooperation (columns 3-6) with membership in eight different groups (Panel A) and four different attitudes (Panel B), controlling for the Swiss German identity and other covariates. In regressions with the first principal component of attitudes towards cooperation as the dependent variable, column 1 reports the coefficient on the additional variable and column 2 the coefficient

³¹ The number of replications and resulting p -values in parentheses are 1000 (0.000; 0.062), 1500 (0.000; 0.076), and 5000 (0.000; 0.078), where the first p -value is for the extensive margin and the second one for the intensive margin of social identity.

on the Swiss German dummy in the corresponding model. Column 1 shows that memberships in six out of eight groups are statistically insignificant. Memberships in clubs has a positive coefficient which is significant at the 1 percent level, while membership in sports enters negatively and is significant at the 10 percent level. In contrast, three of the four other attitudes are statistically significant at the 1 percent level; while the coefficient on work attitudes is negative that on generalized trust and trust in government are positive. Importantly, column 2 shows that the coefficient on the Swiss German dummy (about 0.37) is remarkably robust both in magnitude and significance to controlling for several proxies of membership in other groups as well as other attitudes.

In regressions with conditional cooperation as the dependent variable, while columns 3 and 5 report the coefficient on the additional variable, columns 4 and 6 report the coefficient on the Swiss German dummy and the degree of Swiss German identity in the corresponding model, respectively³². Columns 3 and 4 show that neither the membership in seven out of eight other groups nor any of the four attitudes are statistically significant; the only exception is class identification which enters positively and is significant at the 5 percent level. The coefficients on Swiss German identity (about 0.25, column 4) and its degree (about 0.05, column 6) remain positive and statistically significant, and are very similar to our main results reported in column 4 of Tables 4 and 5, respectively.

Together these results suggest that the association of social identity with conditional cooperation and attitudes towards cooperation is not capturing the effect of membership in other groups or other attitudes.

F. *Social Identity or Institutions?*

A major remaining concern that could potentially explain our results is the difference in local institutions across the Swiss German and Swiss French speaking cantons. We exploit the *roestigraben* language divide and test whether our results hold even when we compare individuals who have been exposed to the same institutional environment but differ in their social identity. Specifically, we compare Swiss Germans and Swiss French within each of the

³² Because we did not collect data on membership in other groups and other attitudes in the post experiment survey, we obtain averages of these variables at the municipal level using SHP and then merge these with the experimental data at the municipal level.

three bilingual cantons of Berne, Fribourg, and Wallis. Due to our small sample size comprising 38 Swiss Germans and 23 Swiss French, we focus on social identity at the extensive margin.

Before we present the results on conditional cooperation, we verify that just as with the full sample of SHP, social groups differ in their attitudes towards cooperation even in the *roestigraben* sub-sample. Columns 1-2, Table 8 report the results without and with canton fixed effects and show that Swiss Germans display significantly stronger cooperative attitudes than Swiss French. In line with these findings, we show that conditional cooperation is also higher among Swiss Germans than Swiss French (columns 3-4). As before, without canton fixed effects (column 3), we see that Swiss Germans have a significantly higher propensity to cooperate conditionally (0.379, s.e. 0.183), which is slightly higher than the magnitude obtained using the full sample (Table 4, column 4). The gap, however, widens to 0.593 (s.e. 0.266) once we introduce canton fixed effects (column 4). One plausible explanation, which is consistent with referendum outcomes, could be that Swiss Germans prefer more self-governance, whereas Swiss French prefer more state intervention (Eugster et al. 2011). Hence, once we account for institutions, the gap widens. Another explanation could be that groups invest more into social identity when they are a minority (Bisin and Verdier 2011). To adjust for our small sample size, we also conduct permutation tests that yield similar results (p -value = 0.038)³³.

G. Further Sensitivity Checks

We argue that our measure of conditional cooperation is a generalized measure because it is obtained in an anonymous context. One concern though is that in expectation Swiss French individuals are more likely to be matched with a Swiss German, the latter being the majority group in Switzerland. As a consequence, it could be that despite our claim of the measure being a generalized one, Swiss French might be actually playing an out-group game, which could eventually explain their lower levels of conditional cooperation. We use data from the second experiment described in section III to address this concern. In this experiment, an individual is randomly matched to a player from the same social group (in-group treatment) or from another social group (out-group treatment). We do not find any difference in conditional cooperation across the two treatments, either for Swiss French (p -value = 0.888) or for Swiss Germans (p -

³³ Monte Carlo permutation tests with 10,000 replications.

value = 0.761). This result clearly suggests that conditional cooperation among Swiss French or Swiss Germans does not depend on the social identity of the other partner.

A related concern is that our interpretation of the gap in conditional cooperation across social groups is not reflecting the role of social identity but discrimination. For instance, Swiss French display a lower propensity for conditional cooperation because they form a minority group in Switzerland. However, as the evidence from the second experiment points out, this seems not to be the case. In addition, if discrimination is the driving factor then we should observe lowest conditional cooperation among Swiss Italians, which are the most under-represented group. However, as column 5 in Table 4 shows, Swiss Italians exhibit higher conditional cooperation than Swiss French, the difference being 0.135 (s.e. 0.06). Furthermore, if discrimination is indeed the underlying channel then we should find differences in conditional cooperation across Swiss French from cantons where they are in absolute majority (Vaud, Neuchatel, Geneva, and Jura) to cantons where they are in relative majority (Fribourg and Valais), and where they are in minority (Bern). We test this hypothesis first using attitudes towards cooperation elicited via SHP. Our results reveal that while the trend is actually opposite, that is, Swiss French display stronger cooperative attitudes when they are in minority, the differences are not statistically significant (p -value > 0.335). Subsequently, we also use our experimental sample and find similar results – there is no difference in conditional cooperation among Swiss French across any of these groups of cantons (p -value = 0.738).

We ensure that our results are also not being driven by our classification of Swiss Germans into a single social group. While we acknowledge that Swiss Germans speak a variety of dialects³⁴, which could be broadly associated with larger entities like a canton, it does not necessarily mean that Swiss Germans differ in their prescriptions towards cooperation and hence social identity. To substantiate our argument, we first show using ANOVA that individual differences in conditional cooperation across Swiss German cantons are not only small but also statistically insignificant (p -value = 0.688). Second, following the epidemiological approach (Luttmer and Singhal 2011), we use individual level data on migration obtained from the post-experimental survey. We find that conditional cooperation of migrant Swiss Germans in a given resident canton is not significantly correlated with the average conditional cooperation in the migrant's home canton, controlling for the resident canton's fixed effect (p -value = 0.85).

³⁴ Except of Wallis and Basel-City, all other Swiss-German dialects are of High Alemannic origin.

VI. Family Background, Social Identity, and Conditional Cooperation

In this section, we document how the gap in conditional cooperation across Swiss Germans and Swiss French changes in response to changes in social identity induced by parental and grandparental background. Our main argument is that the family background, over which individuals have no control, shapes social identity, and via this the propensity to cooperate conditionally. Thus, having a stronger Swiss German family background is likely to shape stronger Swiss German identity, which in line with the Swiss German attitudes towards cooperation (section IV), is expected to shape stronger conditional cooperation.

We proxy for family background using the linguistic region in which individuals' parents or grandparents were (a) born - *region of birth*, as well as (b) spent most of their time - *region of stay*. Our choice of these variables is motivated by Bisin and Verdier (2011) who posit three distinct processes for the transmission of preferences from parents to children: direct socialization of children by parents, indirect socialization via parents choosing the social environment of their children (school and neighborhood), and assortative mating³⁵.

Data on these variables were collected via the post-experimental survey, in which we asked individuals to state the region in which both of their parents and all four of their grandparents were born, and the region in which they spent most of their life. Individuals could choose from the following options: Swiss German, Swiss French, Swiss Italian, and other (outside Switzerland)³⁶. Overall, of the 262 Swiss German and Swiss French individuals in our sample, 253 individuals answered the parental questions and 249 individuals the grandparental questions; of these about 76 percent were Swiss Germans and 24 percent Swiss French.

We use data on the region of birth and the region of stay of individuals' parents and grandparents to build a quantitative score for each individual. This score measures the strength of parental / grandparental linguistic background an individual is exposed to *without* taking the

³⁵We focus on the combined effect of the three processes because of very high correlation among them. For instance, parents' / grandparents' region of birth and region of stay can be used as proxies for direct and indirect socialization, respectively. In our sample, the correlation between region of birth and region of stay is 0.89 for grandparents, and 0.84 for parents. Similarly, by comparing mothers' and fathers' regions of birth and stay, we could also infer assortative mating. The correlation is 0.99 between mother's and father's region of stay and 0.76 between their region of birth.

³⁶ Using additional data on the actual native language of parents elicited through a separate question in the same survey, we verify that the region of birth is indeed highly correlated (0.90) with the native language of parents. We do not have data on grandparents' native language. However, given the strong correlation between parents' native language and region of birth, it is highly plausible that this correlation also exists for grandparents.

individuals' language into consideration. For the parental data, the scoring rule is such that each individual can have from zero to four points (maximum two points from mother's region of birth and stay, and maximum two points from father's region of birth and stay). Similarly, for the grandparental data, each individual can have from zero to eight points (maximum four points from maternal grandparents' region of birth and stay, and four points from paternal grandparents' region of birth and stay). Thus, the higher the score, the higher is the exposure to parental / grandparental linguistic background. A score of zero points means that none of the parents / grandparents of an individual were either born or spent most of their life in a particular region, while a score of four points in the parental background and eight points in the grandparental background means that all parents / grandparents were born and spent most of their life exclusively in a region. Any intervening score means that some of the parents / grandparents were born or spent most of their life outside a particular region.

Given our emphasis on Swiss German and Swiss French linguistic groups, we construct the scores separately for Swiss German and Swiss French regions. The two scores are highly correlated (0.92), so we use only one score at a time³⁷. In line with the results in the previous section, we focus on Swiss German family background. We estimate separately the association of Swiss German family background first with an individual's social identity, and then with conditional cooperation using OLS³⁸. Throughout the analysis, we assume that mothers / grandmothers have the same socialization effect as fathers / grandfathers. Similarly, we assume that the region of stay and region of birth play a similar role.

We present our results on the effect of Swiss German family background on an individual's social identity (Panel A) and conditional cooperation (Panel B) separately for parents and grandparents in Table 9. Each cell in the table reports results from a separate specification. Column 1 reports results without control variables. Column 2 controls for socio-demographic characteristics, such as age, education, gender, household income, and urban residence. Column

³⁷ Only nine individuals have an overlap in Swiss German and Swiss French parental background, and 33 individuals in grandparental background. In addition, 47 individuals do not belong to either of the two groups, that is, they score zero on both.

³⁸ Our approach is similar to an instrumental variables set up where the regression of social identity on the family background is akin to a first-stage regression, and the regression of conditional cooperation on family background is the intention-to-treat estimate. An additional advantage of our approach is that it allows us to address the concern arising from a higher share of Swiss Germans having a stronger family background than the share of Swiss French. Ignoring this may have potential consequences for our results from the previous analysis, for it could be that we are capturing differences in pure and mixed heritage across linguistic groups.

3 also includes religion and politics covariates, while column 4 presents the most comprehensive model where we also account for an individual's underlying geographical and economic environment by controlling for altitude, GDP, and Gini index of inequality.

We find that the stronger the Swiss German family background, the more individuals identify themselves with Swiss Germans. The effect is statistically significant at the 1 percent level. In addition, stronger exposure to Swiss German family background is reflected in significantly higher conditional cooperation as well. These results are robust to different specifications. According to the estimates presented in column 4, a one standard deviation increase in Swiss German *parental* background (1.71) is associated with an increase in Swiss German identity by 0.50 points and conditional cooperation by 0.10 points. The corresponding estimates for a one standard deviation increase in Swiss German *grandparental* background (3.31) are 0.42 points for social identity and 0.07 points for conditional cooperation³⁹. These results can also be broadly interpreted as demonstrating the role of the intergenerational transmission of conditional cooperation via social identity (Bisin and Verdier 2011).

VII. Conclusions

There is over-whelming evidence in economics documenting large variation in social preferences and its implications for a variety of economic outcomes. However, despite this importance, the determinants of social preferences are not well understood. In this paper, we examine the role of social identity in shaping social preferences in a generalized context, as distinguished from both beliefs and institutions. We focus on preferences for conditional cooperation - the individual propensity to cooperate conditional on the contribution of others. Conditional cooperation is measured using a one-shot anonymous public goods game played in the strategy method, which allows us to control for beliefs.

We exploit the within country variation of social identities in Switzerland, which is home to three major linguistic groups: Swiss German, Swiss French, and Swiss Italian. We measure social identity both at the extensive and intensive margin by using individuals' native language and the extent to which individuals consider themselves as belonging to own and other social groups. In addition, we ascertain the prescriptions of appropriate cooperative behavior in each

³⁹ Note that parental and grandparental backgrounds are measured on different scales (0-4 and 0-8, respectively). This implies that their coefficients cannot be simply compared.

social group by using data on attitudes towards cooperation measured in the Swiss Household Panel and World Values Survey.

Our findings reveal that social groups differ widely in their attitudes towards cooperation: Swiss Germans display significantly stronger cooperative attitudes than Swiss French. In line with these prescriptions, Swiss Germans exhibit a significantly higher propensity for conditional cooperation than Swiss French. Furthermore, the gap in conditional cooperation widens with the strength of Swiss German identity. Our results hold even when we control for a wide variety of individual and municipal / cantonal level variables, membership in other groups, attitudes other than cooperation, as well as geographical, historical, religious, political, and personality variables. These findings are robust even when we exploit variation in social groups within the *roestigraben* cantons and compare individuals who differ in social identities but are exposed to the same institutional environment. Finally, using data on parental and grandparental regions of birth and stay as a measure of family background, we show that stronger exposure to Swiss German parental / grandparental background is associated with stronger social identity towards Swiss Germans, as well as higher propensity for conditional cooperation.

Our results highlight the importance of social identity in shaping social preferences, as distinguished from both beliefs and institutions, and the importance of family background in shaping social identity as well as conditional cooperation.

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TABLE 1: DESCRIPTIVE STATISTICS: BEHAVIORAL EXPERIMENT

	Sample including Swiss Italians Mean (s.d.)	Sample excluding Swiss Italians Mean (s.d.)
A. Social identity		
Swiss German proportion	0.648 (0.478)	0.752 (0.433)
Degree of Swiss German identity	3.521 (1.211)	3.681 (1.144)
B. Conditional cooperation		
Propensity to cooperate conditionally	0.637 (0.545)	0.646 (0.545)
C. Family background		
Parental Swiss German background	2.452 (1.807)	2.775 (1.709)
Grandparental Swiss German background	4.645 (3.472)	5.233 (3.305)
D. Covariates		
Age	43.901 (13.575)	43.905 (13.500)
University degree	0.447 (0.498)	0.450 (0.498)
Male	0.533 (0.500)	0.538 (0.499)
Income	12.143 (6.304)	12.503 (6.516)
Urban	0.720 (0.450)	0.710 (0.455)
Catholic	0.355 (0.479)	0.321 (0.468)
Protestant	0.332 (0.472)	0.363 (0.482)
Left wing	0.118 (0.324)	0.111 (0.314)
Centre	0.579 (0.495)	0.607 (0.489)
Gini	0.297 (0.059)	0.293 (0.058)
GDP	68.031 (16.747)	68.484 (17.991)
Average altitude	6.269 (3.227)	6.225 (2.966)
Observations	304	292

Notes. Data are from our experimental sample. Social identity refers to the proportion of individuals whose native language is Swiss German. The degree of Swiss German identity is a variable ranging from 1 to 5, as measured by Venn-like diagrams. The propensity to cooperate conditionally varies from -1 to +1. The Swiss German parental background ranges from 0 to 4, while the Swiss German grandparental background ranges from 0 to 8. The number of observations of the variable degree of Swiss German identity is 292 (254), parental Swiss German background is 294 (253), and grandparental Swiss German background is 290 (249) in the sample including (excluding) Swiss Italians because of missing answers to the corresponding questions. Age is measured in number of years. Male is a dummy variable equal to one if the individual is male, 0 otherwise. University degree is a dummy variable equal to one if the individual has a university degree, zero otherwise. Income is monthly household income divided by 1000. Urban is a dummy variable equal to one if the individual lives in an urban area, 0 otherwise. Catholic and protestant are dummy variables indicating the religion of the individual. Left wing and centre are dummy variables referring to the political orientation of the individual. Gini and average altitude are measured at the municipal level, while GDP per capita at the cantonal level. Standard deviations (s.d.) are presented in parenthesis.

TABLE 2: DESCRIPTIVE STATISTICS: SWISS HOUSEHOLD PANEL (SHP)

	Mean (s.d.)
	A. Social identity
Swiss German proportion	0.727 (0.445)
	B. Attitudes towards cooperation
First principal component	0.002 (1.277)
Lying in own interest	7.598 (2.338)
Cheating on taxes	8.690 (2.126)
Claiming state benefits not entitled to	9.647 (1.087)
	C. Covariates
Age	49.461 (17.285)
University degree	0.163 (0.370)
Male	0.454 (0.498)
Income	5.633 (8.447)
Urban	48.586 (18.002)
Catholic	0.352 (0.478)
Protestant	0.432 (0.495)
Left wing	0.247 (0.431)
Centre	0.117 (0.321)
Gini	0.290 (0.060)
GDP	71.833 (21.507)
Average altitude	6.328 (3.031)
Observations	5,031

Notes. Data are from wave 13 (year 2011) of SHP and shows the average score on attitudes towards cooperation where 0 means “always justified” and 10 “never justified”. Age is measured in number of years. Male is a dummy variable equal to one if the individual is male, 0 otherwise. University degree is a dummy variable equal to one if the individual has a university degree, 0 otherwise. Income refers to monthly individual income divided by 1000. Urban refers to the share of agricultural land as proxy of urbanization at the municipal level. Catholic and protestant are dummy variables indicating the religion of the individual. Left wing and centre are dummy variables referring to the political orientation of the individual. Gini and average altitude are measured at the municipal level, while GDP per capita at the cantonal level. Swiss Italians are excluded. Standard deviations (s.d.) are presented in parenthesis.

TABLE 3: SOCIAL IDENTITY AND ATTITUDES TOWARDS COOPERATION

	Lying in own interest (1)	Cheating on taxes (2)	Claiming state benefits (3)	First principal component of attitudes towards cooperation (4)
Swiss German	0.192*** (0.044)	0.368*** (0.080)	0.744*** (0.056)	0.376*** (0.049)
Age	0.006*** (0.001)	0.017*** (0.002)	0.019*** (0.002)	0.012*** (0.001)
University degree	0.025 (0.051)	-0.053 (0.065)	0.202*** (0.051)	0.043 (0.041)
Male	-0.190*** (0.027)	-0.653*** (0.060)	-0.399*** (0.107)	-0.380*** (0.038)
Income	0.003** (0.001)	-0.001 (0.003)	0.001 (0.005)	0.002 (0.001)
Urban	0.000 (0.001)	0.001 (0.001)	0.000 (0.002)	0.000 (0.001)
Catholic	0.042 (0.050)	0.010 (0.079)	-0.225** (0.096)	-0.026 (0.054)
Protestant	0.056 (0.053)	-0.060 (0.056)	-0.082 (0.093)	-0.007 (0.048)
Left wing	-0.026 (0.016)	-0.042 (0.097)	-0.066 (0.079)	-0.041 (0.039)
Centre	0.086* (0.046)	0.073 (0.071)	0.057 (0.091)	0.079 (0.051)
Gini	0.093 (0.281)	0.835* (0.476)	-0.340 (0.511)	0.215 (0.306)
GDP	-0.000 (0.001)	0.001 (0.001)	0.001 (0.001)	0.000 (0.001)
Average altitude	-0.002 (0.004)	-0.010 (0.011)	0.026** (0.012)	0.002 (0.005)
Constant	9.224*** (0.190)	7.622*** (0.234)	6.217*** (0.254)	-0.844*** (0.171)
Observations	5,031	5,031	5,031	5,031

Notes. OLS coefficients with robust standard errors clustered at the cantonal level in parentheses. The dependent variable is to which extent it is justifiable to lie in own interest (column 1), cheating on taxes (column 2), claiming state benefits not entitled to (column 3), and the first principal component of attitudes towards cooperation (column 4). Data are from wave 13 of SHP and the covariates are defined in Table 2. ***, **, * indicate significance at the 1%, 5%, and 10 % level, respectively.

TABLE 4: SOCIAL IDENTITY AND CONDITIONAL COOPERATION
RESULTS AT THE EXTENSIVE MARGIN

	Propensity to cooperate conditionally				
	(1)	(2)	(3)	(4)	(5)
Swiss German	0.281*** (0.066)	0.289*** (0.065)	0.278*** (0.065)	0.256*** (0.058)	0.249*** (0.061)
Swiss Italian					0.135** (0.060)
Age		-0.001 (0.002)	-0.001 (0.002)	-0.000 (0.002)	-0.001 (0.002)
University degree		0.122** (0.056)	0.091 (0.061)	0.096 (0.059)	0.098* (0.052)
Male		-0.042 (0.085)	-0.059 (0.084)	-0.051 (0.087)	-0.037 (0.073)
Income		0.000 (0.007)	-0.000 (0.008)	-0.001 (0.008)	-0.000 (0.007)
Urban		0.069 (0.072)	0.067 (0.075)	0.087 (0.084)	0.086 (0.075)
Catholic			0.009 (0.068)	0.043 (0.071)	0.004 (0.068)
Protestant			-0.064 (0.097)	-0.063 (0.100)	-0.083 (0.092)
Left			0.183 (0.142)	0.188 (0.148)	0.129 (0.133)
Centre			0.139 (0.105)	0.133 (0.103)	0.084 (0.096)
Gini				-1.060 (0.799)	-0.842 (0.664)
GDP				0.002 (0.001)	0.002 (0.001)
Average altitude				-0.007 (0.007)	-0.021* (0.011)
Constant	0.435*** (0.056)	0.373*** (0.111)	0.334** (0.135)	0.554* (0.274)	0.672** (0.245)
Observations	262	262	262	262	304

Notes. OLS coefficients with robust standard errors clustered at the cantonal level in parentheses. The dependent variable is the propensity to cooperate conditional on the contribution of others in a public goods game. Swiss Italians are included only in column 5. ***, **, * indicate significance at the 1%, 5% and 10% level, respectively.

TABLE 5: THE DEGREE OF SOCIAL IDENTITY AND CONDITIONAL COOPERATION
RESULTS AT THE INTENSIVE MARGIN

	Propensity to cooperate conditionally						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Degree of Swiss German identity	0.056*	0.064**	0.062*	0.055**	0.054**		
	(0.028)	(0.027)	(0.030)	(0.026)	(0.022)		
<i>Strong</i> Swiss German						0.273***	
						(0.071)	
<i>Weak</i> Swiss German						0.187*	
						(0.097)	
<i>Very strong</i> Swiss German							0.348***
							(0.089)
Age		-0.001	-0.001	-0.001	-0.002	-0.000	0.002
		(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)
University degree		0.098	0.060	0.065	0.062	0.067	0.071
		(0.069)	(0.068)	(0.064)	(0.058)	(0.068)	(0.074)
Male		-0.034	-0.058	-0.052	-0.045	-0.059	-0.015
		(0.087)	(0.087)	(0.087)	(0.074)	(0.083)	(0.114)
Income		0.003	0.002	0.001	0.002	-0.001	-0.002
		(0.006)	(0.007)	(0.007)	(0.007)	(0.007)	(0.009)
Urban		0.105	0.104	0.108	0.118	0.125	0.094
		(0.076)	(0.075)	(0.081)	(0.078)	(0.082)	(0.105)
Catholic			-0.014	0.026	0.005	0.027	-0.047
			(0.067)	(0.070)	(0.061)	(0.070)	(0.086)
Protestant			-0.076	-0.072	-0.082	-0.095	-0.126
			(0.103)	(0.104)	(0.095)	(0.103)	(0.087)
Left			0.174	0.173	0.116	0.226	0.203
			(0.148)	(0.153)	(0.137)	(0.141)	(0.165)
Centre			0.187*	0.176*	0.133	0.174*	0.103
			(0.092)	(0.089)	(0.081)	(0.088)	(0.096)
Gini				-0.868	-0.690	-1.003	-0.501
				(0.662)	(0.512)	(0.682)	(0.783)
GDP				0.002	0.002	0.001	0.003*
				(0.001)	(0.001)	(0.001)	(0.002)
Average altitude				-0.010*	-0.026*	-0.008	0.001
				(0.006)	(0.013)	(0.007)	(0.008)
Constant	0.448***	0.345*	0.293	0.464**	0.601**	0.546**	0.165
	(0.113)	(0.169)	(0.175)	(0.216)	(0.199)	(0.242)	(0.282)
Observations	254	254	254	254	292	250	172

Notes. OLS coefficients with robust standard errors clustered at the cantonal level in parentheses. The dependent variable is the propensity to cooperate conditional on the contribution of others in a public goods game. The degree of Swiss German identity is a variable ranging from 1 to 5, where 1 means that the individual chose the Venn-like diagram corresponding to no overlap with Swiss Germans while 5 means complete overlap. Strong Swiss German is a dummy variable equal to one if individuals identify *strongly* with their social group by choosing Venn-like diagrams greater than or equal to four. Weak Swiss German is a dummy variable equal to one if individuals identify *weakly* with their group by choosing Venn-like diagrams less than or equal to three. Very strong Swiss German is a dummy variable equal to one if individuals identify *strongly* with their social group (i.e., Venn-like diagrams greater than or equal to four) but *weakly* with other social groups (i.e., Venn-like diagrams less than or equal to three). Column 5 includes Swiss Italians. Column 6 and 7 reports results with respect to *strong* Swiss French and *very strong* Swiss French as a benchmark category, respectively. ***, **, * indicate significance at the 1%, 5%, and 10% level, respectively.

TABLE 6: SOCIAL IDENTITY AND CONDITIONAL COOPERATION: ROBUSTNESS CHECKS

	Propensity to cooperate conditionally									
	Drop Zurich (1)	Drop Geneva (2)	Drop Zurich and Geneva (3)	Foreigner share, 2011 (4)	Population density, 2011 (5)	Social assistance rate, 2011 (6)	Date of joining Switzerland (7)	Population density, 1850 (8)	School enrollment, 1888 (9)	Big Five personality traits (10)
<i>Panel A: Social identity at the extensive margin</i>										
Swiss German	0.244*** (0.070)	0.255*** (0.064)	0.242*** (0.075)	0.253*** (0.060)	0.256*** (0.057)	0.256*** (0.057)	0.229*** (0.070)	0.256*** (0.057)	0.256*** (0.068)	0.274*** (0.079)
Foreigner share 2011				0.001 (0.002)						
Population density 2011					-0.002 (0.002)					
Social assistance rate 2011						0.016 (0.021)				
Date of joining Switzerland							-0.031 (0.032)			
Population density, 1850								-0.000 (0.000)		
Secondary school enrollment, 1888									-0.145 (0.578)	
Primary school enrollment, 1888									0.115 (0.295)	
Big five personality [joint- <i>p</i> -value]										[0.98]
Other covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	222	252	212	262	262	262	262	260	260	237
<i>Panel B: Social identity at the intensive margin</i>										
Degree of Swiss German identity	0.052* (0.030)	0.071*** (0.023)	0.070** (0.025)	0.055** (0.026)	0.054* (0.027)	0.056* (0.027)	0.044* (0.026)	0.058* (0.028)	0.053* (0.030)	0.057* (0.031)
<i>p</i> -value of additional covariate				[0.54]	[0.18]	[0.59]	[0.05]	[0.15]	[0.78]	[0.90]
Other covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	214	244	204	254	254	254	254	252	252	235

Notes. OLS coefficients with robust standard errors clustered at the cantonal level in parentheses. The dependent variable is the propensity to cooperate conditional on the contribution of others in a public goods game. All columns include “other covariates” of Table 1. Column 1 excludes the canton of Zurich, column 2 excludes the canton of Geneva, and column 3 excludes both. Columns 4-6 include additional controls measured in 2011 at the municipal level including the share of foreigners (column 4), population density per Km² (column 5), and social assistance rate (column 6). In columns 7-9, additional controls are at the canton level including the date of joining Switzerland (column 7), population density in 1850 (column 8), and primary and secondary school enrollment in 1888 (column 9). Column 10 includes the Big Five personality traits at the individual level described in Appendix A.V. The sample drops in columns 8-9 because Jura was not a separate canton at that time, and in column 10 because of missing answers on the personality traits questions. Panel A refers to social identity at the extensive margin while panel B at the intensive margin. The degree of Swiss German identity is a variable ranging from 1 to 5, where 1 means that the individual chose the Venn-like diagram corresponding to no overlap with Swiss Germans while 5 means complete overlap. ***, **, * indicate significance at the 1%, 5%, and 10% level, respectively.

TABLE 7: EXAMINING THE ROLE OF MEMBERSHIP IN OTHER GROUPS AND OTHER ATTITUDES

	First principal component of attitudes towards cooperation		Propensity to cooperate conditionally			
	Additional variable	Swiss German	Additional variable	Swiss German	Additional variable	Degree of Swiss German identity
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A: Membership in other groups</i>						
Clubs	0.173*** (0.038)	0.360*** (0.046)	-0.017 (0.127)	0.258*** (0.063)	0.061 (0.137)	0.054* (0.026)
Sports	-0.052* (0.028)	0.379*** (0.050)	0.024 (0.148)	0.253*** (0.056)	0.032 (0.150)	0.055* (0.026)
Culture	0.045 (0.033)	0.373*** (0.048)	-0.025 (0.191)	0.258*** (0.059)	0.079 (0.231)	0.055** (0.026)
Syndicate	0.030 (0.054)	0.376*** (0.048)	-0.025 (0.172)	0.256*** (0.058)	-0.057 (0.214)	0.055* (0.027)
Environment	0.033 (0.067)	0.375*** (0.050)	0.015 (0.217)	0.255*** (0.058)	0.092 (0.209)	0.055** (0.026)
Parents	0.054 (0.034)	0.373*** (0.049)	-0.236 (0.167)	0.276*** (0.059)	-0.210 (0.193)	0.057* (0.028)
Class	-0.001 (0.045)	0.373*** (0.049)	0.288** (0.124)	0.256*** (0.060)	0.323** (0.124)	0.061** (0.026)
Other	-0.021 (0.035)	0.378*** (0.049)	0.027 (0.146)	0.255*** (0.058)	0.003 (0.177)	0.055* (0.027)
<i>Panel B: Other attitudes</i>						
Work attitudes	-0.070*** (0.021)	0.393*** (0.048)	0.104 (0.079)	0.235*** (0.065)	0.091 (0.072)	0.051* (0.026)
Family attitudes	0.031 (0.025)	0.407*** (0.052)	0.080 (0.060)	0.280*** (0.063)	0.052 (0.058)	0.061** (0.028)
Trust	0.022*** (0.007)	0.360*** (0.050)	-0.042 (0.039)	0.290*** (0.059)	0.003 (0.043)	0.055* (0.030)
Trust in government	0.042*** (0.007)	0.371*** (0.050)	0.008 (0.033)	0.251*** (0.064)	0.019 (0.042)	0.053* (0.028)

Notes. OLS coefficient with robust standard errors clustered at the cantonal level in parentheses. In columns 1-2, the dependent variable is the first principal component of attitudes towards cooperation obtained using data from wave 13 of SHP. In columns 3-6, the dependent variable is the propensity to cooperate conditionally obtained using the behavioral experiment. Memberships in other groups are from wave 13 of SHP while other attitudes are from waves 14 and 15 of SHP and are merged to our experimental sample at the municipal level, as these were not elicited by us at an individual level. All group membership variables are dummy variables equal to one if the individual is a member of a specific group (e.g., clubs, sports association, cultural association, syndicate, association for the protection of the environment, parental association, other interest groups, and class identification). Trust refers to the response to the question: “Would you say that most people can be trusted or that you can’t be too careful in dealing with people, if 0 means ‘Can’t be too careful’ and 10 means ‘Most people can be trusted’?” The variable trust in the government refers to the response to the question: “How much confidence do you have in the federal government, if 0 means ‘no confidence’ and 10 means ‘full confidence’?” The variable “work attitudes” is the first principal component of responses to the question: “Please tell me how far you would agree with the statements I am going to read to you now, if 0 means ‘I completely disagree’ and 10 ‘I completely agree’: 1) Other people determine most of what I can and cannot do; and 2) I can do just about anything I really set my mind to.” The variable “family attitudes” is the first principal component of the responses to the following questions: (i) “How frequent are your contacts with your mother? Number of times per month.” (ii) “If necessary, in your opinion, to what extent can your father provide you with practical help, this means concrete help or useful advice, if 0 means “not at all” and 10 “a great deal”?” (iii) If necessary, in your opinion, to what extent can these brothers and sisters provide you with practical help, this means concrete help or useful advice, if 0 means “not at all” and 10 “a great deal”?” In addition, columns 1-2 include the covariates of Table 2, while columns 3-6 the covariates of Table 1. ***, **, * indicate significance at the 1%, 5%, and 10% level, respectively.

TABLE 8: SOCIAL IDENTITY, ATTITUDES TOWARDS COOPERATION, AND CONDITIONAL COOPERATION RESULTS FROM THE *ROESTIGRABEN*

	First principal component of attitudes towards cooperation		Propensity to cooperate conditionally	
	(1)	(2)	(3)	(4)
Swiss German	0.245*** (0.093)	0.236** (0.098)	0.379** (0.183)	0.593** (0.266)
Other covariates	Yes	Yes	Yes	Yes
Fixed effects	No	Yes	No	Yes
Observations	1,174	1,174	61	61

Notes. OLS coefficients with robust standard errors clustered at the cantonal level in parentheses. All columns include only *roestigraben* cantons (Bern, Fribourg, and Valais). In columns 1-2, the dependent variable is the principal component of cooperative attitudes and data are from wave 13 of SHP. In columns 3-4, the dependent variable is the propensity to cooperate conditional on the contribution of others in a public goods game, and data are from our experimental sample. Columns 2 and 4 include canton fixed effects. All columns include as covariates age, education, gender, income, urban residence, religion, and politics, except in column 1-2 where urban residence is excluded because of little variation within a canton. ***, ** indicate significance at the 1% and 5% level, respectively.

TABLE 9: FAMILY BACKGROUND, SOCIAL IDENTITY, AND CONDITIONAL COOPERATION

	(1)	(2)	(3)	(4)
Panel A: Degree of Swiss German identity				
Swiss German background				
Parents	0.329*** (0.053)	0.316*** (0.047)	0.296*** (0.048)	0.295*** (0.050)
Grandparents	0.145*** (0.033)	0.137*** (0.029)	0.128*** (0.029)	0.126*** (0.028)
Panel B: Propensity to cooperate conditionally				
Swiss German background				
Parents	0.064*** (0.014)	0.066*** (0.013)	0.064*** (0.015)	0.058*** (0.014)
Grandparents	0.023** (0.009)	0.025*** (0.008)	0.024** (0.009)	0.022*** (0.008)
Socio-demographic covariates	No	Yes	Yes	Yes
Religion, politics	No	No	Yes	Yes
Municipal / cantonal covariates	No	No	No	Yes

Notes. OLS coefficients with robust standard errors clustered at the cantonal level in parentheses. In Panel A, the dependent variable is the degree of Swiss German identity ranging from 1 to 5 as measured by Venn-like diagrams. In Panel B, the dependent variable is the propensity to cooperate conditional on the contribution of others in a public goods game. Swiss German background refers to the linguistic region in which an individual's parents or grandparents were (a) born - *region of birth*, as well as (b) spent most of their time - *region of stay*. Swiss German parental background is a score ranging from 0 to 4; while Swiss German grandparental background is a score ranging from 0 to 8. Data refers to our experimental sample. Column 1 reports results without control variables. Column 2 controls for individuals' socio-demographic characteristics, such as age, education, gender, household income, and urban residence. Column 3 also includes religion and politics covariates while column 4 also accounts for altitude, GDP, and Gini index of inequality. ***, ** indicate significance at the 1% and 5% level, respectively.

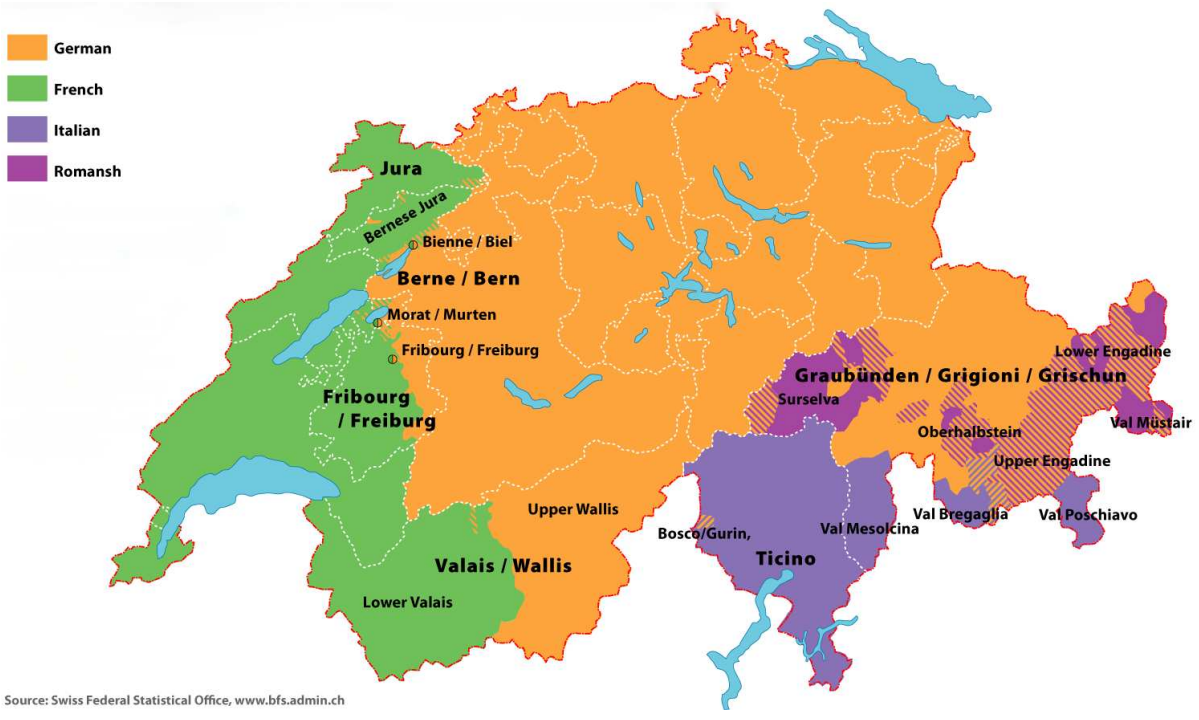


FIGURE 1: GEOGRAPHICAL DISTRIBUTION OF SWITZERLAND'S OFFICIAL LANGUAGES
 Source: Swiss Federal Statistical Office (2000)

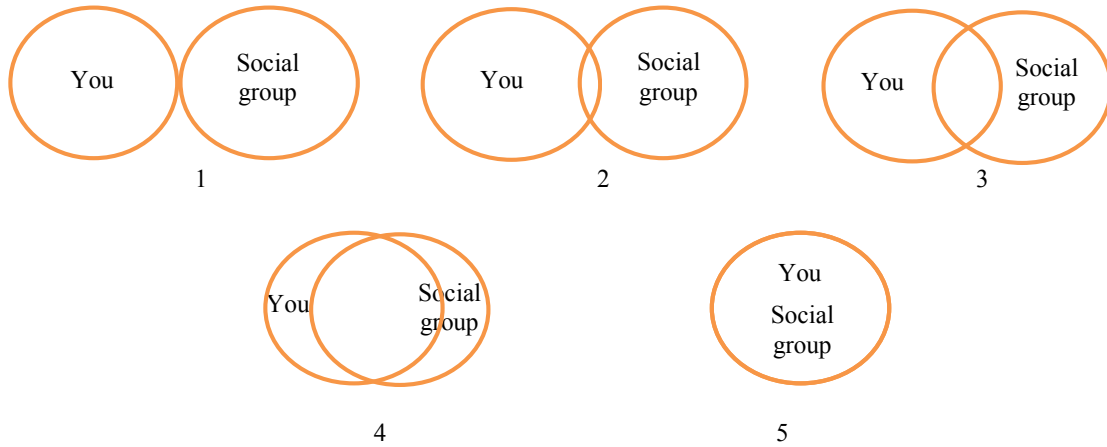


FIGURE 2: THE DEGREE OF SOCIAL IDENTITY (INTENSIVE MARGIN)

Notes: The figure shows Venn-like diagrams represented by a pair of circles that overlap at different degrees. One circle represents the respondent (“you”) and the other circle a social group (Swiss German or Swiss French or Swiss Italian or foreigner). Respondents face four questions, each depicting a different social group, and they are asked to choose the pair of circles that best represents their degree of social identity with a given social group, with possible answers ranging from 1 (no overlap) to 5 (complete overlap).

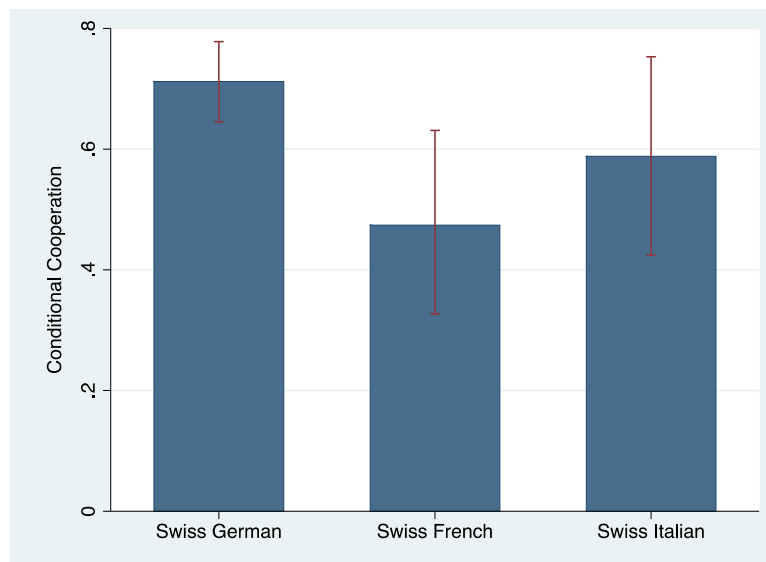


FIGURE 3: SOCIAL IDENTITY AND CONDITIONAL COOPERATION

Notes: Data are from our experimental sample. Social identity refers to individuals whose native language is Swiss German, Swiss French, or Swiss Italian. Conditional cooperation refers to the propensity to cooperate conditional on the contribution of others in a public goods game.

APPENDIX A

I. SAMPLE CONSTRUCTION

Out of 1022 individuals approached by us to take part in the online experiment, 590 individuals agreed to take part but 432 individuals declined. Table A1 shows the scope of selection by comparing a variety of covariates across individuals who agreed to take part in our study ($n = 590$) and individuals who did not ($n = 432$). Columns 1 and 2 report the mean and standard deviation of the variable, whereas column 3 reports the difference obtained from an OLS regression where the dependent variable is each covariate and the independent variable is a dummy variable equal to one if the individual agreed to participate in our study, 0 otherwise. Except for age, the other differences are statistically insignificant. Concerning age, it seems that, on average, older individuals took part in our study, the difference being 5 years.

Out of 590 individuals who agreed to take part in the online experiment, 321 completed the study. Thus, we compare again the differences in covariates across these two different groups of individuals, following the same procedure reported in the above paragraph. Column 6 reports the difference. It appears that individuals, who were on average 3 years younger, completed our study, offsetting some of the above concerns.

The results in Table A1 at the level of the full sample ignore selection that might have happened within a linguistic group. Consequently, we repeat the above exercise, the results of which are reported in Table A2. We see that in the first stage, both older Swiss Germans and older Swiss French agreed to take part in our study. Actually, the coefficient is similar across the two social groups, alleviating selection concerns across linguistic groups. In the second stage, the coefficient on age is negative for both Swiss Germans and Swiss French, suggesting that younger individuals were more likely to complete the study. It is nonetheless comforting to note that the coefficient on age is also negative for Swiss French, and actually, it appears to be also similar in magnitude.

TABLE A1: SAMPLE CONSTRUCTION

	Participants	Non-participants	Difference	Study completed	Study not completed	Difference
	Mean (s.d.)	Mean (s.d.)	Coeff. (s.e.)	Mean (s.d.)	Mean (s.d.)	Coeff. (s.e.)
	(1)	(2)	(3)	(4)	(5)	(6)
Swiss German	0.610 (0.488)	0.639 (0.481)	-0.029 (0.031)	0.639 (0.481)	0.576 (0.495)	0.062 (0.040)
Swiss French	0.261 (0.440)	0.271 (0.445)	-0.010 (0.028)	0.231 (0.422)	0.297 (0.458)	-0.067* (0.036)
Swiss Italian	0.129 (0.335)	0.090 (0.287)	0.039* (0.020)	0.131 (0.338)	0.126 (0.333)	0.004 (0.028)
Age	45.268 (14.096)	40.012 (14.850)	5.256*** (0.913)	43.498 (13.511)	47.379 (14.508)	-3.881*** (1.155)
University degree	0.412 (0.493)	0.370 (0.483)	0.041 (0.031)	0.445 (0.498)	0.372 (0.484)	0.074* (0.041)
Male	0.502 (0.500)	0.493 (0.501)	0.009 (0.032)	0.523 (0.500)	0.476 (0.500)	0.048 (0.041)
Income	9.893 (5.032)	10.357 (6.399)	-0.465 (0.358)	10.067 (5.185)	9.685 (4.846)	0.382 (0.416)
Urban	0.705 (0.456)	0.741 (0.439)	-0.036 (0.028)	0.732 (0.444)	0.673 (0.470)	0.059 (0.038)
Catholic	0.371 (0.484)	0.394 (0.489)	-0.022 (0.031)	0.352 (0.478)	0.394 (0.490)	-0.042 (0.040)
Protestant	0.332 (0.471)	0.308 (0.462)	0.024 (0.030)	0.321 (0.468)	0.346 (0.476)	-0.025 (0.039)
Left wing	0.102 (0.303)	0.102 (0.303)	-0.000 (0.019)	0.112 (0.316)	0.089 (0.286)	0.023 (0.025)
Centre	0.598 (0.491)	0.567 (0.496)	0.031 (0.031)	0.583 (0.494)	0.617 (0.576)	-0.035 (0.041)
Observations	590	432	1,022	321	269	590

Notes: Column 1 reports the mean and standard deviation (s.d.) of the socio-demographic characteristics of the sub-sample of individuals that agreed to participate in our study while column 2 for the sub-sample that did not agree to participate in our study. Columns 3 and 6 report OLS coefficients with standard errors (s.e.) in parenthesis where the dependent variable is each socio-demographic characteristic, and in column 3, the independent variable is equal to 1 if individuals agreed to participate in our study, 0 otherwise, while in column 6 the independent variable is a dummy variable equal to 1 if individuals completed our study, 0 otherwise. Column 4 refers to the sub-sample of individuals that completed our study while column 5 refers to the sub-sample that did not complete our study. The definition of each socio-economic variable is reported in Table 1. ***, * indicate significance at the 1% and 10% level, respectively.

TABLE A2: SAMPLE COMPARISON BY SOCIAL GROUPS

	Dependent variable: each covariate;					
	independent variable: dummy variable equal to 1 if individuals					
	Agreed to participate in our study, 0 otherwise			Completed our study, 0 otherwise		
	Swiss German	Swiss French	Swiss Italian	Swiss German	Swiss French	Swiss Italian
(1)	(2)	(3)	(4)	(5)	(6)	
Age	5.511*** (1.160)	6.163*** (1.724)	1.272 (2.912)	-4.451*** (1.492)	-4.030* (2.154)	0.007 (3.457)
University degree	0.067* (0.039)	-0.011 (0.061)	0.023 (0.097)	0.079 (0.052)	0.113 (0.080)	-0.007 (0.115)
Male	0.041 (0.040)	-0.067 (0.061)	0.025 (0.099)	0.093* (0.053)	-0.069 (0.081)	0.035 (0.116)
Income	-0.517 (0.493)	-0.319 (0.605)	0.284 (0.696)	0.635 (0.553)	0.114 (0.837)	-0.364 (0.789)
Urban	-0.015 (0.037)	-0.081 (0.056)	-0.119** (0.060)	0.093* (0.049)	0.052 (0.077)	-0.102 (0.081)
Catholic	-0.041 (0.038)	0.011 (0.059)	-0.100 (0.096)	-0.052 (0.050)	-0.036 (0.078)	0.007 (0.115)
Protestant	0.013 (0.039)	0.059 (0.053)	0.093 (0.062)	-0.039 (0.052)	-0.031 (0.072)	-0.004 (0.082)
Left wing	-0.011 (0.023)	0.019 (0.040)	0.003 (0.067)	-0.012 (0.029)	0.114** (0.054)	0.025 (0.079)
Centre	0.045 (0.038)	-0.020 (0.061)	0.141 (0.098)	0.007 (0.050)	-0.172** (0.080)	-0.053 (0.117)
Observations	636	271	115	360	154	76

Notes: OLS with robust standard errors in parentheses. Columns 1-6 report coefficients by linguistic group where the dependent variable is each covariate and the independent variable is in columns 1-3 a dummy variable equal to 1 if individuals agreed to participate in our study, 0 otherwise, while in columns 4-6 a dummy variable equal to 1 if individuals completed our study, 0 otherwise. The definition of each socio-economic variable is reported in Table 1. ***, **, * indicate significance at the 1%, 5%, and 10% level, respectively.

II. SHARING BELIEFS AND VALUES

In Table A3 we show that both Swiss Germans and Swiss French are equally likely to report that their beliefs and values are aligned with their linguistic social group.

TABLE A3. SOCIAL GROUPS AND IDENTIFICATION WITH THE GROUP

Dependent variable: Sharing beliefs and values with linguistic group	
Swiss German	-0.048 (0.042)
Age	0.001 (0.001)
University degree	-0.025 (0.025)
Male	-0.017 (0.047)
Income	0.002 (0.003)
Urban	-0.007 (0.047)
Catholic	0.107 (0.072)
Protestant	0.142** (0.054)
Left wing	-0.054 (0.059)
Centre	0.016 (0.061)
Gini	-0.106 (0.264)
GDP	0.000 (0.001)
Average altitude	-0.007 (0.008)
Constant	0.894*** (0.149)
Observations	254

Notes: Linear probability model with robust standard errors clustered at the cantonal level in parentheses. The dependent variable is a dummy variable equal to one if individuals share their beliefs and values with their linguistic group, 0 otherwise. ***, ** indicate significance at the 1% and 5% level, respectively.

III. SOCIAL IDENTITY AND ATTITUDES TOWARDS COOPERATION

Table A4 shows that the three attitudes are correlated with each other. The first principal component is also strongly correlated with each of the three attitudes.

TABLE A4: CORRELATION AMONG ATTITUDES TOWARDS COOPERATION

	First principal component (1)	Cheating on taxes (2)	Lying in own interest (3)
Cheating on taxes	0.790		
Lying in own interest	0.694	0.333	
Claiming state benefits	0.741	0.387	0.259

Source: Wave 13 Swiss Household Panel (year 2011).

Table A5 verifies the positive association between Swiss German identity and attitudes towards cooperation using data from wave 2 (year 1989), wave 3 (year 1996), and wave 5 (year 2007) of the World Values Survey. Each OLS regression controls for the covariates of Table 2 except for Gini, GDP, and average altitude because data on the canton in which an individual resides are not available.

TABLE A5: SOCIAL IDENTITY AND ATTITUDES TOWARDS COOPERATION

(SOURCE: WORLD VALUES SURVEY)

	Lying in own interest	Cheating on taxes			Claiming state benefits		
	1989 (1)	1989 (2)	1996 (3)	2007 (4)	1989 (5)	1996 (6)	2007 (7)
Swiss German	0.353* (0.208)	0.616*** (0.221)	0.706*** (0.219)	0.460*** (0.112)	0.690*** (0.203)	1.951*** (0.212)	0.460*** (0.112)
Observations	672	672	515	861	672	515	861

Notes: OLS with robust standard errors in parentheses. The dependent variable is to what extent it is justifiable to lie in own interest (column 1), cheating on taxes (columns 2-4), and claiming benefits not entitled to (column 5-7) where 1 means “never justified” and 10 “always justified”. Data are from wave 2 (year 1989), wave 3 (year 1996), and wave 5 (year 2007) of the World Values Survey. Each regression controls for the covariates of Table 2 except for Gini, GDP, and average altitude because data on the canton in which an individual resides are not available. ***, * indicate significance at the 1% and 10% level, respectively.

IV. ADDITIONAL ROBUSTNESS CHECKS

We report in Table A6 additional robustness checks that we conducted. Panel A reports the coefficient on the control variables that we introduce one at a time and the change in coefficient on Swiss German dummy in response to the inclusion of these controls. Panel B does the same using the degree of Swiss German identity. To save space, we do not report the coefficient on the additional variable, but its *p*-value.

TABLE A6: SOCIAL IDENTITY AND CONDITIONAL COOPERATION. ROBUSTNESS CHECKS

	Propensity to cooperate conditionally							
	Migrant	Naturalized citizen	Population change due to migration	Game comprehension	Time taken	Change language assignment	Drop bilingual individuals	Different belief/values from social group
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Panel A: Social identity at the extensive margin</i>								
Swiss German	0.245*** (0.071)	0.242*** (0.057)	0.262*** (0.060)	0.256*** (0.059)	0.273*** (0.058)	0.235*** (0.055)	0.215*** (0.063)	0.237*** (0.058)
Migrant	0.017 (0.093)							
Naturalized citizen		-0.005 (0.078)						
Migration change			-0.016 (0.015)					
Game comprehension				-0.015 (0.089)				
Time taken					-0.000 (0.000)			
Dummy belief								-0.078 (0.102)
Other covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	257	252	262	262	262	265	233	254
<i>Panel B: Social Identity at the intensive margin</i>								
Degree of Swiss German identity	0.050* (0.027)	0.050** (0.021)	0.055* (0.026)	0.056** (0.026)	0.059** (0.025)	0.044* (0.022)	0.052** (0.024)	0.053* (0.026)
<i>p</i> -value of additional covariate	[0.85]	[0.75]	[0.57]	[0.59]	[0.35]	-	-	[0.79]
Other covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	253	247	254	254	254	257	230	254

Notes: OLS coefficients with robust standard errors clustered at the cantonal level in parentheses. The dependent variable is the propensity to cooperate conditional on the contribution of others in a public goods game. All columns include the “other covariates” of Table 1. Column 1 includes a dummy variable equal to one if individuals have migrated, 0 otherwise; column 2 includes a dummy variable equal to one if individuals are naturalized citizens, 0 otherwise; column 3 includes the population change due to migration at the municipal level; column 4 includes a game comprehension variable measured as the number of correct responses to the control questions described in Appendix B; column 5 includes a variable measuring the time taken to complete the study; column 6 assigns the ten individuals speaking two Swiss languages to the social group non corresponding to the Swiss language of the canton where they reside; column 7 excludes individuals speaking two languages; and column 8 includes a dummy variable equal to one if individuals state that their beliefs and values differ with respect to their social group, 0 otherwise. Panel A refers to social identity at the extensive margin while panel B at the intensive margin. The degree of Swiss German identity is a variable ranging from 1 to 5, where 1 means that the individual chose the Venn-like diagram corresponding to no overlap with Swiss Germans while 5 means complete overlap. ***, **, * indicates significance at the 1%, 5%, and 10% level, respectively.

V. BIG FIVE PERSONALITY TRAITS

In our post-experimental survey, individuals face a question that includes 15 different items related to their personality as follows: “Please, say how well do the following statements describe your personality (where 1 means “agree,” 2 “neither agree nor disagree,” and 3 “agree”).”

I see myself as someone who...

- 1: does a thorough job
- 2: is communicative, talkative
- 3: is sometimes somewhat rude to others
- 4: is original, comes up with new ideas
- 5: worries a lot
- 6: has a forgiving nature
- 7: tends to be lazy
- 8: is outgoing, sociable
- 9: values artistic experiences
- 10: gets nervous easily
- 11: does things effectively and efficiently
- 12: is reserved
- 13: is considerate and kind to others
- 14: has an active imagination
- 15: is relaxed, handles stress well

Items 4, 9, and 14 are used to measure openness to experience; items 1, 7 (reverse coded), and 11 to measure conscientiousness; items 2, 8, and 12 (reverse coded) to measure extraversion; items 3 (reverse coded), 6, and 13 to measure agreeableness; and items 5, 10, and 15 (reverse coded) to measure neuroticism. In the analysis, we standardize the score with a mean of zero and standard deviation of one. Table A7 shows the descriptive statistics of the Big Five personality traits by social group. On average Swiss Germans are significantly more open to experience than Swiss French, while Swiss French are more neurotics than Swiss Germans. However, they do not differ significantly in levels of conscientiousness, extroversion, and agreeableness.

TABLE A7: SUMMARY STATISTICS OF BIG FIVE PERSONALITY TRAITS

Variable	(1)			(2)			(3)
	Swiss Germans			Swiss French			Difference
	Observations	Mean	Std. Dev.	Observations	Mean	Std. Dev.	<i>p</i> -value
Openness to experience	188	0.010	0.972	59	-0.336	1.040	0.020
Conscientiousness	190	0.069	0.980	59	-0.037	1.038	0.476
Extroversion	190	-0.077	0.953	59	0.140	1.091	0.141
Agreeableness	188	0.022	0.907	59	0.137	1.147	0.428
Neuroticism	182	-0.123	0.924	57	0.265	1.207	0.011