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Gianluca Grimalda, Nancy Buchan,
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Globalization, Social Identity, and Cooperation:

An Experimental Analysis of Their Linkages and Effects

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Abstract

Globalization is defined as an individual's connectivity in global networks. Social identity is conceptualized as attachment and identification with a group. We use questionnaire items to measure individual involvement with global networks along with local, national, and global social identity. Propensity to cooperate is measured in experiments involving local and global others. Firstly, we analyse possible determinants of global social identity, showing a significant and positive correlation with an index of individual global connectivity. Secondly, we find a significant mediating effect of global social identity between individual global connectivity and propensity to cooperate at the global level. This is consistent with a cosmopolitan hypothesis of how participation in global networks reshapes social identity: increased participation in global networks increases global social identity and this in turn increases propensity to cooperate with others.

Keywords

Globalization, social identity, cooperation, cosmopolitanism

Authors

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Globalization, Social Identity, and Cooperation: An Experimental Analysis of Their Linkages and Effects [1]

Gianluca Grimalda, Nancy Buchan, Marilynn Brewer

1 Introduction

Globalization has been defined as the increased diffusion of worldwide connections between people (Robertson 1992; Scholte 2005). Technological progress in various domains, from information technologies to shipping, makes it possible for people to engage with each other at unprecedented speed regardless of the distance separating them (Scholte 2005). In the words of Harvey (1993), globalization entails compression of time and space. This process encompasses several domains. In the economic domain, international trade and capital movements are at historically unprecedented levels. In the social domain, the internet has made possible instantaneous connections irrespective of distances. In the cultural domain, more and more people access the same sources of information or forms of entertainment. A growing awareness of the 'world as a whole' (Robertson 1992) informs the action of many people. Indexes of globalization testify that globalization has been rising steadily over the last four decades (Lockwood and Redoano 2005; Dreher 2006).

The pervasiveness and comprehensiveness of globalization is likely to restructure radically individuals' sense of the self, their social identity, their attachment to local vis-à-vis global communities, as well as their values. In spite of the relevance of this phenomenon, the empirical evidence on the issue is scant and limited to cross-country survey-based analyses. In this paper we draw on experimental evidence coming from the first study that was explicitly designed to measure large-scale interconnectedness at the individual-level, and to examine its correlation with the propensity to engage in cooperative activities with global others.

In previous works our research group (Buchan et al. 2009, 2011, 2012) demonstrated the sizeable and significant effects that participation in global networks exerts on propensity to cooperate. We have found that more 'globalized' individuals are significantly more inclined to cooperate with global others in

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comparison with less globalized individuals. Furthermore, the same correlation holds at the country level. The higher the aggregate level of globalization of a country, the higher the average levels of cooperation by their citizens (Buchan et al. 2009). Hence, participation in globalization (at both the individual and aggregate level) is associated with increased propensity to cooperate with global others.

In Buchan et al. (2011) we show that the development of a global social identity is also a strong trigger of cooperation. Social identity is conceptualized as an individual's sense of belonging and identification with a group (Tajfel and Turner 1986). In this case, it is *global* social identity, rather than national or local social identity, which is most strongly associated with propensity to cooperate with global others. The higher the identification with the global community, the higher one's level of cooperation with global others in our experiments. In the present paper we further expand the analysis of the linkages between globalization, social identity, and propensity to cooperate, addressing the following two questions: (1) What are the possible factors affecting global social identity? (2) Does global social identity exert a *mediating* effect in the relationship between participation in globalization and propensity to cooperate?

Our hypothesis is that participation in global networks reshapes individuals' social identity by expanding the number and inclusiveness of groups to which individuals experience a sense of belonging and identification. In other words, we conjecture that the process of globalization expands the boundaries of the groups to which an individual attributes emotional and psychological attachment—the 'ingroup'—relative to the group of people perceived as lying outside such groups—the 'outgroup'. At the limit, the process of globalization may mould a *cosmopolitan* individual, for whom, as Anthony Giddens (1991) famously put it, 'humankind becomes a "we" where there are no "others"'. It has been posited that the development of a 'global we' identity is one of the key elements to address global cooperation problems (Messner et al. 2013).

In Buchan et al. (2011) we found evidence supporting this 'cosmopolitan' model of social identity. In this paper we provide further and more comprehensive evidence supporting what we refer to as cosmopolitan hypothesis. We show that: (a) higher participation in global networks is associated with higher identification with the global community; (b) social identity has a mediating effect in the relationship between participation in globalization and propensity to cooperate. That is, more globalized individuals cooperate more with global others than less globalized individuals *in as much as* their global social identity has strengthened.

The paper is organized as follows. Section 2 briefly reviews the theoretical background and puts forward our hypotheses. Section 3 describes the experimental design. Section 4 presents the results, while section 5 concludes.

2 Theoretical background

2.1 Conceptualizing globalization

Theories of globalization hint at the transcendence—or compression—of space and time in human relations as the distinctive feature of globalization. The crux of globalization is seen in the progressive elimination of physical boundaries to

interpersonal relations, as a result of widespread technological progress. The range of activities that is affected by these changes is so broad that several spheres of human relations are likely to be influenced at the same time.

Even if the question of geographical distance is certainly central to globalization, various theories differ on the emphasis they put upon it. Early definitions do not offer particular qualifications to this notion, but refer generically to 'the intensification of worldwide social relations linking distant localities in such a way that local happenings are shaped by events occurring many miles away and vice versa' (Giddens 1991). Other conceptualizations in turn emphasize the necessity of these links to be transnational (e.g. Beck 2006), or transcontinental (Held et al. 1999). Other theorists (Harvey 1989; Scholte 2005: Chapter 2) go a step forward in arguing that the nature of globalization is best captured by the idea of 'deterritorialization'—or 'supra-territorialization'—of human relations. Scholte thus discusses globalization as 'the spread of transplanetary and […] supra-territorial connections between people.

From this perspective, globalization involves reduction in barriers to transworld contacts. People become more able – physically, legally, culturally, and psychologically – to engage with each other in "one world"' (Scholte 2005). Supra-territorialization is the characteristic that causes the spatial location of the people being connected to become irrelevant. For instance, with the internet—the supra-territorial space *par excellence*—two individuals may connect with each other regardless of their physical position, provided they have access to the network. With global trade, goods produced in any country in the world—including cultural products such as Hollywood blockbusters—can be supplied to an individual living in another country, provided that the countries are part of the international trade network.

It is important to stress that the condition of supra-territorialization is an ideal type, and as such it has to be understood as a property that may not necessarily apply *fully* and integrally in all of the facets of globalization. Or, to put it differently, globalization has to be understood as a *process* leading to the ideal condition of supra-territorialization, where such process is *asymptotic*—namely, it will never reach such a condition but it will indefinitely come closer to it.

2.2 Conceptualizing social identity

Our main theoretical conjecture is that the social, cultural and psychological engagement inherent in globalization has the effect of reshaping an individual's social identity. By social identity we mean '*that part of the individual's self-concept which derives from his knowledge of his membership of a social group (or groups) together with the value and emotional significance attached to that membership'* (Tajfel 1981: 251). As illustrated in the seminal contributions by Tajfel and Turner (1986), social identity relies on *categorization*—namely, the psychological process of assigning people to categories—, *identification*—namely, the process whereby an individual associates him/herself with certain groups, and *comparison*—i.e. the process whereby one's own group is compared with other groups. A key distinction is put forward between the 'ingroup' and the residual category of the 'outgroup'. An ingroup can be defined as a group to which an individual (a) categorizes herself as being part of, (b) identifies with, and (c) triggers comparisons with other groups.

Such comparisons generally generate an 'ingroup bias', i.e. a tendency to attribute more positive characteristics to ingroup members in relation to outgroup members, and 'ingroup favouritism', i.e. a tendency to treat more favourably ingroup members than outgroup members in situations of strategic interaction (Yamagishi and Kiyonari 2000).

The literature and the analysis of social identity and ingroup bias is huge and attempting even a cursory summary lies outside the objective of this paper (for a review see Brewer 1999, 2001; Chen and Li 2009). A large body of experimental evidence confirms the propensity of individuals to behave more favourably towards fellow group members, even when groups are artificially created in a laboratory (Mullen et al. 1992; Charness et al. 2007; Chen and Li 2009). Ingroup favouritism has been found in natural groups that are formed on the basis of ethnicity (Bernhard et al. 2006), nationality (Finocchiaro Castro 2008), community of residence (Ruffle and Sosis 2006), or exogenous random assignment to groups (Goette et al. 2006). However, other studies find either no or little ingroup bias effect between some ethnic groups (Fershtman and Gneezy 2001; Whitt and Wilson 2007), or even outgroup favouritism (Tanaka and Camerer, 2010), which is linked to social status. Indeed, ingroup solidarity may be linked to ethnic-specific social norms (Habyarimana et al. 2007).

This review suggests that in spite of the saliency and primary relevance of ingroup attachment in the formation of one's sense of the self, the extent to which it acts as a binding force on individual behaviour may be weakened, annulled, or even reversed by an array of cultural and social factors that concretely define social groups, both independently and in their interaction with other social groups in real life. The key assumption we make is that the process of globalization may redefine the boundaries between groups that have been traditionally held as belonging to one's ingroup in relation to the outgroup. Turner et al. (1987) proposed three possible levels of self-categorization, categorization at the level of humankind being the highest. At the intermediate level differences and similarities between one's ingroup and the outgroup help define the self, while at the lowest level it is the differentiation from other ingroup members that shapes an individual's identity. Most of the research effort has focused on ingroup versus outgroup dynamics, while only little attention has been devoted to the exploration of the highest level (see e.g. McFarland et al. 2012; Reese et al. 2012; Pichler 2008). This paper aims to contribute to fill this gap.

2.3 The link between globalization and social identity

Theories of globalization put forward opposite 'ideal types' for individuals resulting from the process of globalization, which in Buchan et al. (2009) we labelled the 'cosmopolitan' individual and the 'reactant' individual. The former suggests that individuals involved in global networks also experience heightened global social identity. The ingroup boundary is shifted outwards to include groups of people formerly conceived as part of the 'outgroup'. At the limit, this process may involve the whole of humanity (Turner et al. 1987; Giddens 1991). In contrast, the 'reactant' individual hypothesis predicts increased attachment to traditional loyalties, such as local and national communities, as an effect of globalization. According to this model, globalization enhances even further the cleavage

between ingroup and outgroup (Keating 2001; Arnett 2002; Castells 2004), as it triggers a negative reaction by the individual against the global flows of objects, commodities, people, and ideas. This may lead to an entrenchment in the state-nation community or even to adhesion to fundamentalist movements (Marty and Appleby 1993; Appadurai 2000; Arnett 2002). In terms of the ingroup-outgroup model, the presence of an 'other' is made more vivid to members of an ingroup, thus strengthening even further the constricted parochial boundary between the 'us' and 'them'.

In Buchan (2009, 2011) we find extensive evidence consistent with the 'cosmopolitan' ideal-type. Individuals who are more involved in global networks are significantly more inclined to cooperate with global others than individuals who are less globalized (Buchan 2009). Likewise, individuals who identify most with the 'world as a whole' relative to national and local communities are more inclined to cooperate with global others (Buchan 2011). Importantly, our results suggested a transformation of motives and values from self-interest to group interest and concern for the welfare of the group such that increases in global social identity were associated with increased cooperation with the global collective. Significantly, this positive effect of global social identity on cooperation was above and beyond expectations about how others in the group would behave.

The emergence of a cosmopolitan model of social identity can be accounted for by the view that the diffusion of capitalism and of western lifestyle engenders a convergence to a similar form of identity for people living in different parts of the world. Globalization causes a process of homogenization of culture, production, and values (for a discussion see Tomlinson 2003). Others refrain from the idea of cultural homogenization, but agree on the notion that globalization causes individuals to experience a sense of attachment to the whole humankind (Hannerz 1992; Held et al. 1999). The flourishing of several 'global' social movements around a variety of causes, such as human rights or the environment, and the growing importance of global humanitarian relief operations are all instances of the diffusion of a 'cosmopolitan' individual (Cheah and Robbins 1998; Vertovec and Cohen 2002; Brown and Held 2010; McFarland 2011). In this article we deepen our understanding of the cosmopolitan model, putting to further test its underpinnings and analysing in detail its relationship to participation in global networks.

2.4 Direct and indirect effects of involvement with globalization and propensity to cooperate: the cosmopolitan hypothesis

Building on our understandings of the linkages between globalization, social identity and cooperation just presented we argue that participation in global networks may have both a *direct* and an *indirect* effect on cooperation. We classify as *direct* effects of individual involvement with global networks all those effects that take place independently from the restructuring of global social identity. Such direct effects may occur for a variety of reasons. Increased involvement in global networks may increase the amount of information and knowledge that an individual has about people living outside local and national communities. Global networks provide individuals with information about events taking place in far-away places, report on global others' life-style and cultural traits, and distribute produce and objects from foreign countries. The idea of a 'global other' may thus

turn from being a remote and indefinite notion to a more concrete and well-defined image of geographically distant people living in a globalized world. Such increased familiarity with groups of people previously held as remote—both in geographical and social terms—may be a trigger for increased propensity to cooperate.

Increased involvement in global networks may also make an individual more aware of the opportunities arising from cooperating worldwide. Deeper awareness of the global nature of the problems facing people from all around the world may instil a greater consciousness of the importance of global cooperation, and may increase the symmetric expectation that global others also become more conscious about the necessity of global action. This in itself may act as a powerful trigger for global cooperation. Moreover, the observation of cases in which global others have successfully achieved and maintained cooperation may increase an individual's trust in them, thus strengthening a positive disposition to cooperate with them.

In addition to these mechanisms, we also put forward what we refer to as the 'cosmopolitan hypothesis'. We posit that participation in global networks may have an *indirect* effect on cooperation with global others, inasmuch as it increases one's identification with the global community. Such a mechanism can be broken down into two constitutive parts. Firstly, increased participation and involvement in global networks bring about heightened identification and attachment to the global community. More individuals will find the global community a relevant part for the construal of the self, and they will do so with higher intensity. As a result, global social identity increases. Secondly, social identity theory argues that increased identification with a group goes hand-in-hand with increased propensity to cooperate with that group (Tajfel and Turner 1986; Kramer and Brewer 1986; Turner et al. 1987; Brewer 1991; De Cremer and Van Vugt 1999; De Cremer and van Dijk 2002; Messner et al. 2013; Tomasello 2014). When individuals attach their sense of self to their group membership, they see themselves as interchangeable components of a larger social unit (Turner et al. 1987). This engenders a shift of motives and values from self-interest to group interest and concern for the welfare of fellow group members. Pursuing the group's interest thus becomes a direct and natural expression of self-interest. Our prior research does indeed suggest that as cosmopolitan identity takes hold, there occurs a transformation of goals from the individual to the collective global level (Buchan et al. 2011). When these two constitutive elements operate together, increased involvement with the global networks will increase identification with the global community, and this in turn will be accompanied by increased propensity to cooperate with global others. This mechanism, which is specified for the econometric analysis of section 4, is visually illustrated in Figure 1b (page xx). As illustrated in section 3.2, we construct both an index of individual involvement and participation in global networks, which we call Individual Globalization Index (IGI), and an index of Global Social Identity (GSI). These are the main empirical constructs that we use to test our theoretical hypotheses.

3 Experimental design

3.1 The experimental measure of cooperation

Our research group undertook a large-scale experimental study on the relationship between propensity to cooperate in global-level social dilemmas, global social identity, and participation in global networks of interactions. The project involved adult populations from specific locations in six different countries (Iran, South Africa, Argentina, Russian Federations, Italy, and the US). An extensive description of the methods behind the project can be found in Buchan *et al.* (2009, Supplementary Online Materials (SOM)).

Participants in our research took part in three experimental decisions that assessed their propensity to cooperate in Public Goods Games (PGG). Here we discuss the last of the three decisions, which entailed cooperation at the global level. Each participant was endowed with 10 tokens, each worth an equivalent amount of money in terms of Purchasing Power Parity across countries. As in standard PGGs, one option that individuals had was to allocate their tokens to a personal account, where the individual 'Marginal Per Capita Return' (MPCR) is 1. That is, every token put in the personal account maintains intact its monetary value for the individual. Participants also could choose to contribute to the local or global accounts, whose composition and rates of return varied. As standard in PGGs, the MPCR from collective accounts is less than 1 for an individual, but creates positive externalities for others in the group, because each token allocated to a collective account is multiplied by the researcher by a factor greater than 1, and then equally divided among the group members. That is, each contribution to a collective account generates a 'Marginal *Social* Return' greater than 1. Thus, contributing to the group account is classified as a cooperative act in that the individual sacrifices immediate personal gain for greater gain at the collective level.

For purposes of comparing cooperation at a local versus a global level, we constructed a nested PGG similar to that employed by Blackwell and McKee (2003) and Wit and Kerr (2002). In a nested PGG, individuals have the option of keeping their endowment for themselves, contributing some of it to a local account, and/or contributing some of it to a global account. The local account is comprised of the participant plus three other participants who are residents of the local area where the participant lives. The global account consists of the participant's local group plus two other groups of four people from two other countries[2]. Such nested PGGs allow us to study the impact of 'enlarging' the boundaries of an individual's social

[2] Participants made their decisions placing 10 tokens, given to them by the researchers, into three different envelopes, named 'Personal', 'Local', and 'World'. Such envelopes corresponded to the three possible options of the nested PGG. Participants were informed before making their choices that tokens allocated to the Local account would be multiplied by a factor of two and split evenly among the participant and three other people residing in the same local community as the participant. Tokens allocated to the World account would be multiplied by a factor of three and split evenly among the participant and eleven other people, three of whom reside in the same local community as the participant, and eight of whom are from two other countries. Tokens allocated to the 'Personal' account would be transferred to the participant's final payoff. See Buchan (2009: SOM) for a copy of the instructions given to participants.

environment on his/her propensity towards cooperation. The design is seen schematically in Figure 2.

Our nested PGG design yielded three important features. First, this design realistically maps onto the nature of local-global relations. In the global economy, globalization does not exclude the local constituency but potentially expands the level of inclusion to both local and non-local participants. Second, our design also captures the tension between the different incentives from giving to the local vis-à-vis the global good. In our design, the MPCR from giving to the local public account is greater than that of the global account; but on the other hand, the social return is higher in the latter. In this fashion, we are able to examine under which conditions individuals put global (or national) interests ahead of local ones when everyone might be able to benefit in the long run.

Third, our design was as parsimonious and easily-understood by participants as possible. Preliminary tests of different versions of the games on college students in the US, Canada, and Spain, demonstrated that a return ratio of 2:1 between the two accounts—that is, an MPCR of .50 for the local account and of .25 for the global account, for example—was the most quickly grasped and easily understood by participants. [3]

3.2 Questionnaire-based variables

Our dependent variables are obtained in the PGGs just described, namely, the individual's allocation in a PGG involving local and global public goods. The independent variables for our analysis come from an individual-level questionnaire that participants completed at the end of the experiment.

The first and most important aspect that the questionnaire was designed to measure is individual exposure and participation in global relations. This measure, developed for our research, is—to the best of our knowledge—the first example of an individual-level index of globalization. Analogous to the country-level globalization index (CGI) developed by the Center for the Study of Globalisation and Regionalisation (Lockwood and Redoano 2005), the questionnaire was designed to capture individual access to globalization within the social, cultural, political, and economic spheres (see section 2.1). The resulting IGI is a summative scale of 30 questionnaire items listed in Table 7. The IGI measures an individual's usage of various global networks in terms of two dimensions: the frequency with which an individual accesses the networks, and the territorial scope. The index identifies several media of global connection, and measures the temporal frequency with which the medium of connection is used by the individual and whether such a medium is used to contact people at the local, national, or global level. Although a medium of connection, such as email, has a potentially global

[3] Prior research regarding the appropriate MPCR to implement yields ambiguous and conflicting conclusions, and thus could not serve as a guide. The conclusions of Ledyard (1995) are that the relationship between MPCR and N is not yet fully understood. As for studies that deal with a nested structure, Wit and Kerr (2002) focus on the issue of categorization and framing in their study and never discuss the baseline effects of manipulating MPCR or N. Blackwell and McKee (2003) do manipulate the MPCRs of the global vis-à-vis the 'group' accounts in order to study their impact on contributions to the public goods, but do not discuss the role of N.

reach, an individual can decide to use such a medium for contacts at the local or national levels. The IGI, therefore, assigns higher scores to individuals who participate in the global network more frequently and on a larger scope than others.

Second, a set of three social identity measures was included in the questionnaire to assess a possible mediating mechanism between globalization and individual behaviour. The items were taken from the measure of social identity constructed by Yuki et al. (2004). Our measure of social identity assesses social identification at the levels of the local community, the nation, and the world. For example, in Kazan, Russia, the items measuring social identity at the level of the local community read:

1. How strongly do you feel attachment to *your community in Kazan*?
2. How strongly do you define yourself as a member of *your community in Kazan*?
3. How close do you feel to other members *of your community in Kazan*?

Social identities at the national and global level are measured substituting the following expressions, respectively, for 'your community in Kazan': *'your community in Russia'*, and '*the world as a whole'*. Responses to each item are made on a rating scale from 1 (not at all) to 4 (very much).

Third, a number of questions measure the awareness of, and the attitudes toward global processes. Robertson (1992) suggests that a key aspect of globalization is, in addition to participation in global networks, the 'consciousness of the world as a whole'. It is therefore important to assess how the key constructs in our analysis relate to one's global awareness. We constructed a 'Global Awareness Index', based on the answers to four questionnaire items inquiring about a participant's awareness of and concern for the following global issues: global warming, the spread across the planet of potentially dangerous diseases, the action of the international criminal courts of justice, and the persistent gap between rich and poor people around the world. Other questions measured an individual's attitudes towards global processes. Some, taken from the World Value Survey (2010–14), were included to measure the presence of ethnocentric attitudes. Specifically, one item ascertained the participant's willingness to restrict migrants' access, while another inquired about the necessity to protect national culture from foreign influence. Other questions from the PEW (2012) Global Attitudes Survey inquired about a participant's opinions on international trade and migration. Finally, standard demographic measures control for factors such as age, gender, level of income, ethnicity, education, and employment. A description of the variables deployed in the analysis and descriptive statistics is given in Table 4.

3.3 Selection of Research Environments, Sampling Techniques, and Implementation

Research environments were selected for this research with the goal of representing a sufficient degree of variability on the globalization spectrum as ranked by the aggregate CSGR globalization index (Lockwood and Redoano 2005). Six countries were chosen, with the aim of both maximizing the dispersion of each sphere of the CSGR globalization indexes—namely, the economic, social, and

political sphere—and of ensuring a sufficient geographic dispersion, so that each continent—apart from Oceania—was represented. The choice fell on Italy and Argentina (respectively, at the highest and lowest positions in the economic globalization sub-index); the United States and South Africa (at the extremes of the social globalization index); Russia and Iran (at the extremes of the political globalization index). This also ensures a sufficient level of dispersion with respect to the overall globalization scale.

We selected several local environments in each country which reflect differing levels of globalization as indicated by a series of criteria, such as the relative presence of multi-national corporations, and by the homogeneity or heterogeneity of the population (which may reflect the presence of immigrant populations). Data on these variables were not accurate or available in all countries. In these instances, we relied on the expertise of the local researchers, to select locales to represent relatively 'very globalized' and 'less or little globalized' examples within a given country. In general, in each country a large urban centre was designated as the 'hub' of the fieldwork, and less globalized centres were selected within a relatively small radius. For instance, in Italy Milan was selected as the globalized hub, and other localities were situated within a 100 km radius. In Argentina, Buenos Aires represented the main hub, and other research localities lay within a 200 km radius. Localities where experiments were conducted in other countries were Columbus, Ohio (US); Tehran and Shiraz (Iran); Johannesburg (South Africa); and Tatarastan (Russia).

Approximately 200 participants were recruited in each country according to a quota sampling method. The criteria determining the sample were age (three categories: 19–30, 31–50, and 51–70), gender (two categories: male and female), and social economic status (SES) (three categories: high, intermediate, and low). This yielded a grid with 18 cells to be filled with equal numbers of participants in each cell, to the maximum extent possible. The manner of ascertaining the SES of participants was left to the local researcher, who determined which method or question is most culturally appropriate. Most often this question concerned education or type of employment (serving as proxies for low or high SES), and income. In Argentina, Italy, and Russia, recruitment was carried out by agencies specialized in survey polls and market research. Sampling generally happened in two stages: in the first contact, the position of a person who is available to participate in the research was ascertained with respect to the three criteria above. If the 'cell' in the grid occupied by the participant had been filled already, then the participant was turned down. Survey agencies already had assignments of participants to SES category from previous evaluations. All participants were screened to have at least a fourth-grade education and have lived in their locality of residence for at least one year. Table 3 reports country-level descriptive statistics for the demographic variables, the contributions to the World and Local accounts in the experiment, and the IGI and CGI.

An experimental protocol, which explains how to conduct the various phases of the research, was distributed to local researchers in each country. These were in all cases native speakers of the place where the research was conducted. The experiment protocol and instructions are reported in Buchan et al. (2009: SOM). Further experiment control was guaranteed by the presence of a member of the core research team in each location. The experiment session entailed the following phases. First, participants completed the series of three PGGs. At the end of the

decisions, they were asked to complete the questionnaire. In the meantime, research assistants computed participants' payoffs, using an algorithm for the matching procedures provided beforehand by the experiments coordinator. Participants then received their payments. The experiment sessions were conducted in groups of no less than four and no more than sixteen participants.

Participants were told that they were involved in a series of decisions involving people from their own local area, some of whom may or may not be in the same room, from a different location in their own country, and from other countries around the world. The countries chosen for the matching were not specifically named in order to avoid any biases from attitudes or stereotypes about particular nationalities.

4 Results

4.1 Descriptive statistics

The social identification scores at each level (local social identity, LSI; national social identity, NSI; and global social identity, GSI) were calculated by summing up responses to the three items described in section 3.2. The scores, given originally on a 1–4 scale, have been normalized to the 0–1 interval. So, individuals scoring one (zero) in, say, the LSI answered that they feel very strong attachment (no attachment) to their local community, define themselves very strongly (not at all) as a member of their local community, and feel very close (not close at all) to other members of their local community. The Cronbach's alphas of the three social identity items are 0.78 for LSI, 0.72 for NSI, and 0.75 for GSI.

Table 1 reports descriptive statistics for the three social identity measures. For all countries identification with the local and national levels is on average higher, according to our index, than at the global level. For all countries except the Russian Federation, the strongest identification occurs at the national level, followed by the local and then the global level. In the Russian Federation, identification is strongest at the local level, followed by the national and the global level. However, the difference between LSI and NSI appears small, whereas GSI score seem systematically lower.

McFarland et al. (2012) developed a measure of 'Identification with all humanity' (IWAH) that evaluates the extent to which an individual 'cares for all humanity, not just for their ingroups'. This measure examines both an individual's identification with humankind and the propensity to help others in need. This latter dimension is absent in our measures, as it overlaps with our experimental measure. The general structure of IWAH is however similar to our social identity indexes, because respondents are asked to evaluate their identification with, and attitudes toward, (a) people in their community, (b) co-nationals, and (c) 'All humans everywhere' (McFarland et al. 2012: 22–3). Although the phrasing used to identify these three categories differs slightly from the one we used, we will compare our results with those made using IWAH. Preliminarily, we note that for a sample of US adults IWAH records the same pattern we found, with identification with global community being lower than identification with local and national communities, and the latter two being approximately equal to each other.

The gap between GSI and the other social identity measures is statistically significant. Table 2 reports the results of non-parametric Wilcoxon sign-rank tests on the null hypotheses that pairs of social identity scores come from the same distribution. In all countries GSI scores are always strongly significantly lower than both LSI and NSI. The only country in which such differences are attenuated is the US, where the difference between LSI and GSI is rejected at only weakly significant levels, and the difference between GSI and NSI is rejected at the 5% level. Differences between LSI and NSI are not significant except for the Russian Federation (in which LSI scores are generally higher than NSI scores), and Italy (where the opposite occurs).

4.2 Analysis of the factors associated with GSI

An implication of the cosmopolitan model of social identity (see section 2) is that increased participation and exposure to global networks should be associated with increased identification with the global community. In this section we provide a test for this idea. More generally, we analyse the possible determinants of GSI. We fit a Tobit model for this purpose. The first specification (see Table 5: column 1) demonstrates a strongly significant correlation between GSI and both CGI and IGI. That is, people living in more globalized countries and those who are more involved in global networks are also more likely to declare higher identification with the global community. In other words, the more an individual participates in the global network, the higher his/her GSI. This is consistent with the cosmopolitan hypothesis we put forward in section 2.

Among the demographic factors, females and people older than 50 years (variable 'Age High'), are also more likely to score high in GSI. Having attained higher levels of education than the primary level (variable 'Education High') also shows a positive effect on GSI, but this is not robust to the inclusion of further controls in the ensuing regressions. Interestingly enough, the variable 'Income High', identifying people reporting a level of income belonging to the seventh, or upper, decile of a country's income distribution has a significantly negative effect on GSI ($p= 0.005$), in relation to people with low income (lower or equal to the third decile). We further investigate this result below. Living in large urban areas (variable 'City') or in areas with relatively high numbers of foreign immigrants (variable 'Foreign Immigrants') seems to be uncorrelated with GSI.

The second model (see Table 5: column 2) includes both NSI and LSI as controls. An individual may experience attachment to *any* group, rather than experiencing specific attachment to the global community. In this second specification, the results are to be understood as analysing the impact of a variable on GSI *relative to* LSI and NSI. Both LSI and, even more so, NSI show positive correlations with GSI. An increase of one standard deviation unit in NSI increases GSI by 0.42 standard deviation units ($p<0.001$), while the impact for LSI is smaller, namely, 0.11 ($p=0.015$). Both CGI and IGI continue to exert a positive and strongly significant effect on GSI, even when LSI and NSI are controlled for. The same holds true for gender and high income ($p<0.001$ for all four of these variables). Females' GSI scores are, *ceteris paribus*, nearly 6% higher than men's scores. We note that, in contrast to this result, McFarland et al. (2012) do not find any significant effect of gender, and report that males have greater knowledge of global issues than

females (McFarland et al. 2012: 15–16) The effect of belonging to the older age group is also still significant (p=0.047). The positive correlation between age and GSI may be surprising, in the light of the emphasis placed by some scholars (e.g. Arnett 2002) on younger generations as being particularly exposed to the influence of global culture. Nevertheless, we note that the IWAH scale developed by McFarland et al. (2012) finds lower identification with all three of the categorization levels (local, national, and global) in a university student sample than in an adult sample, thus indirectly confirming our result.

These first analyses are 'between-country' because of the omission of country dummies. This may introduce some confounding effects if a variable is correlated with country level globalization. If, for instance, citizens living in a more globalized country also attain higher education levels, the education variable will capture some of the effect due to globalization in addition to those due to education itself. For this reason, regression 3 introduces country dummies so the analysis is now to be understood as being *within-country*. The introduction of country fixed effects obliterates from the analysis all variables that are invariant within-country, such as CGI. In results from this third regression analysis, IGI (p<0.001), NSI (p<0.001), and LSI (p=0.019) maintain strong positive effects, as well as gender (p=0.01), higher age (p=0.040), and higher income (p=0.002) (see Table 5: column 3).

The last specification includes several additional variables measuring a participant's 'Global Awareness Index' (see section 3.2), some attitudinal measures concerning globalization, and variables identifying the participant's occupational situation. All these variables are derived from the questionnaire. Further details on how these variables were constructed and descriptive statistics are reported in Table 4. The regression shows that people who are more aware of global issues report significantly higher scores for GSI (variable 'Global Awareness Index') (p<0.001). McFarland et al. (2012), too, find a high correlation between their IWAH and both global knowledge and global humanitarian concerns.

Other attitudinal measures are also significantly related with the GSI. The less a participant believes that their citizens' way of life needs to be protected against foreign influence (variable 'Way of Life'), and that entry of foreigners should be restricted (variable 'Entry'), the higher their GSI (p<0.01 for both variables). These results are in line with McFarland et al. (2012), who find a strong predictive negative power of their measure of ethnocentrism and their IWAH. Additionally, we find that the more the participant believes that trade, global business, faster communication and greater movements of people are a good thing (variable 'Opinion Glob.'), the higher their GSI score (p=0.015). It is also noteworthy that participants scoring high in GSI are significantly more likely to be active in voluntary associations (variable 'Association Membership') (p=0.026).

Among the demographic controls, gender (p=0.003) and high income (p=0.021) continue to exert significant effects, while belonging to the older age group becomes non-significant (p=0.138). The apparent robustness of the effect of 'Income High' warrants further investigation. We note that 'Income High' is highly correlated with IGI (ρ=0.39) and we suspect that this may cause multi-collinearity problems between these two variables. In fact, when IGI is omitted from the model, 'Income High' is no longer significant (p=0.207). We also note that the raw linear correlation between 'Income High' and GSI is relatively low (ρ=0.03), while the correlation between IGI and GSI is considerably larger (ρ=0.19). We compute the

Variance Inflation Factor (a measure of how much a variable may be affected by multi-collinearity problems) for 'Income High'. This is very close to the threshold suggested by Allison (2012) to signal serious multi-collinearity problems (2.45 vis-à-vis a suggested threshold of 2.5), and, except country dummies, is the variable contributing the most to inflating variance. We conclude that the negative sign of 'Income High' appears to be driven by its correlation with IGI rather than signalling a real independent effect.

The occupational variables are not significant, although 'Self-employed' is at the border of significance (p=0.109). Finally, the IGI maintains a strongly positive effect on GSI (p=0.001), even after all these demographic and attitudinal variables are controlled for. This further proves the robustness of the correlation between participation in the global network and GSI.

We conclude:

Result 1: Consistent with the cosmopolitan ideal-type, increased participation in global networks—both at the individual and country levels—is associated with increased identification with the global community.

Result 2: The analysis of several attitudinal factors confirms the external validity of the GSI construct. Generally speaking, individuals reporting high GSI scores express a positive view regarding global flows of people and objects, and are more aware of global issues than individuals who have lower scores. Women and, although less robustly, older people and more highly-educated people report higher GSI scores. Income is negatively related with GSI, although this result is likely to be driven by the strong correlation between income and IGI.

4.3 Analysis of the mediating effects of GSI between participation in global networks and cooperation levels

Buchan et al. (2009) shows a strong effect of individual participation in global network, as measured by the IGI (see section 3.2), on the propensity to cooperate at the world level in the experimental decision described in section 3.1. In addition, Buchan et al. (2011) showed that GSI, too, had a strong positive effect on cooperation rates in the same decision. In this section we analyse whether GSI may be thought of as having a mediating effect on IGI (see section 2.4).

Figure 3 offers a graphical account of the relationship between CGI, GSI and contribution to the world account at the country level. It plots the mean level of both GSI and the contribution to the world account as a function of the country's CGI. A linear prediction of each variable shows a positive relationship. This means that the more a country is globalized, as per the CSGR index, the more participants from that country will score high on the GSI and the more, on average, they will contribute to the world account.

We perform a Sobel-Goodmann test (Sobel 1982) on the hypothesis that GSI exerts a mediating effect between IGI and cooperation at the world level. The main idea behind this test is that for a variable *z* exerting a mediating effect between two variables *x* and *y*, the following three conditions must hold: (1) *x* significantly influences *y* in the absence of *z*; (2) *x* significantly influences *z*; (3) Once *z* is introduced as a covariate alongside *x*, the effect of *x* shrinks considerably, while *z* exerts a significant effect on *y*. In the first specification, we show, as in Buchan et al.

(2009), that condition (1) holds (see Table 6, column 1). That is, IGI exerts a positive effect on the propensity to cooperate at the world level in our experiment (p=0.043). In the second specification (see Table 6, column 2), we show that condition (2) holds as well, as IGI exerts a strong positive effect on GSI (p<0.001). Finally, the third specification confirms that condition (3) also holds (see Table 6, column 3). Once the GSI is introduced in the analysis as a covariate, it exerts a strong effect on the dependent variable (p<0.001), while IGI loses its significance (p=0.33). The three models studied control for a broad range of variables, namely, the global awareness index, NSI, LSI, the amount of tokens contributed to the local account in the first decision of our experiment[4], demographic variables, a set of variables denoting an individual's economic condition, and country dummies.

The Sobel-Goodmann test checks for the joint statistical significance of the three effects described above. The test strongly confirms—at less than the 1% level—that these effects are indeed significant (p=0.002; proportion of total effect that is mediated = 32%; bootstrapped std. err. with 1000 repetitions). This evidence supports the cosmopolitan hypothesis. Figure 1 plots the key relationships of the three econometric models that have been analysed. In the upper panel the effect of IGI on cooperation at the world level in isolation from GSI is tested. The lower panel illustrates both the *direct* and the *indirect* effect of IGI on cooperation, once a GSI mediation effect is explicitly introduced in the analysis (see section 2.4). It is worth noting that while the indirect effect—i.e. the effect going from IGI to cooperation *through* GSI—is strongly significant, the residual effect—i.e. that going from IGI to cooperation directly—is not statistically significant and thus is fully mediated by the introduction of GSI into the model. This suggests that the direct effect of IGI, as conceptualized in section 2.4, appears to be small in relation to the indirect effect occurring through GSI.

The fourth specification sheds more light on the nature of the relationship between GSI and propensity to cooperate globally. It introduces an interaction effect between the GSI and the three countries in our sample that have the highest level of globalization, as measured by CGI—namely, the Russian Federation, Italy, and the US. This allows us to study whether GSI exerts differential effects in high-globalization countries vis-à-vis low-globalization countries. The answer is positive. GSI exerts a significantly stronger effect in countries at *lower* stages of globalization. This means that higher identification with the world as a whole has larger effects on cooperative attitudes in countries that have a lower baseline level of globalization. For example, increasing one's identification with the world community in Iran is associated with a propensity to cooperate globally that is significantly higher than increasing one's identification with the world community in the US. This finding, if confirmed, would have important implications for the design of social policies.

We conclude:

Result 3: Our econometric and test analysis strongly supports the hypothesis that the GSI has a mediating effect between IGI and propensity to cooperate at the global level. This is consistent with the conjecture that participation in

[4] The inclusion of the measure of local identity enables us to control for one's propensity to cooperate at the local level, so that our dependent variable may be seen as measuring the propensity to cooperate at the global level that goes beyond the baseline propensity to cooperate at the local level (see Buchan et al. 2009).

globalization increases propensity to cooperate at the global level as it simultaneously increases social identification with the world as a whole.

Result 4: GSI exerts larger effects in countries at lower stages of globalization than countries at higher stages of globalization.

5 Discussion and Conclusions

The main objective of this paper has been to expand our understanding of the linkages between participation in global networks, the development of global social identity, and propensity to cooperate. Previous work of our research group demonstrated evidence congruent with what we referred to as the cosmopolitan hypothesis. More specifically, we found that: (1) Increased participation in global networks is associated with increased propensity to cooperate at the global level. (2) Likewise, heightened identification and belonging to the global community is also associated with increased global-level cooperation. In the present contribution we show that these two pieces of evidence can be accommodated into a theoretical framework consistent with the cosmopolitan hypothesis. We show that global social identity exerts a mediating effect between participation in global networks and propensity to cooperate. This means that participation in global networks exerts an indirect effect on increased propensity to cooperate such that participation in global networks increases global social identity, which in turn increases propensity to cooperate globally. We hasten to say that the result of this test does not enable us to say that we have proved the existence of a causal relationship between the three variables at play. It will have the more modest, but arguably important, result of having ascertained that the evidence coming from our study is consistent with the cosmopolitan hypothesis, and therefore such a hypothesis has 'survived' a relevant trial that might have led to its falsification.

The relevance of such a mediating mechanism also implies that increased participation in global networks is associated with the development of a sense of global social identity. This further undermines the 'reactant' individual hypothesis, which posits increased entrenchment in local and national social identity as a result of globalization (see Buchan et al. 2009, 2011, 2012). At least for those individuals who actively participate in globalization, higher levels of participation are associated with higher levels of cosmopolitan identity and global cooperation.

We also analyse which factors are most closely related with GSI. Women and, although less robustly, highly-educated people report higher GSI scores. Income is negatively associated with GSI, but we think that this result may be spurious. Moreover, individuals who express a positive view regarding global trade, are more aware of global issues, are less protective of their ways of life and less restrictive on migration, tend to have higher GSI scores than individuals expressing the reverse views. Finally, we find that GSI exerts larger effects in countries at lower stages of globalization than countries at higher stages of globalization.

Globalization is an all-encompassing process which is likely to affect fundamental aspects of human psychology. However, our knowledge base on this issue is scant. Our project has been specifically developed to investigate the relationship between participation in global processes, identification with the global community, and propensity to cooperate. The results presented in this research

confirm the existence of a strong association between these variables, paving the way for future research to gain better understanding of the underlying mechanisms.

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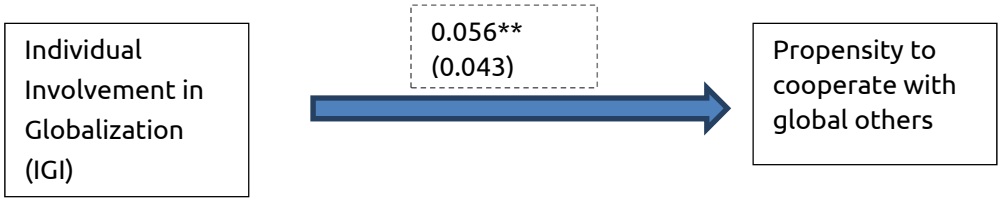
Appendix

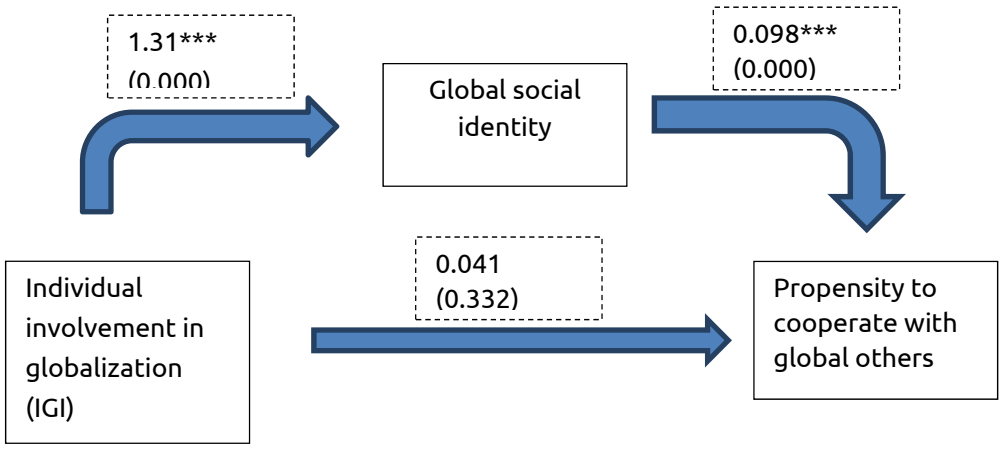
Figures

Figure 1: Mediating effect of global social identity between individual involvement with globalization, as measured by the IGI, and propensity to cooperate at global level

Panel (a): Direct effect of IGI on cooperation rates, without mediation of GSI

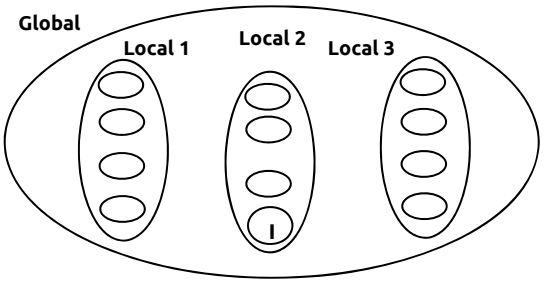


Panel (b): Direct and indirect effects of IGI on cooperation rates, with mediation of GSI



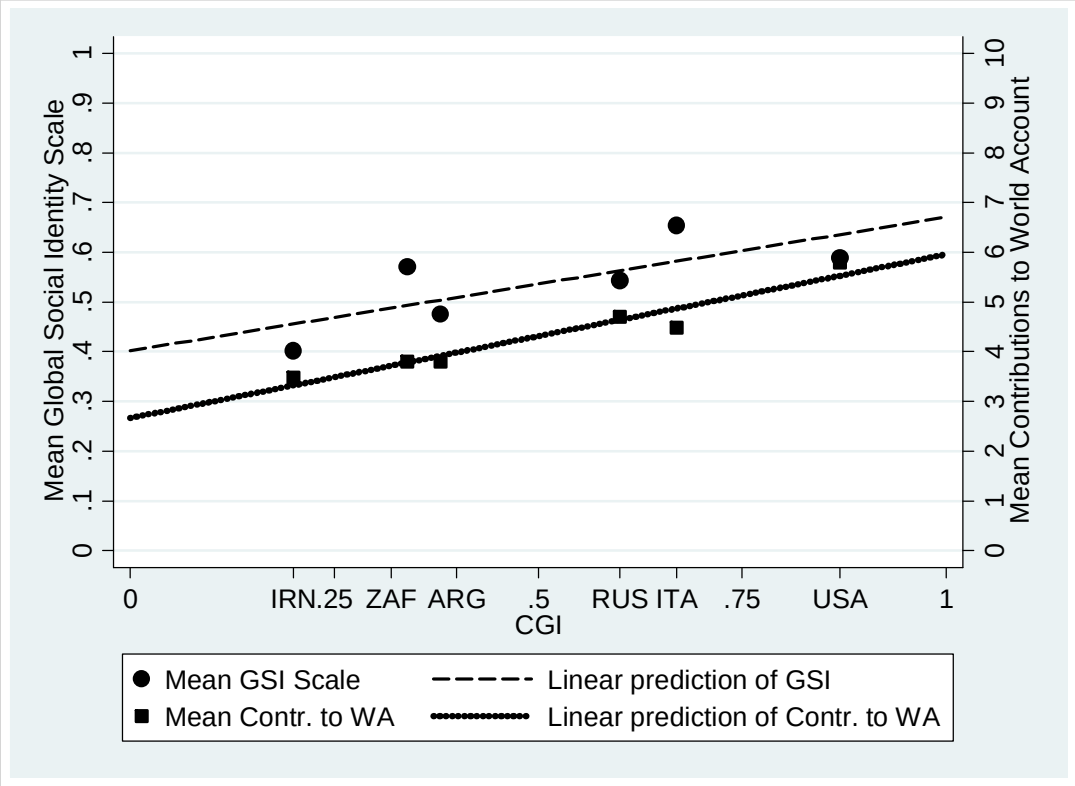
Note: The values in the dashed-contour boxes are the coefficients, expressed in units of standard deviation, estimated in the econometric analysis carried out in Table 6. The number in parentheses is the p-value of the test that the coefficient is equal to zero. The stars denote the level of significance of the rejection of the null hypothesis (*=p<0.1; **=p<0.05; ***=p<0.01). Panel (a) reports coefficients for the model that does not include GSI as covariate (Table 6: column 1); Panel (b) reports coefficients for the models including GSI as covariate (Table 6: column 2 and 3).

Figure 2: Representation of the nested social dilemma



Note: I stands for 'Individual'. 'Local 1', 'Local 2', and 'Local 3' represent groups of people resident in the same locality in three different countries. Individuals have three options on how to allocate their endowments of 10 tokens: allocating to a personal account, to their local account, and to the global account, which comprises the three lower-level local accounts. Contributions to the personal account are transferred one-to-one onto an individual's payoff. Contributions to one's local account are multiplied by a factor of two and divided among four local residents. Contributions to the global accounts are multiplied by a factor of three and divided evenly among the 12 participants.

Figure 3: Correlation between Country-level Globalization index, Global Social Identity Scale, and Contribution to World Account



Tables

Table 1: Descriptive statistics for Local, National, and Global Social Identity, per country

	Local Social Identity	National Social Identity	Global Social Identity
Iran			
Mean	0.66	0.69	0.40
Median	0.67	0.67	0.33
St. Dev.	0.24	0.21	0.24
Obs.	177	178	174
South Africa			
Mean	0.70	0.72	0.57
Median	0.67	0.78	0.56
St. Dev.	0.28	0.27	0.31
Obs.	149	144	143
Argentina			
Mean	0.75	0.78	0.48
Median	0.78	0.78	0.44
St. Dev.	0.26	0.22	0.29
Obs.	201	196	196
Russia			
Mean	0.71	0.67	0.54
Median	0.78	0.67	0.56
St. Dev.	0.26	0.25	0.29
Obs.	205	205	205
Italy			
Mean	0.74	0.80	0.65
Median	0.78	0.89	0.67
St. Dev.	0.25	0.21	0.22
Obs.	204	203	204
US			
Mean	0.63	0.65	0.59
Median	0.67	0.67	0.67
St. Dev.	0.29	0.27	0.26
Obs.	171	171	170

Note: Descriptive statistics for the whole sample are reported in Table 4.

Table 2: Comparison of social identity measures through non-parametric tests

Iran

	LSI	NSI
LSI		
NSI	-1.45 (0.15)	
GSI	9.32 (0.0000)***	10.52 (0.000)***

South Africa

	LSI	NSI
LSI		
NSI	-0.35 (0.73)	
GSI	4.74 (0.0000)***	5.66 (0.000)***

Argentina

	LSI	NSI
LSI		
NSI	-0.44 (0.6635)	
GSI	9.48 (0.0000)***	11.13 (0.000)***

Russian Federation

	LSI	NSI
LSI		
NSI	3.63 (0.0003)***	
GSI	7.85 (0.0000)***	7.56 (0.000)***

Italy

	LSI	NSI
LSI		
NSI	-3.54 (0.0004)***	
GSI	4.27 (0.0000)***	6.83 (0.000)***

US

	LSI	NSI
LSI		
NSI	-0.65 (0.51)	
GSI	1.82 (0.070)*	3.01 (0.0026)**

Note: The tables above report results of Wilcoxon sign rank matched-pair tests over the hypothesis that pairs of social identity measures come from the same distribution. The number outside the brackets reports z-statistics. The number inside the brackets reports p-values. A positive (negative) value of the z-statistic means that the differences between the scores in the column variable and in the row variable in matched pairs are on average positive (negative). For instance, the fact that the z-statistics for the test applied to differences in LSI (column variable) and NSI (row variable) in Iran is -1.446 means that the Iranian sample on average attributed a higher score to NSI than LSI. Stars denote the significance level: *: p<0.1; **: p<0.05; ***: p<0.01.

Table 3: Descriptive statistics of country samples, experimental decisions, and globalization indexes

Country/ Statistics	Obs.	Income [1=Highest Decile in a country's income distribution]	Education [1=Highest educational attainment]	Age	Gender [1=All females]	Contribution to World Account (Decision 3)	Contribution to Local Account (Decision 1)	IGI [1=Most globalized]	CGI [1=Most globalized]
IRAN	171								
Mean		0.31	0.43	38.36	0.50	3.49	4.85	0.29	0.20
St. Dev.		0.23	0.24	16.27	0.50	2.85	3.16	0.14	
Median		0.33	0.6	37		3	5	0.29	
SOUTH AFRICA	159								
Mean		0.58	0.35	36.98	0.65	3.81	5.58	0.41	0.34
St. Dev.		0.31	0.21	16.18	0.48	1.98	2.32	0.17	
Median		0.56	0.2	31		3	6	0.40	
ARGENTINA	201								
Mean		0.700	0.32	39.42	0.57	3.81	6.38	0.40	0.38
St. Dev.		0.27	0.21	11.98	0.50	2.84	2.61	0.13	
Median		0.78	0.2	39		3	6	0.41	
RUSSIA	207								
Mean		0.57	0.44	40.71	0.57	4.70	6.47	0.39	0.60
St. Dev.		0.30	0.17	14.53	0.50	2.66	2.57	0.12	
Median		0.56	0.40	42		4	6	0.38	
ITALY	205								
Mean		0.50	0.42	40.39	0.52	4.49	6.07	0.42	0.67
St. Dev.		0.29	0.14	14.30	0.50	2.87	2.90	0.12	0.00
Median		0.44	0.40	40		4	6	0.419	
USA	171								
Mean		0.36	0.40	40.59	0.47	5.80	7.49	0.41	0.87
St. Dev.		0.25	0.24	15.71	0.50	3.16	2.53	0.11	
Median		0.33	0.4	40		5	8	0.39	
Total	1114								
Mean		0.51	0.40	39.53	0.54	4.35	6.16	0.39	0.52
St. Dev.		0.31	0.21	14.80	0.50	2.86	2.80	0.14	0.22
Median		0.44	0.40	39		4	6	0.383	

Note: Table 3 (previous page) is reproduced with permission from Buchan et al. (2009; SOM: Table S2). Number of observations refers to 'Contributions to World Account'. Missing variables may occur for other variables. All variables apart from 'Age' and Contributions to World and Local Accounts are scaled on the [0, 1] interval. 'Income' denotes the income decile to which a participant responded s/he belongs within his/her country income distribution. See Questionnaire: Question 38. 'Education' is the highest level of education attained by an individual. See Questionnaire: Question 32. 'Age' is the participant's age. See Questionnaire: Question 31. 'Gender' is a dummy variable identifying with the value of 1 (0) females (males). 'Contributions to World (Local) Account' is the number of tokens contributed to the World (Local) Account out of 10 available tokens in the third (first) decision of the experiment. See section 3.1. 'IGI' is the score for the Individual-Level Globalization Index. See Section 3.2. 'CGI' is the score for the Country-level Globalization Index (Lockwood and Redoano, 2005). The research questionnaire is reported in the Appendix to the paper.

Table 4: Description and descriptive statistics of variables included in the econometric analysis

Name of variable	Description	Mean value	Median value	Std. Dev	Minimum value	Maximum value	N. obs.
Age High	Dummy variable, where 1 identifies people older than 50.	0.26		0.44	0	1	1092
Age Medium	Dummy variable, where 1 identifies people between 31 and 50 years old.	0.40		0 .49	0	1	1092
Association Membership	It assigns a value of 1 if the participant is a member of at least one voluntary association.	0.68	1	0.47	0	1	1122
CGI	Country-level Globalization Index. It offers a ranking of countries on a [0, 1] interval according to their level of economic, social and political international interconnectedness (see Lockwood and Redoano, 2005).	0.52	0.60	0.22	0.20	0.87	1122
City	Dummy identifying people living in the largest urban centre sampled in each country	0.65		0.48	0	1	1122
Divorced	Dummy identifying people who are divorced	0.097		0.30	0	1	1095
Education High	Dummy variable, where 1 identifies bachelor or higher degree.	0.36		0.48	0	1	1102
Education Medium	Dummy variable, where 1 identifies upper secondary school degree.	0.26		0.44	0	1	1102
Entry	Participant agrees with the following statement: 'We should restrict and control entry of people into our own country more than we do.' See Questionnaire: Question 27c.	2.79	3	1.065	1	4	1093
Female	Dummy variable, where 1 (0) identifies female (male) participants.	0.54		0.50	0	1	1098
Foreign Immigrants	Dummy variable assigning value of 1 if participant reports that some groups of foreign migrants live in the area where the participant lives. See Questionnaire: Question 16a.	0.82		0.38	0	1	1085
Global Awareness Index	The index measures the level of participant's awareness with the following global issues: global warming, the spread across the planet of potentially dangerous diseases, the action of the international criminal courts of justice, the persistent gap between rich and poor people around the world. The index assigns value of 1 if the participant	0.70	0.75	0.21	0	1	1100

	does *not* answer that 'she is not informed about this issue' to the four items of question 4 of the questionnaire. It then sums up the four resulting scores. Therefore, the index is equal to 0 (1) if the participant is not informed on any of these issues (is informed of all these issues). See Questionnaire: Question 4.						
Global Social Identity (GSI)	Index of Global Social Identity. See sections 2.2 and 3.2.	0.54	0.56	0.28	0	1	1092
Global Social Identity_X_High Glob. Countries	Interaction variable between Global Social Identity and High_Glob_countries.						1092
High Glob. countries	Identifies the three most globalized countries in our sample, i.e. the US, Italy, and Russia						1122
Income High	Dummy variable, where 1 identifies income levels higher than the seventh decile of a country's income distribution. See Questionnaire: Question 38.	0.28		0.20	0	1	1057
Income Medium	Dummy variable, where 1 identifies income levels between fourth and seventh deciles of a country's income distribution. See Questionnaire: Question 38.	0 .44		0 .50	0	1	1057
Individual Globalization Index (IGI)	See section 3.2.	0.38	0.38	0.14	0.011	0.83	1115
Local Social Identity (LSI)	Index of Local Social Identity. See sections 2.2 and 3.2.	0.70	0.67	0.27	0	1	1107
National Social Identity (NSI)	Index of National Social Identity. See sections 2.2 and 3.2.	0.72	0.78	0.24	0	1	1097
Opinion Glob.	Participant agrees that the following two statements are a 'very good thing': 'The world becoming more connected through greater economic trade and business ties.'; 'The world becoming more connected through faster communication and greater movements of people'. Answers were given on a 4-point Lickert scale ranging from 'Very Bad' to 'Very good'. Scores in these two items have been summed. See Questionnaire: question 28.	2.08	2	1.21	1	5	1096
Self-employed	Dummy identifying people who are self-employed. See Questionnaire: Question 36, 37.	0.11		0.32	0	1	1071
Unemployed	Dummy identifying people who are unemployed. See Questionnaire: Question 36.	0.053		0.22	0	1	1071
Way of Life	Participant agrees with statement 'Our way of life needs to be protected against foreign influence.' See: Questionnaire: Question 27b.	2.51	3	1.066	1	4	1094

Note: Questionnaire items are reported in the Appendix.

Table 5: Regression analysis of factors associated with GSI

	(1)	(2)	(3)	(4)
DEPENDENT VARIABLE			GSI	
CGI	0.217***	0.264***		
	(0.0468)	(0.0417)		
IGI	0.564***	0.521***	0.487***	0.287***
	(0.0916)	(0.0830)	(0.0865)	(0.0866)
National Social Identity Index		0.492***	0.497***	0.508***
		(0.0481)	(0.0492)	(0.0496)
Local Social Identity Index		0.110**	0.106**	0.0741*
		(0.0450)	(0.0450)	(0.0445)
Foreign Immigrants	-0.00357	-0.0159	-0.0152	-0.0238
	(0.0271)	(0.0243)	(0.0242)	(0.0240)
Female	0.0637***	0.0645***	0.0605***	0.0538***
	(0.0199)	(0.0178)	(0.0182)	(0.0179)
Education Medium	0.0568**	0.0393	0.0254	0.0260
	(0.0262)	(0.0239)	(0.0255)	(0.0247)
Education High	0.0370	0.0388*	0.0354	0.0256
	(0.0239)	(0.0213)	(0.0225)	(0.0222)
Age Medium	0.0244	-0.0178	-0.00986	-0.00836
	(0.0230)	(0.0206)	(0.0205)	(0.0204)
Age High	0.115***	0.0475**	0.0487**	0.0363
	(0.0263)	(0.0239)	(0.0237)	(0.0245)
Income Medium	-0.0273	-0.0249	-0.0241	-0.0149
	(0.0251)	(0.0224)	(0.0224)	(0.0222)
Income High	-0.0833***	-0.0933***	-0.0895***	-0.0671**
	(0.0299)	(0.0265)	(0.0283)	(0.0291)
City	-0.0158	-0.0281	-0.0339*	-0.0149
	(0.0223)	(0.0199)	(0.0203)	(0.0200)
Global Awareness Index				0.245***
				(0.0462)
Association Membership				0.0447**
				(0.0200)
Way of Life				-0.0327***
				(0.00983)
Entry				-0.0265***

				(0.00931)
Opinion Glob.				-0.0177**
				(0.00823)
Self-employed				0.0529
				(0.0329)
Unemployed				0.0361
				(0.0506)
Divorced				-0.00859
				(0.0278)
South Africa			0.128***	0.105**
			(0.0384)	(0.0415)
Argentina			0.0176	-0.0187
			(0.0361)	(0.0372)
Russia			0.134***	0.124***
			(0.0307)	(0.0303)
Italy			0.169***	0.174***
			(0.0331)	(0.0327)
USA			0.172***	0.131***
			(0.0330)	(0.0342)
Constant	0.156***	-0.226***	-0.173***	-0.0867
	(0.0505)	(0.0519)	(0.0506)	(0.0670)
Observations	998	994	994	948
Pseudo R^2	0.133	0.366	0.385	0.482

Note: A Tobit model has been fitted to the data. The censoring values are the lowest and upper values for GSI, i.e. 0 and 1. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The variables description is in Table 4.

Table 6: Regression analysis of mediating effect of GSI between IGI and propensity to cooperate

	(1)	(2)	(3)	(4)
DEPENDENT VARIABLE	Tokens contributed to world account	Global Social Identity	Tokens contributed to world account	Tokens contributed to world account
Individual Globalization Index	1.180**	2.689***	0.860	0.902
	(0.547)	(0.567)	(0.565)	(0.554)
Global Social Identity			0.993***	1.583***
			(0.268)	(0.321)
High Glob. countries				0.999***
				(0.268)
Global Social Identity_X_High Glob. countries				-1.181***
				(0.437)
Global Awareness Index	0.648**	1.755***	0.402	0.468
	(0.294)	(0.311)	(0.303)	(0.297)
National Social Identity	0.412	3.237***	-0.0243	-0.106
	(0.303)	(0.373)	(0.337)	(0.337)
Local Social Identity	-0.207	0.700**	-0.277	-0.304
	(0.272)	(0.317)	(0.276)	(0.275)
Tokens to Local account	0.372***	0.0616***	0.362***	0.365***
	(0.0319)	(0.0217)	(0.0319)	(0.0320)
City	-0.350***	-0.156	-0.353***	-0.371***
	(0.131)	(0.134)	(0.134)	(0.127)
Female	0.00554	0.355***	-0.0489	-0.0569
	(0.115)	(0.121)	(0.117)	(0.114)
Education Medium	0.184	0.115	0.172	0.0938
	(0.151)	(0.160)	(0.154)	(0.149)
Education High	0.221	0.163	0.199	0.216
	(0.152)	(0.149)	(0.152)	(0.134)
Age Medium	-0.247*	-0.186	-0.225	-0.233*
	(0.144)	(0.138)	(0.146)	(0.142)
Age High	-0.223	0.289*	-0.244	-0.198
	(0.154)	(0.162)	(0.156)	(0.155)
Income Medium	0.109	-0.0220	0.100	0.0506

	(0.142)	(0.153)	(0.145)	(0.142)
Income High	0.0529	-0.472**	0.100	-0.0190
	(0.194)	(0.201)	(0.196)	(0.183)
Self-employed	0.130	0.402*	0.113	0.0688
	(0.213)	(0.212)	(0.213)	(0.216)
Unemployed	0.527**	0.345	0.470*	0.506*
	(0.248)	(0.328)	(0.253)	(0.259)
Divorced	0.254	-0.146	0.258	0.231
	(0.203)	(0.178)	(0.203)	(0.198)
Russia	0.403*	0.959***	0.258	
	(0.224)	(0.213)	(0.231)	
South Africa	0.129	0.756***	0.0416	
	(0.248)	(0.276)	(0.253)	
USA	0.673***	1.052***	0.539**	
	(0.245)	(0.224)	(0.251)	
Argentina	-0.215	0.106	-0.220	
	(0.254)	(0.255)	(0.255)	
Italy	0.303	1.188***	0.138	
	(0.229)	(0.223)	(0.234)	
Observations	983	978	976	976
Pseudo R2	0.0788	0.0952	0.0815	0.0821

Note: An ordered logit model has been fitted to the regressions in columns 1, 3 and 4. A Tobit model has been used in the regression in column 2. The censoring values are the lowest and upper value for GSI, i.e. 0 and 1. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The variables description is in Table 4.

Table 7: List of Questionnaire Items used to construct IGI

Description of items	Related question in questionnaire
Frequency of internet access	Question 1c
Territorial scope of phone use. Higher (lower) score if phone used at global level (is not used).	Question 2a
Territorial scope of mobile phone use. Higher (lower) score if mobile phone used at global level (is not used).	Question 2b
Territorial scope of email use. Higher (lower) score if email used at global level (is not used).	Question 2c
Territorial scope of mail use. Higher (lower) score if mail used at global level (is not used).	Question 2d
Territorial scope of fax use. Higher (lower) score if fax used at global level (is not used).	Question 2e
Speaking foreign languages	Question 15
Born abroad	Question 33a
Parent born abroad	Question 33b
Watch TV program from a different country	Question 6a
Read an international news source	Question 6c
Read international magazine	Question 6d
Read a book by foreign author	Question 6e
Listen to music made by foreign artists	Question 6f
Follow international news source	Question 6b
Travel abroad within continent	Question 3b
Travel abroad outside continent	Question 3c
Followed international sports events	Question 5c
Followed international cultural events or international trade fairs	Question 5d
Frequency with which participant goes to foreign cuisine restaurant	Question 11a/b A
Frequency with which participant has food/drinks made in a foreign country	Question 11a/b B
Frequency with which participant uses clothes made by foreign companies	Question 11a/b C
Frequency with which participant goes to restaurant owned by multi-national company (e.g. large fast food chains)	Question 12a/b A
Frequency with which participant uses food/drinks produced by multi-nationals	Question 12a/b B
Frequency of using clothes made by multi-nationals	Question 12a/b C
Work for multi-national company	Question 9
Car from other country	Question 10
Owns foreign currency	Question 14a
Owns bank deposit in other country	Question 14b
Owns investments in another country	Question 14c

Note: The Individual Globalization Index is a summative index of the items reported above.

Research Questionnaire

{Classification Codes: [S]=Social globalisation; [C] = Cultural globalisation; [E]=Economic globalization; [GA]= Global Awareness [SI]=Social Identity; [AMI]=Association Membership Index}

Note: The full version of the questionnaire can be found in Buchan et al. (2009: SOM). The questions reproduced below are those relevant for the analyses presented in this paper. Terms in italics were modified in the different localities/countries where the research was run. The terms reported below were used in the community of Columbus, OH, US. The numbering of the question is the same as in the original questionnaire.

1. How often do you normally use the following products or services? Check one option.

		I own/have access to this product or service, and I use it:				I do not own/have access to this product or service.
		Every day	Every week	Less often	Never	
[S]	Internet	☐1	☐2	☐3	☐4	☐5
[ECO]	Credit card	☐1	☐2	☐3	☐4	☐5

2. If you use the following products or services, do you use them to contact people living in other parts of your country, or people living in other countries? Check all that apply.

		Local area	Other parts of my country	Other countries	Does not apply
[S]	a. Landline phone	☐1	☐2	☐3	☐4
[S]	b. Mobile phone	☐1	☐2	☐3	☐4
[S]	c. Email	☐1	☐2	☐3	☐4
[S]	d. Postal mail	☐1	☐2	☐3	☐4
[E]	e. Fax machine	☐1	☐2	☐3	☐4

3. Consider the following geographical areas. How often do you travel, either for work or for vacation, in each of them? Check one.

		Every week	Every month	Every year	Less often	Never
	a. Within a national area (to other parts of my country besides my own locality).	☐1	☐2	☐3	☐4	☐5
[C]	b. To other countries within my continent	☐1	☐2	☐3	☐4	☐5
[C]	c. To other countries outside my continent	☐1	☐2	☐3	☐4	☐5

4. How concerned are you with the following issues? Check one.

		Not at all concerned	Slightly concerned	Concerned	Very concerned	I am not informed about this issue.
[GA]	a. Global warming	☐1	☐2	☐3	☐4	☐5
[GA]	b. The spread across the planet of potentially dangerous diseases (for example, HIV, SARS, bird flu)	☐1	☐2	☐3	☐4	☐5
[GA]	c. Making the action of international criminal courts of justice more effective	☐1	☐2	☐3	☐4	☐5
[GA]	d. The persistent gap between rich and poor people around the world	☐1	☐2	☐3	☐4	☐5

5. Have you taken part in the following activity?

		Yes	No
[C]	c. Following international sport events (for example, Olympic games, soccer world cup)	☐1	☐2
[C]	d. Following international cultural events or international trade fairs	☐1	☐2

6. How often do you do the following activity? Check one.

		I own/have access to this product or service, and I use it:				I do not own/have access to this product or service.
		Every day	Every week	Less often	Never	
[C]	a. Watch a television program or a movie from a different country	☐1	☐2	☐3	☐4	☐5
[C]	b. Watch / listen to an international news source (CNN International, BBC World, *Euronews*)	☐1	☐2	☐3	☐4	☐5
[C]	c. Read an international news source (Time, The Economist, *Le Monde*)	☐1	☐2	☐3	☐4	☐5
[C]	d. Read an international magazine other than a news related publication, e.g. a style or sports magazine (Cosmopolitan, National Geographic, *Men's Health*)	☐1	☐2	☐3	☐4	☐5
[C]	e. Read a book written by an author from another country	☐1	☐2	☐3	☐4	☐5
[C]	f. Listen to music made by artists from other countries	☐1	☐2	☐3	☐4	☐5

9. [E] Do you work for a multinational or foreign-owned company?

Yes	No
☐1	☐2

10. [E] If you (or your household) own a car, where was it made? Check one (if you own more than one car, consider the one that you regularly use).

In my country	In a different country	I do not know where my car was made	I do not own a car
☐1	☐2	☐3	☐4

11a. Consider the following list. Are products or services that are from different parts of the world available in the area where you live?

	Yes	No	I don't know
A. Restaurants (e.g. *Japanese, Thai* restaurants)	☐1	☐2	☐3
B. Food and beverages (from supermarkets, shops or bars)	☐1	☐2	☐3
C. Clothing	☐1	☐2	☐3

11b. [E] If you answered yes to the previous question, how often do you use such products or services?

	Every day	Every week	Less often	Never
a. Restaurants (e.g. *Japanese, Thai* restaurants)	☐1	☐2	☐3	☐4
b. Food and beverages (from supermarkets, shops or bars)	☐1	☐2	☐3	☐4
c. Clothing	☐1	☐2	☐3	☐4

12a. Consider the following list. Are products or services that are produced by multi-national companies - that is, those companies active in different parts of the world - available in the area where you live?

	Yes	No	I don't know.
A. Restaurants and cafes (e.g. Mc Donald's, Starbucks Coffee, *Pizza Hut, Taco Bell*)	☐1	☐2	☐3
B. Food and Beverages (e.g. Coca-Cola, Nestlé, *Dannon*)	☐1	☐2	☐3
C. Clothing (e.g. Nike, Zara, *Adidas, Levi's*)	☐1	☐2	☐3

12b. [E] If you answered yes to the previous question, how often do you use such products?

	Every day	Every week	Less often	Never
A. Restaurants and cafes (e.g. Mc Donald's, Starbucks Coffee, *Pizza Hut, Taco Bell*)	☐1	☐2	☐3	☐4
B. Food and Beverages (e.g. Coca-Cola, *Nestlé, Dannon*)	☐1	☐2	☐3	☐4
C. Clothing (e.g. Nike, Zara, *Adidas, Levi's*)	☐1	☐2	☐3	☐4

14. Currently do you own any of the following?

		Yes	No
[E]	a. Foreign currencies	☐1	☐2
[E]	b. Bank deposit in another country	☐1	☐2
[E]	c. Some investment(s) in another country	☐1	☐2

15. [S] Besides your native tongue, how many other languages can you speak?

None	☐1
I can understand and can make myself understood in another language.	☐2
I am fluent in another language.	☐3
I am fluent in more than one other language.	☐4

16a. How many different immigrant communities live in the area where you live (for example, *Hmong immigrants*)?

None	☐1
Between 1 and 2	☐2
Between 3 and 4	☐3
More than that	☐4

17a. How many ethnic/racial groups different from yours live in the area where you live (for example, *White, Black/African Americans, Asian, Hispanic*)?

None	☐1
Between 1 and 2	☐2
Between 3 and 4	☐3
More than that	☐4
Several peoples (6 or more peoples)	☐3

21. [SI] How strongly do you feel attachment to your community in *Columbus*, in the *United States*, or to the world as a whole?

	Not attached at all			Very attached
a. Your local community	☐1	☐2	☐3	☐4
b. Your country	☐1	☐2	☐3	☐4
c. The world as a whole	☐1	☐2	☐3	☐4

22. [SI] How strongly do you define yourself as a member of your community in *Columbus*, in the *United States*, or of the world as a whole?

	Not at all			Very strongly
a. Your local community	☐1	☐2	☐3	☐4
b. Your country	☐1	☐2	☐3	☐4
c. The world as a whole	☐1	☐2	☐3	☐4

23. [SI] How close do you feel to other members of your community in *Columbus*, in the *United States*, or to the world as a whole?

	Not at all close			Very Close
a. Your local community	☐1	☐2	☐3	☐4
b. Your country	☐1	☐2	☐3	☐4
c. The world as a whole	☐1	☐2	☐3	☐4

25. [AMI] Please look carefully at the following list of voluntary organizations and activities. How would you describe your involvement with them? Check the one response that best applies for each type of activity or organization.

	I do not belong and do not follow their activities.	I do not belong but I sympathize with some of their activities.	I belong
a. Social welfare services for elderly, *handicapped* or deprived people	☐1	☐2	☐3
b. Religious or church organizations	☐1	☐2	☐3
c. Education, arts, music or cultural activities	☐1	☐2	☐3
d. Labour unions	☐1	☐2	☐3
e. Political parties or groups	☐1	☐2	☐3
f. Poor countries development or human rights	☐1	☐2	☐3
g. Conservation, environmental, animal rights groups	☐1	☐2	☐3
h. Professional associations	☐1	☐2	☐3
i. Youth work (for example, *scouts, guides, youth clubs*, etc.)	☐1	☐2	☐3
j. Sports or recreation	☐1	☐2	☐3
k. Women's group	☐1	☐2	☐3
l. Peace movement	☐1	☐2	☐3
m. Voluntary organizations connected with health	☐1	☐2	☐3

27. For each of the following statements, please state if you agree or disagree:

a. Our people are not perfect, but our culture is better than all others.

Completely disagree	Somewhat disagree	Somewhat agree	Completely agree
☐1	☐2	☐3	☐4

b. Our way of life needs to be protected against foreign influence.

Completely disagree	Somewhat disagree	Somewhat agree	Completely agree
☐1	☐2	☐3	☐4

c. We should restrict and control entry of people into our own country more than we do.

Completely disagree	Somewhat disagree	Somewhat agree	Completely agree
☐1	☐2	☐3	☐4

28. What do you think about each of the following: has it been a very good thing, somewhat good, somewhat bad or very bad for you (and your family)?

28a. The world becoming more connected through greater economic trade and business ties?

Very Good	Somewhat Good	Somewhat Bad	Very Bad	Don't Know
☐1	☐2	☐3	☐4	☐5

28b. The world becoming more connected through faster communication and greater movements of people?

Very Good	Somewhat Good	Somewhat Bad	Very Bad	Don't Know
☐1	☐2	☐3	☐4	☐5

30. What is your sex?

Male	Female
☐1	☐2

31. In which year were you born? _____

32. What is the highest level of education you completed?

Grade School	*High School*	*Technical School*	*Bachelor's Degree*	*Master's Degree*	*Doctoral Degree*
☐1	☐2	☐3	☐4	☐5	☐6

33a. Were you born in a country different than *the US*?

Yes	No
☐1	☐2

33b. Were any of your parents born in a country different than *the US*?

Yes	No
☐1	☐2

35. What is your marital status?

Single	Married	Divorced/ Separated	Widowed	Living with partner
☐1	☐2	☐3	☐4	☐5

36. What is your current employment situation?

Full-time employed	☐1
Part-time employed	☐2
Self-employed	☐3
Retired/Pensioned	☐4
Housewife/husband not otherwise employed	☐5
Student	☐6
Unemployed	☐7
Other (Please specify) _____	☐8

37. In which profession/occupation do you or did you work? If more than one job, the main job? What is/was your job there?

_____

38. Here is a scale of incomes. We would like to know in what group your household is, counting all wages, salaries, pensions and other incomes that come in. Just check the group your household falls into, before taxes and other deductions.

$0-9,999	☐$_1$
10,000-14,999	☐$_2$
15,000-24,999	☐$_3$
25,000-34,999	☐$_4$
35,000-49,999	☐$_5$
50,000-74,999	☐$_6$
75,000-99,999	☐$_7$
100,000-149,999	☐$_8$
150,000-199,999	☐$_9$
Over 200,000	☐$_{10}$

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