

**On the Determinants of Generalised Trust: An Investigation
of the Institution-Centred and Society-Centred Perspectives**

Sergio Lo Iacono

A thesis submitted for the degree of Doctor of Philosophy (PhD)

Department of Sociology

University of Essex

12.2017

Summary

This thesis investigates the institution-centred and society-centred perspectives on generalized trust. Using advanced statistical techniques, I first assess some central implications of the two approaches employing observational data. In particular, I begin by suggesting that the scarcity of different goods in a region (lack of personal security and jobs) negatively affects our propensity to trust strangers, as we are less likely to believe that the state will fulfil its obligations. A Multilevel Structural Equation analysis of data from the European Social Survey 2010 and EUROSTAT confirms hypotheses put forward, suggesting that institutional trust has indeed a strong intervening function. Subsequently, moving to the society-centred perspective, I consider two main theoretical mechanisms (namely, the Bridging and Spillover effects) to explain why we consistently observe that interactions with people we know lead us to trust people we do not know. Using the Social Capital Community Benchmark Survey 2000, I find support for the Spillover effect. However, findings are less convincing in respect to the Bridging mechanism.

Finally, I focus on the Spillover effect and propose a novel design to accurately evaluate its causal validity. In this sense, I conduct an experiment where subjects play a series of Trust Games with anonymous others and are able to report their games' experience to their social links. Changing the average number of links among subjects, I check if in communities characterized by a higher overall density of social ties, network-based reputation systems foster trusting behaviours with strangers. Evidence supports the validity of the Spillover effect, encouraging further research on the topic.

Table of Contents

Introduction.....7

1 Chapter 1.....11

 1.1 Introduction.....12

 1.2 Theory, Hypotheses and Literature.....15

 1.3 Data, Methods and Variables.....25

 1.4 Results.....32

 1.5 Conclusion.....44

2 Chapter 2.....48

 2.1 Introduction.....49

 2.2 Literature Review.....52

 2.3 Data and Methods.....60

 2.4 Results and Discussion.....66

 2.5 Conclusion.....80

3 Chapter 3.....84

 3.1 Introduction.....85

 3.2 Experimental Setup and Hypotheses.....89

 3.3 Measures, Controls, and Statistical Model.....98

 3.4 Results and Discussion.....110

 3.5 Conclusion.....99

Conclusion.....114

Reference List.....116

Appendix A.....134

Appendix B.....137

Table of Figures and Graphs

Figure 1.1 – Mediation model for homicide rates with relevant confounder.....20

Figure 1.2 – Opinion on “Government’s responsibility to provide job for everyone”.....23

Figure 1.3 – Mediation model for unemployment rates with relevant confounders....24

Figure 3.1 – The theoretical argument behind the Spillover Effect.....86

Figure 3.2 – Treatment 1 (Low Density).....94

Figure 3.3 – Treatment 2 (High Density).....94

Graph 3.1 – Average number of times subjects’ behaviour was known by other players.....100

Graph 3.2 – Reports received by type.....102

Graph 3.3 – Trusting behaviours across treatments.....103

Graph 3.4 – Trustworthy behaviours across treatments.....104

Table of Tables

Table 1.1 – Sample size, countries and NUTS II regions	26
Table 1.2 – Operationalization of concepts.....	30
Table 1.3 – MSEM testing mediation effect of institutional trust on homicide	34
Table 1.4 – MSEM testing mediation effect of institutional trust by people’s views on state’s duties.....	36
Table 1.5 – MSEM testing mediation effect of institutional trust on long-term unemployment.....	38
Table 1.6 – MSEM testing mediation effect of institutional trust on long-term unemployment and homicide by people’s views on state’s duties.....	42
Table 2.1 – Descriptive statistics for variables.....	62
Table 2.2 – Fixed effect model assessing the role of social connectedness on generalized trust.....	68
Table 2.3 – Fixed effect model assessing the correlation bridging friendship networks and generalized trust.....	72
Table 2.4 – Fixed effect model assessing the correlation bridging associational networks and generalized trust.....	74
Table 2.5 – Multilevel model assessing the effect of networks’ density on generalized trust.....	79
Table 3.1 – Descriptives and operationalization of concepts.....	91
Table 3.2 – Correlation between trusting behaviour with strangers and survey questions measuring generalized trust.....	98
Table 3.3 – Random effect model on trustworthy and trusting behaviours with strangers.....	106

Table 3.4 – Random effect model on trusting behaviours towards strangers for whom positive reports are available.....108

Introduction

At the 2017 White House Correspondents' Dinner, a well-known American comedian argued: "We are living in a strange time, where trust is more important than truth" (Minhaj, 2017). Though this statement was meant to criticize Donald Trump's presidency and rhetoric, it is also a sharp acknowledgement of the emergent role of trust in the modern era. In fact, contemporary societies appear to strongly depend on people's positive expectations about others and institutions (Luhman, 1979): in our daily life we are overwhelmed by information that is relevant to reduce the uncertainty characterizing the world around us and make reasonable decisions. However, no individual can exhaustively evaluate such information. To manage this complexity in our everyday routine, we need to rely on others. That is, given the impossibility to consider carefully all facts available, we simply assume that other people, institutions or collective actors will behave as we presume they should, making bearable (at least on a psychological ground) the uncertainty that surrounds us (Luhman, 1979). Under this perspective, trust accompanies us continually: leaving our children at school, voting in local elections, giving our house keys to a friend are very different actions but they all imply the placement of trust towards some actors (the teachers, the local functionaries, our friend).

In this thesis, I examine the mechanisms underlying the emergence of trust towards our unknown fellow citizens (that is, generalized or social trust). In particular, I analyse current institution-centred and society-centred explanations, exploring how different types of social connections and institutional performances affect our propensity to trust strangers. Three papers are at the core of my PhD work.

The first paper (“Social Dysfunctions and Generalized Trust: The Mediating Role of Institutional Trust”) illustrates that when a society does not promote the good of its members and the norms of communal living are frequently broken, generalised trust declines. More specifically, building upon institutional theory, I suggest that the association between poor macro-level conditions and individuals’ social trust is mostly due to the mediating role of institutional trust – rather than the specific economic and social challenges that such circumstances imply. Combining data from the European Social Survey (ESS) with regional information from EUROSTAT, I use advanced statistical techniques, such as Multilevel Structural Equation Modelling (Preacher et al. 2010), to show that in regions that underperform in terms of employment prospects and lack of crime, people do not trust strangers because they are likely to believe the state will not fulfil its obligations.

In my second paper “Social Connections and Generalized Trust: Exploring the Reasons Behind the Correlation”, I move to the society-centred perspective. The article points out the lack of theory and empirical research, exploring why we observe that interactions with people we know lead us to trust people we do not know. In this sense, I re-evaluate the theoretical relevance of out-group contact (Bridging effect) and social ties’ density in a community (Spillover effect) in promoting generalised trust. Following Abascal and Baldassari (2015), I assess the validity of the Bridging mechanism by considering the role of several forms of out-group contact on generalised trust, separating their effect from the one of contextual diversity. Moreover, I test the Spillover effect by looking at how the density of associations,

neighbourhood and friendship connections in a community influences people's propensity to trust strangers, controlling for individuals' social ties.

Finally, in my third paper "Does Community Social Embeddedness Promote Generalized Trust? An Experimental Test for the Spillover Effect", I focus on the Spillover effect and propose a novel experimental design to thoroughly assess its causal validity. In particular, by changing the average number of social links among individuals, I check if trusting behaviours are more common when subjects are allocated to denser communities. Results from an experiment funded by the ESSEXlab and involving 158 subjects demonstrate that the overall density of social ties can effectively promote trusting behaviours towards strangers independently from the individual level of social integration, supporting the relevance of this mechanism.

Chapter 1

Social Dysfunctions and Generalized Trust: The Mediating Role of Trust in Institutions

1.1 Introduction

Most of our daily social interactions involve anonymous others of which we know nothing or very little about. Despite this uncertainty, cooperation is not rare. In fact, contemporary societies tend to deeply rely on positive impersonal interactions among strangers who believe that their positive expectations about the behaviours of other actors will be reciprocated (Giddens, 1984; Luhmann, 1979). This propensity to trust people we do not know (that is, to place generalized or social trust) has been argued to be a central feature of our society (Knack and Keefer, 1997; Putnam 1993, 2000; Zak and Knack, 2001), and understanding how it emerges is a relevant part of the social sciences' agenda.

In this sense, empirical research has shown that when a society is not regulated in a way that fosters the good of all its members and the norms of communal living are frequently broken, social trust declines. For instance, studies looking at the impact of material deprivation, unemployment, crime and poverty rates on trust indicate that in areas where this social upheaval is more prominent, people, regardless their personal condition, are less likely to believe in the trustworthiness of their unknown fellow citizens (e.g. Fieldhouse and Cutts, 2010; Galea et al., 2002; Kawachi et al., 1999; Kennedy et al., 1998; Laurence, 2009; Lederman et al., 2002; Phan, 2008; Portes and Vickstrom, 2011; Sturgis et al., 2011).

Noticeably, the institution-led perspective claims that when institutions are universally oriented, act as an actual and fair enforcer of the law, and deliver services and goods in an impartial and effective way, people will be more prone to think that

the state will successfully intervene to decrease opportunism and arbitrate disputes, leading to the conviction that trusting strangers involves fewer risks (Levi, 1998; Freitag and Bulhmann, 2009; Robbins, 2012; Rothstein and Stolle, 2008; You, 2012). According to this line of thought, when in a certain area there is a lack of goods that entails a scarce ability of the state to fulfil its functions, individuals' lower propensity to trust fellow citizens should be due to a weaker confidence in the state.

Though this argument strongly relies on the intervening function of institutional trust, virtually no empirical analysis examined its validity. As a matter of fact, there is a major lack of research in this respect, as we do not even have evidence of significant correlational relationships confirming (or disconfirming) the mediation argument. This has left unclear whether it is plausible to assume that the association between poor macro-level conditions and individuals' social trust passes through a common factor, namely institutional trust. That is, do really worse economic and social conditions lead us to distrust other citizens because of our lost faith in the state? Or is this more likely due to the specific challenges posed by economic and social disruptions?

This paper is the first study investigating the mediating role of institutional trust on the relationship between macro indicators of social upheaval and generalized trust. Using data from the European Social Survey (ESS – 2010) in combination with regional information (NUTS II¹ level) from EUROSTAT², we employ Multilevel

¹ The NUTS classification (Nomenclature of territorial units for statistics) is a hierarchical system composed by three levels (NUTS I, NUTS II, NUTS III) that subdivides each State into a certain number of NUTS I regions, each of which is in turn subdivided into a number of NUTS II regions, and so on. Though the NUTS subdivision attempts to match administrative divisions within the country,

Structural Equation Modelling (MSEM – fitted via Mplus 7.4) to address this gap in the literature with the most adequate statistical techniques currently available. In particular, moving beyond traditional methods to assess mediation (e.g. Baron and Kenny, 1986; Mackinnon et al., 2002), we follow Preacher et al. (2010) to properly test multilevel mediation³ and use MSEM to separate the between and within component of the intervening variable, avoiding bias in the calculation of the indirect effect.

Although employing panel data is generally preferable, this is practically unfeasible to test the mediation argument presented above, as it would imply the use of a 3-level mediation SEM⁴, which is still a research area⁵ (see Preacher, 2011 for more details). Additionally, the paucity of longitudinal datasets gathering information on relevant macro-institutional factors and different forms of trust⁶ further indicates how impractical this line of research currently is. Thus, in line with Muthén, “SEM mediation analysis [is here applied] as a useful exploratory tool rather than a confirmatory causal analysis device, as is sometimes claimed” (Muthén 2011:44).

this is not always the case. NUTS II regions, in particular, try to correspond to administrative units where regional policies are applied.

² The ESS and EUROSTAT datasets are excellent resources for our purposes, as they gather information on several types of trust as well as regional economic and social conditions for a large and heterogeneous number of cases.

³ Sensitivity analysis (Imai et al. 2010) for multilevel mediation models has not been developed yet (Preacher 2015; Tingley et al. 2014), and therefore we could not implement it in the analysis.

⁴ Observations at each point in time would be clustered within individuals, who would be clustered within NUTS II regions.

⁵ While traditional mediation multilevel modeling (MLM) estimates biased coefficients that conflate across levels, MSEM can correctly estimate multilevel mediation. However, in the 3-level mediation case MSEM presents several limitations. For instance, Preacher points out that “no SEM software is yet [...] optimized to fit three-level models” and that “[proposed] three-level models [to assess multilevel mediation] require three-stage random sampling” (Preacher, 2011:724, 727), a condition rarely achieved.

⁶ In particular, two main issues limited our choice: (1) the lack of a satisfactory number of waves and cases both at the individual and aggregate levels; (2) the lack of significant variation in values of macro factors (e.g. regional homicide rates) for countries where adequate longitudinal surveys were available (e.g. Switzerland or Denmark).

The aim is to evaluate the solidity of correlational relationships essential to the validity of mediating mechanism underlying the institutional perspective.

In this sense, we start by taking into consideration a traditional institution-centred argument, and examine how the deficiency of state's protection of citizens (measured by regional homicide rates) affects individuals' generalized trust and if this is attributable to institutional trust. Subsequently, we contribute to the theoretical debate by arguing that the mediating role of institutional trust highly depends on citizens' perception of state's duties. That is, we claim that if citizens see the provision of a good as a state responsibility, its lack will create a stronger mediation effect, producing a more significant drop in our institutional trust, and consequently a lower propensity to rely on strangers. This should affect also goods that are *not* related to the state's ability to act as an effective and impartial enforcer, since people might see the state as responsible for goods and services unrelated to such aspects (e.g. free health care and education). In this sense, we compare how the mediation effect operates for people with different perceptions of the role of government in respect to two different goods: citizens' safety (measured by homicide rates) and job security (measured by long-term unemployment rates). As the former is strongly entangled with state's capacity to act as an effective and impartial enforcer, while the latter is not, we are able to explore different aspects of the mediation mechanism.

1.2 Theory, Hypotheses and Literature

Social dysfunctions and generalized trust: the role of effective enforcement

Institutional accounts of trust assert that ‘the state can favor the development of social trust by sanctioning those who do not honor trust placed in them. If we know that any non-compliance with an agreement will be sanctioned by the state, we will have greater expectations about other people’s compliance.’ (Herreros, 2004:75) ‘Nevertheless, in real life, states are not perfect enforcers of agreements.’ (Herreros and Criado, 2008:57), and they are able to punish defectors only in some instances. That is, ‘courts only apply sanctions with probability p when player breaks the agreement’ (Herreros and Criado, 2008:57). Thus, players would place trust only if p is reasonably high. Yet the exact probabilities the state will effectively intervene are not known, and citizens will need to estimate p on the basis of a series of factors, such as past institutional performances, values and criteria followed, and so on.

One of the aspects most widely emphasized as pivotal in the promotion of trust across the literature is the capacity of the state to act as an effective enforcer: if institutions are unable to practically prevent and punish law-breaking, individuals’ evaluation of state’s reliability should tend to be negative and therefore social trust would not be fostered (Levi, 1998; Rothstein and Stolle, 2008). Along these lines, for instance, Freitag and Bulhmann, (2009) argue that ‘if there is reason to suspect that the rule of law in a given country is weak, such that legal organs like the judicial system or law enforcement are unable to ensure secure contracting [...], mistrust between individuals is more likely to develop’ (Freitag and Bulhmann, 2009:1544). Similarly, Robbins (2012) writes: ‘institutional incentives allow individuals to feel safe and secure in their exchanges with others. As long as these incentives provide the perception that institutional actors are able to minimize opportunism, then institutions

foster the belief and expectation that anonymous others are reliable' (Robbins 2012:2).

Using subjective-based measures of institutional quality, previous empirical research has corroborated such claims by showing that in areas connoted by more effective enforcement of private agreements, protection of legal rights, and lower levels of corruption, trust in our unknown fellow citizens is more likely to emerge (Charron, Dijkstra and Lapuente 2014; Herreros and Criado, 2008; Herreros 2012, 2004; Richey, 2010; Robbins 2012, 2011; Rothstein and Stolle, 2008; Rothstein and Uslaner, 2005; You, 2012). However, while these inquiries thoroughly investigate the direct impact of institutions' performances on social trust, they neglect the intervening role of trust in institutions on the relationship, leaving untested the mediation mechanism (notwithstanding its theoretical relevance). The only exception seems to be represented by You's (2005) work 'A comparative study of corruption, inequality, and social trust'⁷, where using data from the World Value Survey (1995-1997 and 2000-2001) and the European Value Survey (1999-2000), he runs several hierarchical models to survey how higher levels of corruption at the country-level influence individuals' political and social trust. Other studies that have taken into account some of the same concepts considered in You's analysis appear to be in line with his results, showing that institutional and social trust are positively and significantly correlated in cross-sectional and panel analyses (e.g. Brehm and Rahn, 1997; Allum et al., 2010; Sønderskov and Dinesen 2015, 2014; Tao et al., 2014), while macro-institutional factors have a relevant impact on trust in political institutions (Richey, 2010; Van Der Meer and Dekker, 2011; Zmerli and Hooghe, 2011). Taken together

⁷ Notice that in the latter version of this article (You 2012) results for the mediation mechanism are not shown.

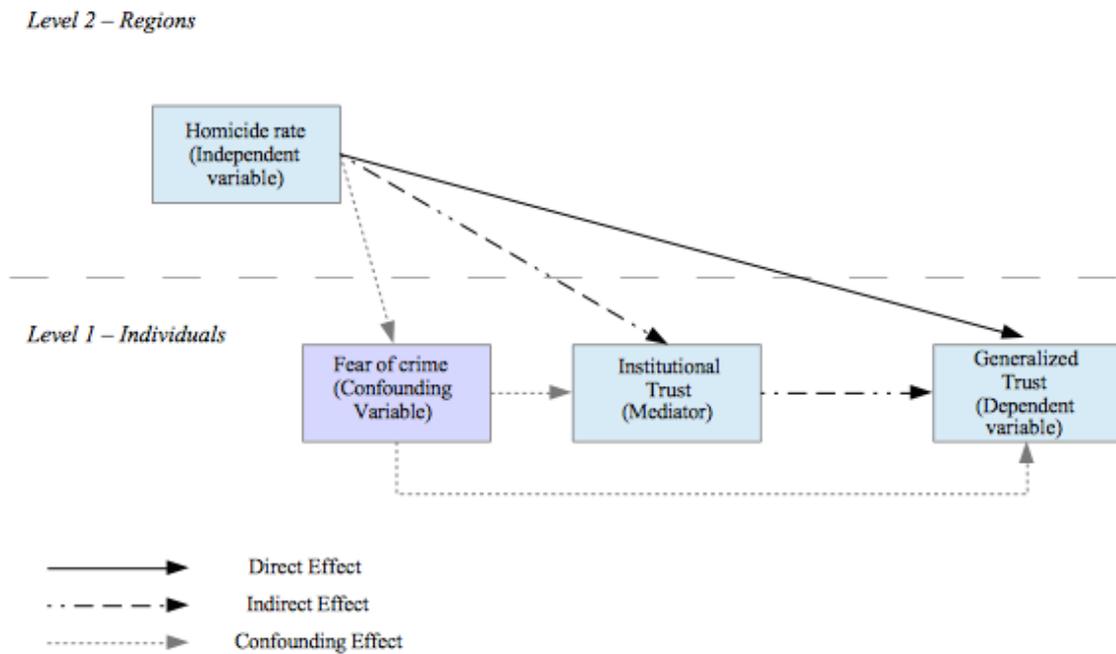
these findings are encouraging, and provide probatory evidence for the mediation mechanism.

As already mentioned, the mediation argument concerning the role of institutional trust offers an interesting interpretative key to understand how institutions practically affect our tendency to trust anonymous others. In particular, it implies that when goods lacking in an area indicate a lower state's ability to decrease chances of defection from other unknown fellow citizens, individuals would be inclined to believe that the state cannot guarantee their security when interacting with strangers, diminishing therefore people's propensity to place generalized trust.

An exemplifying case for this mediation mechanism would be represented by the reported association between measures of state's inability to assure citizens' safety, such as higher crime (e.g. homicide, assaults or robberies) rates, and lower trust (Galea et al., 2002; Kawachi et al., 1999; Kennedy et al., 1998; Lederman et al., 2002; Messner et al., 2004; Rosenfeld et al., 2007). According to the institutional framework, indeed, these negative correlations should not be attributed simply to a higher fear of crime (as argued in the literature – Bauer, 2014; Messner et al., 2004), but *also* to a general mistrust in the institutions. That is, living in an area with more homicides would lead us to believe that the state is generally unable to carry out its job, leaving us unprotected even for occurrences unrelated with the crimes committed in the area. As a result, distrusting in most of our interactions with strangers would appear the safest option to reduce hazards. Empirically, if this interpretation is correct, we should find some confirmation to the following hypothesis: (H1) *individuals living in regions with higher homicide rates are less likely to trust*

institutions, and less likely to place generalized trust, even when they have the same degree of fear of being victims of a crime.

Figure 1.1 – Mediation model for homicide rates with relevant confounder



Social dysfunctions and generalized trust: a responsibility-based mechanism

Another macro-institutional factor often presented as crucial in the promotion of trust (alongside the effectiveness of law enforcement) is the fairness and impartiality of the state. This position rests on the notion that if institutions do not treat everyone according to the same set of principles and do not allow equal opportunities, people will believe that the state will side with one actor over the others, favouring the development of treacherous attitudes and behaviours (Robbins, 2012; Rothstein, 2013; Rothstein and Stolle, 2008; You, 2012). Several analyses support this assertion showing the existence of a direct impact of higher levels of perceived unfairness and economic inequality on social trust (Ariely and Uslaner, 2014; Bjørnskov, 2007; Freitag and Bullmann, 2009; Rothstein and Uslaner, 2005; Rothstein and Eek, 2009).

More interestingly, results indicate that even after having controlled for different forms of inequality (e.g. Gini Index), better institutional performances in economic terms (e.g. lower poverty and unemployment rates or higher GDP per capita) are significantly and positively correlated with higher levels of trust and social cohesion at the individual level, regardless of individual's economic status (Fieldhouse and Cutts, 2010; Gesthuizen et al., 2009; Gundelach and Traunmuller, 2014; Hooghe et al., 2009; Twenge et al., 2014).

This points out a limitation of current institutional models: if the placement of trust depends on the belief that the state will discourage opportunism and not side with one part over the others, why do people living in regions with the same degree of inequality but better overall conditions are more likely to trust strangers? We suggest that this empirical regularity can be plausibly explained *within* the institutional theoretical framework by hypothesizing that the mediation effect relies on a responsibility-based mechanism. More precisely, we argue that *individuals' propensity to trust institutions and (consequently) unknown fellow citizens highly depends on the delivery of goods that are seen by citizens as a state's responsibility to provide.*

To make this point clearer, let us assume that a certain number of people in a community think that the state should guarantee work for everyone, as well as free education and health care. However, these goods and services are not provided. Regardless of the point that delivering such goods is part of state's scope of actions and duties, the very fact that people think that this is the case will lead them to see the state as accountable for their absence. In turn this will contribute to reduce their

overall inclination to consider institutions as trustworthy: if the state is unable to ‘do its job’ in respect to such important issues, how can we trust it to act properly in relation to other central matters? Under this perspective, the absence of goods for which the state is *perceived* as responsible would be significant in reducing institutional trust, creating incentives to distrust our fellow citizens.

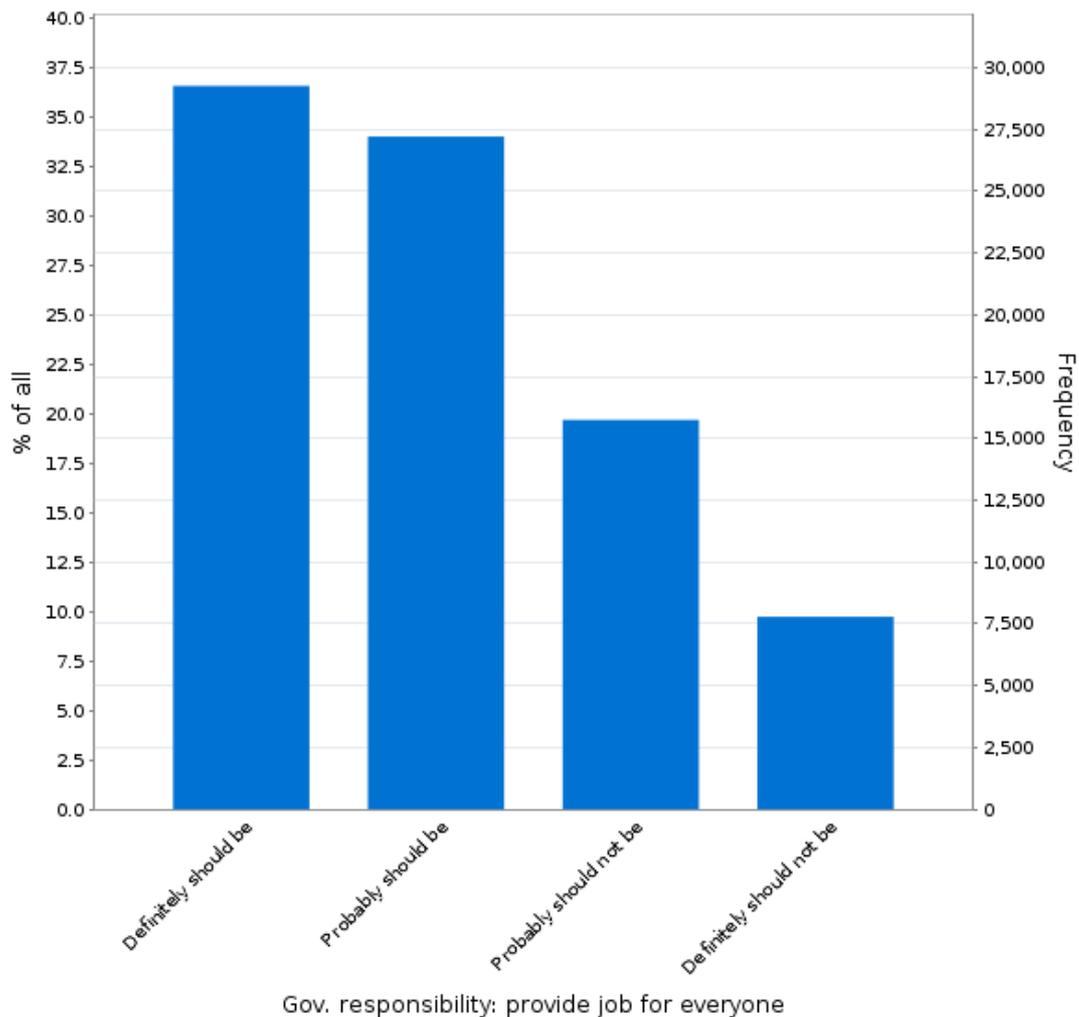
In order to test this claim, I follow two lines of inquiry. First, I consider the lack of citizens’ protection (measured by homicide rates) as an indicator of state’s inability to act as an effective enforcer, and test if the intervening function of institutional trust depends on subjects’ views of state’s duties. More specifically, I hypothesize that (H2) *the mediating role of institutional trust on the relationship between homicide rates and social trust will be stronger for people who believe that it is important for the government to ensure safety and security.*

Second, to assess the scope of the responsibility mechanism, I test if there is evidence of mediation when taking into account job insecurity (using the regional long-term unemployment rate) – an example of a good that is not related to the enforcing side of the state, but for which citizens can hold the government accountable. Indeed, promoting employment is mentioned in several constitutions as a formal obligation of the state⁸, and it is frequently reported as one of its key charges in cross-national surveys. For example, in all rounds of the International Social Survey Programme: Role of Government (ISSP 1985, 1990, 1996, 2006), which involves around 80,000 participants across 22 countries from 1985 to 2006, about 70.6 per cent of respondents indicated as a government’s responsibility to “provide job for everyone

⁸ For example, art. 3 paragraph 2 Italian constitution or art. 35 paragraph 1 Spanish constitution.

who wants one” as something that either “definitely should be” or “probably should be” (Figure 1.2).

Figure 1.2 – Opinion on “Government’s responsibility to provide a job for everyone” across 22 countries from 1985 to 2006

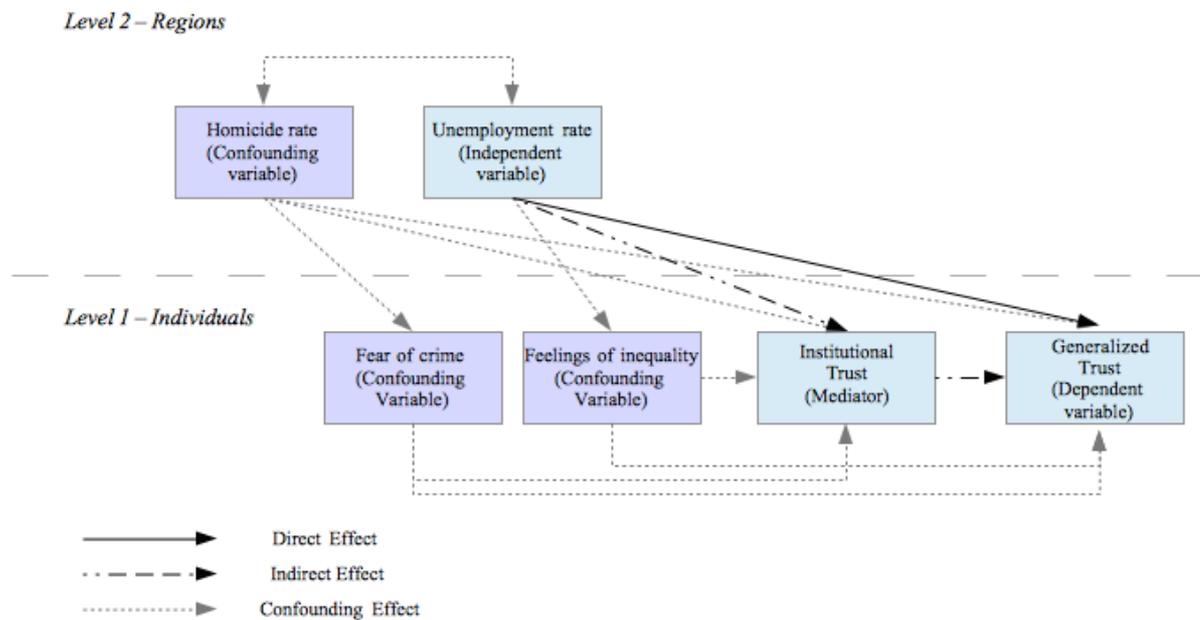


Source: ISSP-Role of Government I-IV rounds (1985, 1990, 1996, 2006). Countries: Australia, Canada, Czech Republic, France, Germany, Hungary, Ireland, Israel, Italy, Japan, Latvia, New Zealand, Norway, Philippines, Poland, Russia, Slovenia, Spain, Sweden, Switzerland, Great Britain, United States. The only countries that report a value lower than 50% for the categories ‘definitely should be’ and ‘probably should be’ combined are Australia, Canada, New Zealand, Switzerland, and United States.

To correctly assess the mediation mechanism, it is important to point out that unemployment is prone to be entangled with impartiality and security issues, which might influence both institutional and social trust. That is, living in areas where the

lack of jobs is more common can be associated to (1) the belief that equal treatment and opportunities for everybody is not guaranteed⁹, (2) higher levels of criminality (e.g. robberies and homicides) and therefore (3) a stronger fear of being victims of a crime, leading ultimately to less trustful attitudes. To estimate the intervening role of trust in institutions and rule out alternative interpretations of the phenomenon, these dimensions need to be taken into account.

Figure 1.3 – Mediation model for unemployment rates with relevant confounders



Thus, if institutional trust intervenes on the relationship between job insecurity and social trust, we should find that (H3) *individuals living in regions with higher unemployment rates will be less likely to trust institutions, and less likely to place generalized trust, even when they have the same degree of fear of being victims of*

⁹ While we control for impartiality demands at the individual level, we do not aim to test the institutional argument on state's impartiality. This is certainly an interesting line of inquiry for future research, which could analyze whether there is evidence of mediation for different impartiality indicators (e.g. GINI index, corruption etc.) either at the regional or country level.

crime, feel that people should have equal opportunities, and live in regions with the same homicide rates. In addition, if this relies on a responsibility-based mechanism, (H4) the mediating role of institutional trust will be stronger for people who believe that it is important for the government to intervene in the economy by protecting citizens in economic disadvantage.

1.3 Data, Methods and Variables

Data and Methods

The analysis will be conducted using official regional statistics from the EUROSTAT in combination with information from the 5th round of the ESS (2010), a cross-national survey carried out in Europe each two years from 2002. For the purposes of this study, we will take into consideration only respondents aged over 17 for countries that provide information on variables of interest¹⁰ at the regional level according to the NUTS II nomenclature system¹¹, giving us a total sample of 27,264 respondents spread on 145 NUTS II regions (see table 1.1 for more details).

¹⁰ Switzerland has been excluded because of the lack of information available for this country at the NUTS II level.

¹¹ We excluded NUTS II regions that correspond to an entire country (e.g. Lithuania and Estonia) or present inconsistencies with the ESS dataset due to modification of NUTS coding (e.g. Finland and Croatia) after the implementation in 2012 of the ‘NUTS nomenclature 2010’, which changed the subdivision of the territory of the European Union at the regional level.

Table 1.1 - Sample size, countries and NUTS II regions¹²

Country	Number of Individuals	Number of NUTS II regions	Average number of individuals per NUTS II
Belgium	1,594	11	145
Bulgaria	2,096	6	349
Czech Republic	2,146	8	268.25
Denmark	1,438	5	287.6
Spain	1,731	18	96.2
France	1,619	21	77.1
Greece	2,539	13	195.3
Hungary	1,338	7	191.1
Ireland	2,124	2	1,062
Netherlands	1,676	12	140
Norway	1,433	7	205
Poland	1,472	16	92
Portugal	1,894	5	378.8
Sweden	1,337	8	167.13
Slovenia	1,203	2	601.5
Slovakia	1,624	4	406
(TOTAL)			
16	27,264	145	188.03

Source: ESS 2010

Preliminary exploration of data revealed a significant Intra-Class Correlation for NUTS II regions equal to 17 per cent for the dependent variable ‘Generalized Trust’, indicating that analysing regional level differences represents an extremely important line of inquiry (though often overlooked). Also, it seems relevant to point out that focusing on regional level data offers a number of advantages over national level data by granting a larger sample size and higher statistical power as well as the possibility to capture heterogeneity within countries (a point particularly significant for states connoted by substantial internal differences, such as France or Spain)¹³.

¹² Ireland has a large number of individuals per NUTS II. However, excluding or including this country from the analysis does not change results significantly.

¹³ NUTS II regions have been preferred to NUTS III regions for a number of reasons: (1) NUTS II regions tend to correspond to areas where regional policies are applied, potentially establishing a link between the lack of a specific good and individuals’ view on the state. (2) NUTS II regional information are richer (i.e. more variables are accessible for this level of analysis) and available for more countries (creating more variability). (3) When we investigate sub-populations, our analysis requires a minimum number of subjects per region, which is always satisfactory with NUTS II. The same, however, is not true for NUTS III regions.

In order to take into account the lack of independence among observations and analyse how macro-factors at the regional level affect individuals' propensity to trust, we employ a recursive multilevel structural equation model where individuals (level 1) are nested within NUTS II regions (level 2). Given the multilevel design of the mediation model, we follow Preacher et al. (2010) and calculate the effect of the intervening variable by separating its between and within component. This allows us to avoid conflation and obtain an unbiased estimate of the between indirect effect¹⁴.

To analyse the responsibility mechanism, I consider the following subsamples: people who think that it is important for the government to ensure safety, and people who believe that the government should protect citizens in economic disadvantage. Respondents who identify themselves with the following statement (by answering either "Very much like me" or "like me") are part of the first subsample: "Now I will briefly describe some people. Please listen to each description and tell me how much each person is or is not like you. It is important to her/him that the government ensures her/his safety against all threats. She/he wants the state to be strong so it can defend its citizens". The second subsample is constructed using the following statements: "The government should take measures to reduce differences in income levels" and "The government should do more to prevent people falling into poverty". People who "agree" or "agree strongly" with both statements, or "agree strongly" with one of the two statements but "neither agree or disagree" with the other one were included in the second subsample.

¹⁴ Replicating results with traditional multilevel mediation modelling, where the within and between components of the intervening variable conflate, the mediation effect remains significant, though its size decreases.

Variables

The dependent variable, social trust, is measured by using a 11-points scale based on the standard question: ‘Generally speaking, would you say that most people can be trusted, or that you can’t be too careful in dealing with people?’ Differently, institutional trust, the mediation variable, is obtained by combining respondents’ reported trust in the country’s parliament, legal system and parties (see table 1.2 for more details).

The level of unemployment is calculated by using the long-term unemployment rate, namely the number of registered unemployed in a NUTS II region for a period equal or superior to 12 months divided by the total number of active people in the region¹⁵. We also use a squared term of unemployment under the assumption that small differences in the long-term unemployment rate among prosperous regions might produce a steep drop in the confidence in the state and fellow citizens (while the effect would be much more tempered among poorer regions). The homicide rate is estimated by dividing the number of homicides reported to the police¹⁶ by the total number of residents in the region. The result is then multiplied by 100,000.

To address possible sources of bias and adequately separate the impact of regional factors from individual ones, on the basis of previous literature, we select and control for covariates that might correlate with the dependent, independent and mediation variables. In this sense, we include measures of GDP per capita, life expectancy at age less than one, net immigration rate, population density, and area in km² to account for different levels of wealth, general well-being, diversity, regions’ size and

¹⁵ The long-term unemployment has been considered as a more effective indicator of lack of jobs, since it is more likely to be closer to individuals’ perception of daily life and less dependent on time variations or sudden economic crisis.

¹⁶ Measuring crime by using the number of cases reported to the police is likely to underrepresent the real dimension of the phenomenon. However, this issue should be mitigated to some extent in the case of homicide, since it is less prone to suffer of underreporting in comparison to other types of crime.

population concentration at the NUTS II level (Alesina and La Ferrara, 2002; Costa and Kahn, 2003; Freitag and Buhlmann, 2009; Putnam, 2007; Robbins, 2011; Stolle et al., 2013; You, 2012). Likewise, at the individual level, we apply controls for gender, education, age, political interest, perceived economic status, employment, being member of a group discriminated against in the country (e.g. for racial or religious reasons)¹⁷ and social connections (Brehm and Rahn, 1997; Putnam, 2000; Sønderskov and Dinesen 2015, 2014; Tao et al., 2014).

¹⁷ Minority status has often been found to be negatively correlated with trust as a result of discrimination. Here we measure directly feelings of discrimination instead of using proxies such as race.

Table 1.2 – Operationalization of concepts¹⁸

Variables' description	Mean	S.D.	Range	Obs individual level (obs NUTS II level)
Generalized Trust: 0 = Can't be too careful 10 = Most people can be trusted	4.80	2.47	0-10	27,264 (145)
Trust in Parties: 0 = No trust at all 10 = Complete trust	3.11	2.36	0-10	27,264 (145)
Trust in the Legal System: 0 = No trust at all 10 = Complete trust	4.58	2.68	0-10	27,264 (145)
Trust in country's Parliament: 0 = No trust at all 10 = Complete trust	3.87	2.59	0-10	27,264 (145)
Age	49.09	17.74	18-101	27,264 (145)
Gender: 0 = Female 1 = Male	0.47	0.50	0-1	27,264 (145)
Education: 0 = Lower secondary or less 1 = Upper secondary 2 = Advanced vocational, sub-degree 3 = Bachelor, Master or higher	1.18	1.09	0-3	27,264 (145)
Political Interest: 1 = very interested 2 = quite interested 3 = hardly interested 4 = not at all interested	2.68	0.92	1-4	27,264 (145)
Social connections: (How often socially meet with friends, relatives or colleagues) 1 = never 2 = Less than once a month 3 = once a month 4 = several times a month 5 = once a week 6 = several times a week 7 = every day	4.84	1.63	1-7	27,264 (145)
Unemployed: 0 = being employed in the last 7 days 1 = not being employed in the last 7 days	0.09	0.29	0-1	27,264 (145)
Perceived economic status: (Feeling about household's income nowadays)	2.18	0.94	1-4	27,264 (145)

¹⁸ Homicide rates were unavailable for the following countries: Greece, Ireland and Netherlands.

1 = living comfortably on present income 2 = coping on present income 3 = difficult on present income 4 = very difficult on present income				
Member of a group discriminated 0 = No 1 = Yes	0.06	0.24	0-1	27,264 (145)
Feelings of inequality: (Important that people are treated equally and have equal opportunities) 1 = very much like me 2 = like me 3 = somewhat like me 4 = a little like me 5 = not like me 6 = not like me at all	2.19	0.94	1-6	27,264 (145)
Fear of crime: (Feeling of safety of walking alone in this area after dark) 1 = very safe 2 = safe 3 = unsafe 4 = very unsafe	2.07	0.80	1-4	27,264 (145)
Life Expectancy: Life expectancy at age less than one	79.23	2.76	72.7-84	27,264 (145)
Net Immigration rate (including statistical adjustment): Total Change of the Population – Natural Change of the Population	0.68	10.89	-48.1-26.53	27,264 (145)
Total Area expressed in km ²	19.14	19	0.161-165.3	27,264 (145)
Population density: Annual average population/Total area of the region in km ²	284.33	555.6	3.3-6902	27,264 (145)
GDP at current market price: Euro per inhabitant in percentage of the EU average	95.52	57.15	12-284	27,264 (145)
Homicides per 100,000 residents: Number of homicides reported to police/ Resident Population * 100,000	1.17	0.60	0.24-3.10	20,925 (117)
Long-term unemployment rate: Number of registered unemployed for 12 or more months/ Number of active people	4.53	2.66	0.79-12.33	26,091 (137)

Source: ESS 2010 and EUROSTAT

Finally, in line with what argued in the theoretical section, we include measures of “Fear of crime” and “Feelings of inequality” in models estimating mediation to properly test hypotheses put forward.

1.4 Results

The Traditional Institution-Centred Perspective

Let us begin by commenting results from a two-level structural equation model on generalized trust with ‘Homicide’ and ‘Institutional trust’ as predictors.

Model 1 (table 1.3) shows that, at the NUTS II level, ‘GDP per capita’ and ‘Homicide’ are well associated with social trust: in line with prior studies, living in areas connoted by higher overall levels of wealth and security is strongly beneficial to trust in our unknown fellow citizens. ‘Life expectancy’ is also significant, but the direction of its effect is negative and opposite to the one expected. This unusual outcome is likely to be due to the strong correlation of ‘Life expectancy’ with ‘GDP per capita’¹⁹. ‘Net immigration rate’ has a positive but weak impact in the equation, which tends to fade away when we include more controls – in accordance with Hooghe et al.’s (2009) analysis. ‘Population density’ has also a significant effect on social trust, indicating that in more urbanized areas trust towards our fellow citizens is less common.

¹⁹ Correlation between ‘Life expectancy’ and ‘GDP’ is equal to .70. ‘Life expectancy’ correlates quite relevantly also with ‘Homicide’ ($r = -.54$). Nevertheless, multicollinearity does not emerge as an issue in any model: 1/VIF is always above 0.1.

At the individual level, the analysis points out the relevance of usual predictors of trust: ‘Education’, ‘Social connections’, ‘Perceived economic status’ and ‘Member of a discriminated group’²⁰ are indeed all positively and significantly correlated with generalized trust. In particular, while variables representing objective individuals’ economic conditions (such as ‘Unemployment’ or ‘Income’ – not shown) tend to have a minor role, the perception of a better economic status is solidly associated with the dependent variable. Other covariates, such as ‘Gender’, ‘Age’ and ‘Political interest’, are insignificant in the equation, most likely because of the wide set of controls applied. As concerns ‘Institutional trust’, Model 1 indicates that it is a very solid predictor at the individual level: people who tend to believe that they can rely on the legal system, parliament, and parties of the country will be very prone to place positive expectations towards strangers. This result (along with the negative effect of ‘Homicide’) supports the institutional perspective. However, it does not tell us whether or not institutional trust has an intervening role.

²⁰ ‘Member of a discriminated group’ is a significant predictor ($p < 0.001$) of social trust when we do not include in the model institutional trust (not shown), which is well related to both variables and absorbs the effect.

Table 1.3 – MSEM testing mediation effect of institutional trust on homicide²¹

	Model 1 MSEM no Mediation		Model 2 MSEM with Mediation	
Individual level				
<i>INSTITUTIONAL TRUST BY</i>				
Trust in Parties	1.000	(-)	1.000	(-)
Trust in Legal System	1.104***	(0.020)	1.011***	(0.024)
Trust in Parliament	1.210***	(0.018)	1.255***	(0.019)
<i>SOCIAL TRUST ON</i>				
Institutional Trust	0.389***	(0.020)	0.380***	(0.022)
Political Interest	-0.017	(0.028)	-0.01	(0.027)
Age	-0.003	(0.001)	-0.001	(0.001)
Male	0.033	(0.035)	-0.076	(0.039)
Education	0.223***	(0.018)	0.219***	(0.018)
Unemployment	-0.072	(0.047)	-0.097*	(0.047)
Perceived Economic Status	-0.120***	(0.026)	-0.109***	(0.025)
Social Connections	0.068***	(0.016)	0.063***	(0.016)
Member of a Discriminated Group	-0.156	(0.08)	-0.124	(0.078)
Fear of Crime			-0.331***	(0.026)
NUTS II Level				
<i>INSTITUTIONAL TRUST BY</i>				
Trust in Parties			1.000	(-)
Trust in Legal System			1.288***	(0.067)
Trust in Parliament			1.105***	(0.053)
<i>INSTITUTIONAL TRUST ON</i>				
GDP			0.014***	(0.002)
Net Immigration			0.007	(0.005)
Population Density			-0.000***	(0.000)
Area in Km2			0.004**	(0.002)
Life Expectancy			-0.101***	(0.027)
Homicide			-0.239*	(0.102)
<i>SOCIAL TRUST ON</i>				
Life Expectancy	-0.087***	(0.021)	-0.043	(0.023)
GDP	0.009***	(0.001)	0.002	(0.001)
Net Immigration	0.011*	(0.005)	0.008*	(0.004)
Population Density	-0.000***	(0.000)	-0.000	(0.000)
Area in Km2	0.004**	(0.002)	0.002	(0.002)
Homicide	-0.301***	(0.075)	-0.165*	(0.072)
Institutional Trust			0.760***	(0.087)
Homicide Indirect Effect			-0.182*	(0.078)
% of Total Effect			52%	
N(groups)	21351 (117)		21172 (117)	
RMSEA	0.027		0.026	
R2 Between	0.564		0.826	
R2 Within	0.158		0.138	

Unstandardized Coefficients. Standard errors in parentheses. MLR. All endogenous variables are assumed to be correlated between each other. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Source: ESS 2010 and EUROSTAT.

²¹ To calculate the standardized coefficient of the indirect effect, we would need to employ multilevel bootstrapping to compute the standard errors. However, this is still a research area. Thus, we preferred to use unstandardized coefficients.

To test this, I allow for mediation in Model 2 by adding relevant paths in MSEM and separating the cluster-level component of institutional trust from the individual-level one (Preacher et al. 2010). In the first place, it can be noticed that Model 2 has a better fit to data than Model 1, indicating that the mediation model is more accurate. Secondly, the between indirect effect of trust in institutions represents about 52 per cent of the total effect of ‘Homicide’ on ‘Social trust’ ($p < 0.05$)²². Including ‘Fear of crime’, institutional trust remains an extremely relevant predictor in the equation, and exhibits a large intervening role. This means that in regions with more homicides people’s propensity to confide in institutions and strangers falls, even if they are not more afraid of being victims of a crime.

Furthermore, alternative models testing a potential mediating function of ‘Fear of crime’ (not shown) presented insignificant results, indicating that it is the drop of our faith towards institutions (rather than ‘Fear of crime’) to lead us to mistrust fellow citizens when the state seems unable to act as an effective enforcer. Ultimately, such findings provide a confirmation to H1 and the traditional institution-centred approach.

²² Considering the low sample size at the NUTS 2 level ($n=117$), this significance level is indeed quite relevant.

Table 1.4 – MSEM testing mediation effect of institutional trust by people’s views on state’s duties

	Model 3 MSEM with Mediation		Model 4 MSEM with Mediation	
	Subsample: Important that Government ensures safety		Subsample: Not Important that Government ensures safety	
Individual level				
<i>INSTITUTIONAL TRUST BY</i>				
Trust in Parties	1.000	(-)	1.000	(-)
Trust in Legal System	1.008***	(0.027)	0.998***	(0.031)
Trust in Parliament	1.240***	(0.019)	1.286***	(0.033)
<i>SOCIAL TRUST ON</i>				
Institutional Trust	0.388***	(0.026)	0.364***	(0.021)
Political Interest	0.014	(0.035)	-0.054	(0.035)
Age	-0.002	(0.002)	0.001	(0.002)
Male	0.009	(0.051)	-0.228***	(0.044)
Education	0.213***	(0.021)	0.205***	(0.026)
Unemployment	-0.107	(0.066)	-0.114	(0.084)
Perceived Economic Status	-0.09**	(0.032)	-0.158***	(0.030)
Social Connections	0.064**	(0.019)	0.070**	(0.022)
Member of a Discriminated Group	-0.157	(0.099)	-0.035	(0.131)
Fear of Crime	-0.284***	(0.031)	-0.423***	(0.039)
NUTS II Level				
<i>INSTITUTIONAL TRUST BY</i>				
Trust in Parties	1.000	(-)	1.000	(-)
Trust in Legal System	1.356***	(0.068)	1.236***	(0.076)
Trust in Parliament	1.138***	(0.063)	1.048***	(0.053)
<i>INSTITUTIONAL TRUST ON</i>				
GDP	0.013***	(0.002)	0.014***	(0.002)
Net Immigration	0.005	(0.004)	0.008	(0.005)
Population Density	-0.000**	(0.000)	-0.000***	(0.000)
Area in Km2	0.003*	(0.001)	0.006***	(0.002)
Life Expectancy	-0.098***	(0.027)	-0.111***	(0.030)
Homicide	-0.29**	(0.105)	-0.124	(0.100)
<i>SOCIAL TRUST ON</i>				
Life Expectancy	-0.060*	(0.025)	-0.009	(0.028)
GDP	0.003*	(0.002)	0.000	(0.002)
Net Immigration	0.008	(0.004)	0.008	(0.004)
Population Density	-0.000	(0.000)	-0.000	(0.000)
Area in Km2	0.004*	(0.002)	-0.001	(0.002)
Homicide	-0.208**	(0.078)	-0.185	(0.098)
Institutional Trust	0.693***	(0.082)	0.851***	(0.136)
Homicide Indirect Effect	-0.201**	(0.075)	-0.105	(0.085)
% of Total Effect	49%		36%	
N(groups)	13313 (117)		7476 (117)	
RMSEA	0.027		0.029	
R2 Between	0.826		0.793	
R2 Within	0.125		0.167	

Unstandardized Coefficients. Standard errors in parentheses. MLR. All endogenous variables are assumed to be correlated between each other. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Source: ESS 2010 and EUROSTAT.

The Responsibility Mechanism

To assess if the mediation effect depends on individuals' views of state's duties, we break down our sample in two (Table 1.4), and consider how mediation operates for people who believe that the government should ensure safety and security (Model 3), and people who do not (Model 4). Both models provide a good fit of data, have the same number of clusters, and a good average number of subjects per region.

As it can be noticed, the intervening role of institutional trust holds well in Model 3 ($p < 0.01$), and it is actually more significant than in the equation for the whole sample (Model 2). Differently, in Model 4 there is no evidence of mediation. Across all regions, people who are seeing the government as broadly responsible for guaranteeing safety are more likely to blame institutions for the poor level of security, and (consequently) to see interactions with others more risky. This supports the responsibility mechanism, showing that how institutional performances affect us depends on how we evaluate institutions, even for goods that are essential in an ordered society (i.e. citizens' protection). Arguably, this is more applicable to wealthy and prosperous countries, where security deficiencies tend to be minor and do not imply turmoil or governability issues.

Table 1.5 – MSEM testing mediation effect of institutional trust on long-term unemployment

	Model 5 MSEM no Mediation		Model 6 MSEM with Mediation		Model 7 MSEM with Mediation	
Individual level						
<i>INSTITUTIONAL TRUST BY</i>						
Trust in Parties	1.000	(-)	1.000	(-)	1.000	(-)
Trust in Legal System	1.006***	(0.027)	0.999***	(0.024)	1.011***	(0.025)
Trust in Parliament	1.186***	(0.018)	1.261***	(0.017)	1.246***	(0.02)
<i>SOCIAL TRUST ON</i>						
Political Interest	-0.026	(0.023)	-0.017	(0.022)	-0.013	(0.028)
Age	-0.004**	(0.001)	-0.002	(0.001)	-0.002	(0.001)
Male	0.027	(0.029)	-0.077*	(0.032)	-0.065	(0.040)
Education	0.209***	(0.016)	0.197***	(0.016)	0.223***	(0.019)
Unemployment	-0.091	(0.049)	-0.107*	(0.045)	-0.095	(0.049)
Perceived Economic Status	-0.145***	(0.028)	-0.141***	(0.028)	-0.11***	(0.026)
Social Connections	0.068***	(0.015)	0.059***	(0.015)	0.062***	(0.017)
Member of a Discriminated Group	-0.158*	(0.068)	-0.145*	(0.065)	-0.132	(0.080)
Institutional Trust	0.383***	(0.017)	0.385***	(0.019)	0.379***	(0.023)
Feelings of Inequality			-0.077**	(0.022)	-0.058*	(0.025)
Fear of Crime			-0.34***	(0.023)	-0.336***	(0.027)
NUTS II Level						
<i>INSTITUTIONAL TRUST BY</i>						
Trust in Parties			1.000	(-)	1.000	(-)
Trust in Legal System			0.923***	(0.078)	1.282***	(0.082)
Trust in Parliament			0.975***	(0.050)	1.121***	(0.066)
<i>INSTITUTIONAL TRUST ON</i>						
GDP			0.014***	(0.003)	0.014***	(0.003)
Net Immigration			0.004	(0.006)	0.005	(0.005)
Population Density			-0.000**	(0.000)	-0.000**	(0.000)
Area in Km2			0.005**	(0.002)	0.004**	(0.002)
Life Expectancy			-0.093*	(0.038)	-0.098**	(0.036)
Long-term Unemployment			-0.402***	(0.095)	-0.122	(0.092)
Long-term Unemployment (squared)			0.031***	(0.008)	0.012	(0.007)
Homicide					-0.219	(0.118)
<i>TRUST ON</i>						
GDP	0.006***	(0.001)	0.001	(0.002)	0.001	(0.002)
Net Immigration	0.002	(0.006)	0.001	(0.005)	0.007	(0.004)
Population Density	-0.000**	(0.000)	-0.000	(0.000)	-0.000	(0.000)
Area in Km2	0.003	(0.002)	0.001	(0.002)	0.001	(0.002)
Life Expectancy	-0.028*	(0.023)	-0.002	(0.021)	-0.026	(0.024)
Long-term Unemployment	-0.226***	(0.056)	-0.075	(0.061)	-0.08	(0.056)
Long-term Unemployment (squared)	0.016**	(0.005)	0.005	(0.005)	0.005	(0.004)
Institutional Trust			0.615***	(0.089)	0.743***	(0.086)
Homicide					-0.105	(0.080)
Long-term Indirect Effect			0.019***	(0.005)	0.009	(0.005)
% of Total Effect			79%		64%	
Homicide Indirect Effect					-0.163	(0.088)
% of Total Effect					60%	
N(groups)	26746 (137)		26091 (137)		19787 (111)	
RMSEA	0.023		0.024		0.026	
R2 Between	0.418		0.73		0.776	
R2 Within	0.161		0.145		0.138	

This leaves unclear if the intervening role of institutional trust can affect goods unrelated to security demands, but for which the state can be seen accountable, as argued in the theoretical section. To address this point, I will now discuss results for job insecurity. Table 1.5 displays the effect of ‘Long-term unemployment’ on ‘Social trust’ and how ‘Institutional trust’ intervenes on the relationship. Model 5 indicates that covariates roughly follow the same patterns. In addition, the squared term of ‘Long-term unemployment’ is well correlated ($p < 0.01$) with social trust, entailing that the relationship follows a convex curve (as expected). When we analyse the intervening role of institutional trust in Model 6 (which again provides a better fit to data in comparison to the model without mediation), results show that *ceteris paribus* the between indirect effect of institutional trust mediates 79 per cent of the total effect of long-term unemployment. This remains true when we control for ‘Fear of crime’ and ‘Feelings of inequality’, but once we account for different ‘Homicide’ rates across regions, the indirect effect of ‘Long-term Unemployment’ becomes insignificant.

In other words, though we find a meaningful intervening function of institutional trust on the relationship, this is vulnerable to wider controls. It is difficult to determine whether there is actually a mediation effect for ‘Long-term Unemployment’, as its insignificance might be driven by the correlation with ‘Homicide’ and the lower sample size at the NUTS 2 level.

In addition, results (table 1.6) do not support the idea that citizens’ views of state’s responsibility change the mediation effect as regards job insecurity²³. Indeed, when

²³ This remains true even if we exclude homicide from the analysis – not shown.

we look at how mediation is operating for people who think that the government should protect people in economic disadvantage (Model 8), and people who do not (Model 9), no relevant difference emerges between the two subsamples. On the other hand, the indirect effect of ‘Homicide’ appears to be more robust, as it remains significant ($p < 0.05$) when we properly account for different people’s views of state’s duties by breaking down our sample (Models 10 and 11), confirming once again the relevance of the responsibility mechanism in this respect.

Overall, the analysis indicates that a mediation effect, based on a responsibility mechanism, is in place for goods entailing scarce citizens’ protection, while the same conclusion does not hold for goods unrelated to safety demands, such as job insecurity. However, if we consider other covariates, it emerges that the mediation effect could be wider than what we originally assumed, involving other NUTS II level variables as well²⁴. For instance, if we focus on GDP’s impact, it emerges that the variable is almost entirely mediated: 92 per cent of the total effect is due to the between indirect effect, and its indirect effect is always very significant across all equations (not shown). This is encouraging for the responsibility mechanism, as it indicates that other goods unrelated to the ability of the state to act as an effective and impartial enforcer might be mediated by institutional trust. Quite plausibly, when the overall level of wealth in a region is higher, we will believe that institutions are properly working (as we expect them to do) and that therefore trusting strangers will be less risky. Nevertheless, our theoretical argument and models have not been constructed to account for relevant confounders in this respect. Therefore, we should

²⁴ Models indicate that institutional trust mediates the relationship not only for GDP, but also for Life expectancy, Population density, and Area (which are likely to absorb the effect of other unobserved confounders – e.g. robbery rates). Notice that we also tested if other variables, such as ‘Fear of crime’ or ‘Feelings of Inequality’, have a mediating effect, finding no support for such claims (not shown).

evaluate this result carefully, and dedicate future research to explore it in details assessing its actual robustness.

Table 1.6 – MSEM testing mediation effect of institutional trust on long-term unemployment and homicide by people’s views on state’s duties

	Model 8 MSEM with Mediation		Model 9 MSEM with Mediation		Model 10 MSEM with Mediation		Model 11 MSEM with Mediation	
	Subsample: Government should protect people in economic disadvantage		Subsample: Government should not protect people in economic disadvantage		Subsample: Important that Government ensures safety		Subsample: Not Important that Government ensures safety	
Individual level								
INSTITUTIONAL TRUST BY								
Trust in Parties	1.000	(-)	1.000	(-)	1.000	(-)	1.000	(-)
Trust in Legal System	1.022***	(0.026)	0.962***	(0.043)	1.013***	(0.028)	1.002***	(0.033)
Trust in Parliament	1.232***	(0.021)	1.272***	(0.034)	1.235***	(0.019)	1.275***	(0.036)
SOCIAL TRUST ON								
Political Interest	-0.005	(0.033)	-0.001	(0.043)	0.013	(0.036)	-0.056	(0.036)
Age	-0.002	(0.002)	-0.002	(0.003)	-0.003	(0.002)	0.000	(0.002)
Male	-0.04	(0.045)	-0.154*	(0.065)	0.011	(0.051)	-0.200***	(0.046)
Education	0.241***	(0.022)	0.180***	(0.026)	0.219***	(0.021)	0.206***	(0.028)
Unemployment	-0.072*	(0.058)	-0.154	(0.120)	-0.101	(0.065)	-0.094	(0.089)
Perceived Economic Status	-0.110***	(0.027)	-0.08	(0.056)	-0.089**	(0.033)	-0.158***	(0.032)
Social Connections	0.069***	(0.018)	0.038	(0.027)	0.060**	(0.020)	0.074**	(0.024)
Member of a Discriminated Group	-0.104	(0.099)	-0.218	(0.169)	-0.165	(0.100)	-0.031	(0.139)
Fear of Crime	-0.319***	(0.032)	-0.377***	(0.042)	-0.285***	(0.032)	-0.427***	(0.043)
Feelings of Inequality	-0.063*	(0.032)	-0.044	(0.034)	-0.070*	(0.034)	-0.050*	(0.023)
Institutional Trust	0.370***	(0.026)	0.407***	(0.030)	0.389***	(0.027)	0.358***	(0.021)
NUTS II Level								
INSTITUTIONAL TRUST BY								
Trust in Parties	1.000	(-)	1.000	(-)	1.000	(-)	1.000	(-)
Trust in Legal System	1.279***	(0.084)	1.243***	(0.092)	1.347***	(0.084)	1.217***	(0.093)
Trust in Parliament	1.134***	(0.068)	1.061***	(0.061)	1.136***	(0.078)	1.046***	(0.061)
INSTITUTIONAL TRUST ON								
GDP	0.014***	(0.002)	0.012***	(0.003)	0.014***	(0.003)	0.013***	(0.002)
Net Immigration	0.005	(0.005)	0.004	(0.006)	0.004	(0.005)	0.005	(0.005)
Life Expectancy	-0.106**	(0.036)	-0.059	(0.040)	-0.099**	(0.037)	-0.101**	(0.036)
Population Density	-0.000**	(0.000)	-0.000**	(0.000)	-0.000**	(0.000)	-0.000***	(0.000)
Area in Km2	0.004*	(0.002)	0.007**	(0.002)	0.003*	(0.002)	0.007**	(0.002)
Long-term Unemployment	-0.063	(0.086)	-0.19	(0.112)	-0.088	(0.089)	-0.172	(0.108)

Long-term Unemployment (squared)	0.008	(0.007)	0.014	(0.009)	0.009	(0.007)	0.014	(0.009)
Homicide	-0.279*	(0.115)	-0.094	(0.138)	-0.278*	(0.122)	-0.076	(0.116)
SOCIAL TRUST ON								
GDP	0.001	(0.002)	0.001	(0.003)	0.002	(0.002)	-0.001	(0.002)
Net Immigration	0.006	(0.003)	0.013*	(0.006)	0.007	(0.004)	0.007	(0.004)
Life Expectancy	-0.023	(0.025)	-0.05	(0.035)	-0.042	(0.025)	0.003	(0.032)
Population Density	-0.000	(0.000)	-0.000	(0.000)	-0.000	(0.000)	-0.000	(0.000)
Area in Km2	0.002	(0.002)	-0.002	(0.002)	0.003	(0.002)	-0.002	(0.002)
Long-term Unemployment	-0.061	(0.056)	-0.187*	(0.090)	-0.079	(0.056)	-0.063	(0.083)
Long-term Unemployment (squared)	0.003	(0.004)	0.016*	(0.007)	0.005	(0.004)	0.006	(0.007)
Institutional Trust	0.753***	(0.090)	0.694***	(0.188)	0.692***	(0.083)	0.823***	(0.148)
Homicide	-0.097	(0.080)	-0.202	(0.115)	-0.144	(0.081)	-0.138	(0.116)
Homicide Indirect Effect	-0.210*	(0.089)	-0.066	(0.098)	-0.192*	(0.086)	-0.063	(0.096)
% of Total Effect	68%		24%		57%		31%	
Long-term Indirect Effect	0.006	(0.005)	0.010	(0.007)	0.006	(0.005)	0.011	(0.008)
% of Total Effect	66%		38%		54%		64%	
N(groups)	14938 (111)		4644 (111)		12788 (111)		6820 (111)	
RMSEA	0.028		0.030		0.027		0.029	
R2 Between	0.788		0.749		0.771		0.747	
R2 Within	0.128		0.148		0.125		0.167	

1.5 Conclusion

Following the institutional theoretical framework, this paper provided a first empirical analysis of the intervening role of institutional trust on the association between poor macro social conditions and lower individuals' propensity to trust strangers. More specifically, it tested if these relationships are affected by institutional trust when the goods deficient in an area (1) imply a minor capacity of the state to guarantee safety or (2) are considered by citizens as a responsibility of the state to provide. In this sense, the article explored fundamental implications of the institution-led perspective, addressed the lack of empirical research on the mediating function of institutional trust, and contributed to the theoretical debate by suggesting that the mediation effect changes according to citizens' opinion of state's duties – the responsibility mechanism.

Results support the traditional institutional approach, and confirm the existence of a responsibility mechanism in respect to goods related to safety demands. In particular, the article shows that in areas with higher homicide rates, citizens distrust each other because they cannot rely on the state to act as a third-party enforcer. Such a mediation effect strongly depends on citizens' views of state's duties: when we see the government as responsible for ensuring safety and security, poorer citizens' protection will produce a steeper drop in our confidence towards institutions, and (consequently) fellow citizens. This has been found true controlling for individuals' personal characteristics (e.g. education, ethnicity, age etc.), fear of crime, and feelings of inequality. This is particularly interesting, as it shows that in wealthy and prosperous societies our propensity the lack of protection leads us to distrust each

other regardless of our fear of crime, instead it seems to depend on how we evaluate institutional performances.

As regards the extent of the mediation effect, evidence supports only weakly the idea that institutional trust intervenes on the relationship between goods unrelated to security demands (i.e. Long-term unemployment) and social trust. In this sense, the intervening function of institutional trust does not seem to have a broader scope than what typically assumed in the literature – contrary to what we expected on the basis of the responsibility mechanism. However, the analysis suggested that a mediation effect might involve other variables unrelated to safety issues, such as GDP. This should be explored in future research, along with other dimensions. In particular, it would be interesting to explore if and how institutional trust mediates the impact on social trust of indicators of institution impartiality (e.g. Gini coefficient, corruption etc.).

Given the exploratory nature of this study, no definitive conclusion on the direction of causality can be made. In fact, the main limitation of this analysis is that it cannot exclude that the correlational relationships observed are a product of reverse causality. Nevertheless, it seems relevant to notice that, from a theoretical standpoint, this possibility seems controversial. Indeed, views advocating an effect of generalized trust on institutional and societal factors concern mostly the micro or the macro levels (e.g. Messner et al., 2004; Putnam, 2000), but not micro-macro connections. It is theoretically unclear why we should observe that a higher *individuals'* propensity to trust would cause lower *regional* homicide and unemployment rates. Similarly, no systematic theory addresses why trusting strangers would lead us to trust institutions.

Quite on the contrary, recent empirical evidence supports the reverse trend, showing a causal impact of institutional trust on social trust rather than the opposite (Sønderskov and Dinesen 2015, 2014).

Future studies should attempt to disentangle such causality issues and better address the mediation effect once appropriate techniques will be fully developed (i.e. 3-level MSEM mediation – Preacher 2011).

Chapter 2

Social Connections and Generalized Trust: Exploring the Reasons Behind the Correlation

2.1 Introduction

In the last 25 years, the notion of trust has captured a great deal of attention from the academic community. One of the most influential views on the determinants of generalized (or social) trust, that is trust in people we do not know (such as strangers or unknown fellow citizens), has been put forward at the beginning of the 90s by Robert Putnam (2001, 2000, 1995a, 1995b, 1993), who pointed out the relevance of weak social ties (Granovetter, 1973) to the placement of trust. In this study, I address some of the gaps in Putnam's work as well as in the literature on the topic by concentrating on the following issue: why do interactions with people we know produce trust in people we do not know? Though a considerable number of studies support the idea that social ties enhance generalized trust (either through structural equation models with cross-sectional data -e.g. Brehm and Rahn, 1997- or longitudinal analysis -e.g. Glanville and Andersson, 2013-), the theoretical reasons why it is so remain ambiguous and largely untested (Stolle 2003, 1998). In this sense, the present paper builds upon prior research assessing the causal effect of social connections on generalized trust, and draws attention on two theoretical arguments that might explain why interacting with people in associations, friends and neighbours leads to trust strangers: (*Bridging mechanism*) the collapse of negative stereotypes about the generalized other through interactions with people unlike ourselves and (*Spillover mechanism*) the capability of networks' reputation systems to encourage the emergence of trustworthy behaviours, either inside or outside the networks that originally generated it.

While previous empirical research has explored these arguments to some extent, some important limitations affect these studies. In the first place, it must be noted that the vast majority of the literature has assessed the bridging mechanism by analysing the correlation between contextual diversity and trust rather than examining the role of our actual social connections with people different from us. This provides an assessment that relies on the opportunity for interaction rather than its actual manifestation (Stolle et al., 2013). Furthermore, even when out-group contact has been taken into account, research has mostly neglected to compare how diversity across various types of social ties (e.g. friendship and neighbourhood connection) or dimensions (e.g. race, religion and education) is correlated with generalized trust. That is, how does contact with people unlike us in different social networks relate to our propensity to trust strangers? Is generalized trust associated with having friends of a different race in the same way it is associated with having sport club fellows of a different race? Finally, though the spillover effect is crucial to many theoretical discussions on the impact of social connections on trust (e.g. Putnam, 2000), it is rarely empirically tested. In particular, no current analysis seems to evaluate the relationship between the density of friendship connections in a community and trust.

This article brings a number of contributions to the literature. Most importantly, it addresses the lack of theory and empirical research inquiring why people would generalize positive expectations developed towards specific category of people to their unknown fellow citizens (see exceptions in Glanville and Paxton, 2007; Freitag and Traummüller, 2009; Macy and Skvoretz, 1998; Paxton, 2007). In doing so, it first evaluates the role of a wide set of social ties (e.g. neighbourhood and friendship relations) and assesses which networks are more relevantly and consistently

associated with trust at the individual level. Subsequently, the article examines the bridging mechanism by looking at the role of out-group contact rather than contextual diversity (e.g. Herfindal index), and it clearly distinguishes the potentially misleading effect of the latter from the one of the former (Abascal and Baldassarri, 2015; Portes and Vickstrom, 2011). Also, improving on previous research on bridging social ties and generalized trust, this paper explores in details how contact with people different from us across several dimensions (namely, gender, race, education and religion) within associations and friendship networks relates to generalized trust. Conclusively, the article surveys the existence of a spillover effect at the community level (as Putnam – 1993 – originally suggested) not only for associational and neighbourhood connections, but also for friendship ties, whose function in this respect has been largely ignored in the literature.

These arguments are tested using the Social Capital Community Benchmark Survey 2000 (hereafter SCCBS), a cross-sectional survey. Though employing panel data would allow me to deal more accurately with the issue of causal order, the paucity of longitudinal survey gathering information on the various dimensions discussed in this paper did not allow me to follow such an approach. Nevertheless, using the SCCBS offers the possibility to bring attentiveness to aspects strongly under discussed in prior research and test a *conditio sine qua non* the causal implications of arguments considered would be implausible.

2.2 Literature Review

Putnam's theoretical argument and hypotheses

In presenting Putnam's view on trust, it seems relevant to start by mentioning that his main interest lies in understanding why and how people in modern societies overcome the problem of collective action, rather than explaining trust. More specifically, using game theory language, Putnam suggests that ordinary social interactions resemble a one-shot prisoner's dilemma game where the best rational strategy is not to cooperate. Third-part enforcement could provide a solution to the problem, but the state cannot guarantee enforcement in the vast majority of social interactions. Therefore, “impersonal cooperation should be rare, whereas it seems to be common in much of the modern world. How come?” (Putnam, 1993:166). The heart of Putnam's explanation to this puzzle roots in the notions of social connectedness and trust: social networks would create a web of relations which increases the interconnectedness of the game, transforming it in an iterated prisoner's dilemma where trusting the other part and cooperating represent in fact a stable equilibrium for all parties. In other words, social connectedness would produce a higher level of trustworthiness, making more likely the placement of positive expectations. Two devices are proposed by Putnam to explain how social networks would enhance trustworthiness and (consequently) social trust: (1) Creating a *reputation system* which hinders individual defection and (2) promoting mutual obligations which encourage the formation of a *norm of generalized reciprocity*, meaning by generalized reciprocity, “a continuing relationship of exchange that is at any given time unrequited or imbalanced, but that involves mutual expectations that a benefit granted now should be repaid in the future” (Putnam, 1993:172).

Though we cannot test whether or not social connectedness fosters effective reputation systems and generalized reciprocity norms, it is reasonable to presume that if the core of Putnam's argument is correct, then indicators of social connectedness should be significantly correlated with generalized trust. In more precise terms, it can be hypothesized that:

(H1) People who have more friends, interact more frequently with their neighbours, and participate in associations will be more likely to place generalized trust.

The most interesting aspect of Putnam's argument is that social connections would not only boost trust in the other party involved in the relationship, but also, as already stated, they would foster trust in the generalized other. At first sight, this claim appears to be founded on a major theoretical inconsistency: indeed the trustworthiness that networks are supposed to increase should concern uniquely groups' members ("friends", "members of the sport club" and so on), and *not* other categories of people (such as "strangers" or "unknown fellow citizens"). The reputation system created by the social network is probably known only to people *in* the network, and it regards exclusively them. Similarly, it is not clear why the norms of reciprocity developed through the social network could be generalizable not only to the actions to be performed, but *also* to other categories of actors not involved in the network. For example, while I can reasonably expect that my friend will not return me the same favour that I made him/her (generalization of the norm of reciprocity in respect to the action), it is debatable why the existence of reciprocity between me and she/he should lead us to think that this will also apply to

individuals/categories of people outside our relationship (generalization of the norm to other categories of actors).

Two theoretical arguments can be found in Putnam's work (and, more generally, in the social capital literature) to overcome this issue. First, social networks characterized by “ties to people who are *unlike* you in some important way” (Putnam, 2007:143) (that is, bridging networks) would allow individuals to *break down their negative stereotypes about others*, as well as to generate broader identities and reciprocity norms²⁵. On the contrary, bonding networks (namely networks characterized by “ties to people who are *like* you in some important way” – Putnam 2007:143) would create strong in-group loyalty, and strong out-group antagonism (Putnam, 2000). If the “bridging mechanism” is in place, we should observe that:

(H2) Individuals who are part of friendship and associational networks characterized by a higher degree of heterogeneity in terms of gender, race, education and religion will be more likely to place generalized trust.

Second, in communities with denser social networks the *reputation effects overcome the boundaries of the network*, affecting behaviours of actors even outside the network, so that they will be generally more trustworthy: “If two would-be collaborators are members of a tightly knit community, they are likely to encounter one another in the future – or to hear about one another through the grapevine. Thus they have reputations at stake that are almost surely worth more than gains from momentary treachery” (Putnam 2000:136). This would discourage people in the community to behave unreliably even in one-shot interactions with strangers since

²⁵ Uslaner (2010) gives a somewhat similar interpretation of Putnam's thought.

their defective action will be more likely to be known. As a consequence, trustworthy behaviours will be more common and people living in such communities will have more incentives to trust strangers. Though such a “spillover mechanism” does not directly depend on the individual social connections (but on the general social embeddedness of the community), it implies that people having more social connections will tend to experience or hear about trustworthy behaviours more often, leading them to trust our unknown fellow citizens more easily. Empirically, if this is correct and the “spillover mechanism” is effectively operating, we should find some confirmation for the following statement:

(H3) People living in communities connoted by a higher average number of neighbourhood, friendship relations, and associations will be more likely to place generalized trust, even when they have the same degree of individual social connections than people living in less embedded communities

Empirical literature

Empirical studies that have explored the relationship between social connections and generalized trust have focused mostly on the role of associations, testing the first of the hypotheses presented above. In part, such a limitation in the research can be attributed to Putnam's theoretical emphasis on the relevance of “networks of civic engagement” in the promotion of trust (Putnam 2000, 1993), which has led researchers to think that a major role was assigned by the American political scientist to this form of social network. Nevertheless, Putnam has clearly denied such an interpretation of his position (Putnam, 2001).

Another important factor that could have lead researchers to concentrate on associational membership is the lack of datasets that include trust measures along with satisfying indicators of social connectedness (Stolle, 2003). This would also explain why even Putnam's own work on this topic is affected by the same limitations: as a matter of fact, evidence provided by Putnam to corroborate his complex theoretical speculations is restricted to the analysis of the correlation between membership in associations and social trust. More specifically, he presents results from two multivariate analyses of data from the General Social Survey (GSS) 1974-1994, and from the World Value Survey (WVS) 1990-1991, where he finds a significant and positive relationship between membership and trust, applying “controls for education, age, income, race, gender and so on” (Putnam, 1995a:665-666).

A vast amount of empirical studies have shortly followed Putnam's analyses, reaching quite mixed results: though “the relationship between interpersonal trust and membership in voluntary associations is a persistent research finding in sociology” (Anheier and Kendall, 2002:344) both at the individual and aggregate level (Brehm and Rahn, 1997; Sønderskov, 2011; Stolle and Rochon, 1998; Stolle and Rochon, 1999; Van der Meer, 2003; Wollebaek and Selle, 2002), when a wider set of control variables are applied, the relationship tends to become weaker or to even disappear (Allum et al., 2010; Claibourn, and Martin, 2000; Delhey and Newton, 2003; Li, Pickles, and Savage, 2005; Mayer 2003; Newton and Delhey, 2005; Sturgis et al., 2012; Uslaner, 2002; Van Ingen and Bekkers, 2015).

For instance, as regards the US, focusing on the same GSS surveys examined by Putnam, Uslaner (2002) shows that “civic engagement [measured as involvement in secular organizations] *does not* lead to greater trust” (Uslaner, 2002:128). Cross-

nationally, using data from the WVS, Newton and Delhey found that “voluntary membership and activity does rather little for generalized social trust” (Newton and Delhey, 2005:323) at the aggregate level. Likewise at the individual level, analysing the Euromodule dataset for seven different countries, they report that “there is little evidence that membership of voluntary organizations is associated with trust” (Delhey and Newton, 2003:110). On the other hand, Paxton's (2007) multilevel model across 31 countries²⁶ advocates the importance of associations which are more likely to promote multiple membership, while Stolle and Rochon (1998) demonstrate that active participation is a meaningful dimension for social trust in Germany, Sweden and United States²⁷. Differently, studies that have looked at the role of friendship and neighbourhood connections show a more consistent pattern both at the cross-national (Delhey and Newton, 2003) and national level for such ties even across time (see Glanville and Andersson -2013- for the US, and Li, Pickles, and Savage -2005- for the UK), suggesting that they might have a more relevant role in the promotion of trust.

Following Putnam (2000), these relationships are frequently interpreted by arguing that “regular interactions with friends, [...] and community members should facilitate the general sense that most people can be relied on to fulfil their obligations” (Glanville, Andersson and Paxton, 2013:547). However, as already mentioned in the previous section, this “generalization mechanism” (Glanville and Andersson, 2013) leaves unexplained why people would extend their positive experiences towards a specific category of actors to actors in general. Though some empirical evidence

²⁶ Paxton employs data from the 1994 WVS wave.

²⁷ Stolle and Rochon combine data from a variety of sources: GSS merged samples (1983,1984,1986); Swedish Citizen's Survey 1987; German *Allbus* survey 1991; WVS merged samples of the United States, Germany, and Sweden (1983, 1990).

indicates that trust in more localized domains may induce generalized trust (Glanville and Paxton, 2007; Freitag and Traummuller, 2009; Welch, Sikkink and Loveland, 2007), theoretical justifications to support this mechanism tend to be missing or to refer (more or less explicitly) to either a spillover or bridging effect. In this sense, for example, Freitag and Traummuller (2009) state that “crucial [to the idea that trust in strangers rests on past occurrences] is the assumption that trust based on positive experiences made in one domain [...] will eventually spill over to other domains of social life” (Freitag and Traummuller, 2009:789). Along similar lines, in explicating how the generalization mechanism would operate, Glanville and Andersson (2013) suggest that “regular interactions usually transpire within dense networks of repeated interactions and are governed by shared norms, rules, and understanding of the world, [...] [so that] when individuals feel they share [...] interpretations of the world with others, [...] they are more likely to trust” (Glanville and Andersson, 2013:547).

Nevertheless, both the bridging (H2) and the spillover (H3) effects appear far from being empirically confirmed. Indeed, not only there is little evidence in the literature to support that a spillover effect is effectively in place for neighbourhood and associational connections (Freitag and Traummuller, 2009; Marschall and Stolle, 2004; Stolle, 2003; Van der Meer, 2003), but also several studies found that generalized trust is negatively correlated with ethnic diversity at the contextual level²⁸ (Alesina and La Ferrara, 2002; Costa and Kahn, 2003; Dinesen and Sønderskov, 2015; Putnam, 2007; Stolle et al., 2008; see Marschall and Stolle, 2004 for opposite evidence). In this respect, in the 2007 article “*E Pluribus Unum*” Putnam re-evaluates his initial position, and using data from the SCCBS, he also claims that people living in more ethnically heterogeneous communities are less likely to trust (Putnam, 2007).

²⁸ For a more complete literature review in this respect see Portes and Vickstrom (2011) as well as Van der Meer and Tolsma (2014).

However, it seems relevant to point out that this body of literature looks at the role of aggregate-level proximity of people different from the respondents rather than considering the *actual* diversity of respondents' social networks, providing therefore an inaccurate test of the bridging hypothesis (Stolle et al., 2013). Indeed, though it seems plausible to presume, for instance, that in more diverse neighbourhoods people will have more out-group contact (Wagner et al., 2003), it is also true that such measures of “contextual diversity” do not allow to establish if (and to what extent) individuals do effectively engage in social interactions with their diverse neighbours. Put differently, contextual diversity does not necessarily reflect contact experiences with people unlike us and their effects could be substantially different. As a matter of fact, the small amount of studies on generalized trust where the role of heterogeneous social ties is taken into account point in this direction, showing that such connections tend to have a positive impact both on more localized and generalized forms of trust (Laurence 2011, 2009; Stolle et al., 2013; see exception in Stolle and Harrell 2013), moderating the detrimental effects of contextual diversity (Phan, 2008; Laurence, 2009; Stolle et al., 2008; Stolle et al., 2013; Uslaner 2010, 2012; see Dinesen and Sønderskov, 2015 for opposite evidence). Nevertheless, such analyses tend to focus either on a single type of network (e.g. voluntary associations) or dimension of diversity (e.g. race), leaving unclear what is the relevance of different forms of out-group for social trust.

Finally, it is worth noticing that several studies have found that the negative role of aggregate measures of diversity is likely to be spurious and due to worse economic conditions (Abascal and Baldassari, 2015; Portes and Vickstrom, 2011). Under this perspective, since out-group contact requires some degree of contextual diversity in order to take place, controlling for contextual factors appears to be crucial to estimate

the role of bridging ties correctly, and particular care will be therefore taken during the analysis in this respect.

In the following sections, using the SCCBS, I first estimate how associational involvement, friendship and neighbourhood networks relate to social trust in the US context. Subsequently, I address the theoretical puzzle concerning the relationship between social ties and generalized trust as presented in section 2.1. In particular, I check whether having heterogeneous friendship and associational ties in terms of gender, race, education and religion correlates with higher levels of generalized trust, while taking into account contextual factors. Conclusively, I probe the spillover effect at the community level (Putnam 1993) for associations, neighbourhood and friendship connections.

2.3 Data and Methods

As already mentioned, the analysis will be conducted using data from SCCBS, a telephone-based survey which comprises a national sample of 3,003 subjects and 26,230 respondents from 40 communities across 29 US states.

Given the design of the survey, it is likely that observations are not independent from one another within the same community. If not properly addressed, this problem would scale downwards the standard errors, leading us to evaluate as statistically significant variables that are not (type I error). In order to check if within-community clustering was effectively in place, in the first stages of the analysis I used a variance component model, which revealed a significant Intra-Class Correlation equal to 3,6% for the dependent variable “Generalized Trust”. Thus, to correct for the dependence

among individuals within communities, I included in the models an amount of dummy variables equal to the number of communities minus 1. Such a fixed-effect approach not only corrects for clustering, but it also allows us to control for all community differences. In testing H1 and H2, I employ this fixed model. This is particularly relevant in respect to H2, where distinguishing the role of individual contacts with people unlike us from the one of diversity at the community level is a primary goal of the analysis. Differently, in the case of H3, where I turn to evaluate community effects, I use a multilevel model structured on two levels with individual nested within communities²⁹.

To further address possible sources of bias, on the basis of previous literature, I select and control for variables that might influence both the independent and dependent variables. In particular, in the fixed effect models I apply controls for education, race, perceived economic status and age, while in the multilevel models I also include community-level covariates for economic conditions, education level and ethnic diversity by controlling for the mean income, the mean education level, and the Herfindahl index of ethnic homogeneity.

Weights have been applied to correct for unequal probability of sampling and to reproduce the population distribution in the sample in four demographic characteristics: gender, education, race/ethnicity, age³⁰.

²⁹ When testing H3 the national sample is excluded because it is not clustered in any community.

³⁰ Results for H1 and H2 do not change when I do not apply weights. In testing H3, I could not apply weights because of the multilevel model.

Table 2.1 – Descriptive statistics for variables^{31 32 33}

Variables	Mean	S.D	Range	N
Generalized Trust 0 = You can't be too careful in dealing with people; 1 = People can be trusted	0.50	0.50	0-1	29016
Gender 0 = Male; 1 = Female	0.58	0.49	0-1	29233
Age 0 = other; 1= 18-25 years	0.13	0.33	0-1	28524
0 = other; 1= 26– 35	0.21	0.41	0-1	28524
0 = other; 1= 36–55	0.41	0.49	0-1	28524
0 = other; 1= 56+	0.25	0.43	0-1	28524
Race 0 = other; 1 = White	0.73	0.44	0-1	28629
0 = other; 1 = Black	0.12	0.33	0-1	28629
0 = other; 1 = Hispanic	0.09	0.29	0-1	28629
0 = other; 1 = Other Minority group	0.06	0.24	0-1	28629
Education 0 = other; 1 = Less than high school	0.08	0.26	0-1	28864
0 = other; 1 = High school diploma	0.26	0.44	0-1	28864
0 = other; 1 = Some college or Associational degree or specialized technical training	0.33	0.47	0-1	28864
0 = other; 1 = Bachelors degree	0.17	0.38	0-1	28864
0 = other; 1= Some graduate or professional training	0.16	0.37	0-1	28864
Perceived economic status 0 = Not at all satisfied; 1 = Somewhat satisfied; 2= Very satisfied	1.10	0.64	0-2	28993
Associational involvement 0 = Not involved in any association; 1 = Involved in at least one association	0.82	0.38	0-1	29233
Informal neighbourhood relations 0 = other; 1= Low (talk with or visit immediate neighbours less than or equal to “once a year”)	0.13	0.33	0-1	29018

³¹ The SCCBS includes three possible answers to this question: “People can be trusted”, “You can't be too careful” and “Depends”. The category “Depends” is treated in many different ways by researchers. Here, on the basis of a multinomial regression, I have decided to recode the category “Depends” as “Can't be too careful”. Results across all hypotheses do not change if I consider the category “Depends” as missing.

³² Associations included are: religious organizations, sports clubs, youth organizations, parent associations, veteran groups, neighborhood associations, senior groups, charity or social welfare organizations, labor union, professional organizations, fraternal organizations, ethnic or civil rights organizations, political groups, literary, art or musical groups, hobby associations, self-help programs, internet groups, other groups.

³³ This variable has been constructed using major ethnical groups, namely Asian, White, Black, and Hispanic.

0 = other; 1 = Medium (talk with or visit immediate neighbours more than “once a year” but less than or equal to “several times a month”)	0.33	0.47	0-1	29018
0 = other; 1 = High (talk with or visit immediate neighbours more than “several times a month”)	0.54	0.50	0-1	29018
 Friendship relations				
0 = other; 1 = Low (“No Close friends” and “Two” or less confidants; “1-2 close friends” and “One” or less confidants; “3-5 close friends” and “Nobody” to confide in)	0.09	0.28	0-1	29160
0 = other; 1 = Medium (“No Close friends” and “Three or more” confidants; “1-2 close friends” and “Two” or “Three or more” confidants; “3-5 close friends” and “One” or “Two” confidants; “6-10 close friends” and “One” or less people to confide in)	0.25	0.44	0-1	29160
0 = other; 1 = High (“3-5 close friends” and “Three or more” confidants; “6-10 close friends” and “Two” or more confidants; “More than 10 close friends” and “One” or more confidants)	0.66	0.47	0-1	29160
 Ethnical Diversity in Friendship relations				
0 = Not having friends of a different race; 1 = Having at least 1 friend of a different race	0.76	0.43	0-1	28863
 Religious Diversity in Friendship Relations				
0 = Not having friends of a different religion; 1 = Having at least 1 friend of a different religion	0.79	0.41	0-1	28509
 Ethnic and Religious Diversity in Friendship Relations				
0 = other; 1 = Not having friends of a different religion or race	0.10	0.29	0-1	28227
0 = other; 1 = Having at least 1 friend either of a different religion or race	0.26	0.44	0-1	28227
0 = other; 1 = Having at least 1 friend of a different religion and race	0.64	0.48	0-1	28227
 Ethnical Diversity in Associations				
0 = other; 1 = Not involved in any association	0.19	0.39	0-1	28060
0 = other; 1 = Ethnically homogenous associations (“All” or “most of” group members are the same race as respondent)	0.53	0.50	0-1	28060
0 = other; 1 = Ethnically heterogeneous associations (“Some”, “only a few” or “none” of group members are the same race as respondent)	0.28	0.45	0-1	28060
 Gender Diversity in Associations				
0 = other; 1 = Not involved in any association	0.19	0.39	0-1	28070
0 = other; 1 = Homogenous associations in terms of gender (“All” or “most of” group members are the same gender as respondent)	0.41	0.49	0-1	28070
0 = other; 1 = Heterogeneous associations in terms of gender (“Some”, “only a few” or “none” of group members are the same gender as respondent)	0.40	0.49	0-1	28070
 Education Diversity in Associations				
0 = other; 1 = Not involved in any association	0.20	0.40	0-1	26114
0 = other; 1 = Homogenous associations in terms of education (“All” or “most of” group members have an education similar to the respondent)	0.42	0.49	0-1	26114
0 = other; 1 = Heterogeneous associations in terms of education (“Some”, “only a few” or “none” of group members have an education similar to the respondent)	0.38	0.48	0-1	26114

Overall Diversity in Associations				
0 = other; 1 = Not involved in any association	0.21	0.41	0-1	25582
0 = other; 1 = Very homogenous associations (“All” or “most of” group members are similar to respondent in terms of race, gender, and education)	0.16	0.37	0-1	25582
0 = other; 1 = Homogenous associations (“All” or “most of” group members are similar to respondent in respect to two of the three dimensions considered, namely, race, gender and education)	0.30	0.46	0-1	25582
0 = other; 1 = Heterogeneous associations (“Some”, “only a few” or “none” of group members are similar to respondent in respect to two of the three dimensions considered, namely, race, gender and education)	0.24	0.42	0-1	25582
0 = other; 1 = Very heterogeneous associations (“Some”, “only a few” or “none” of group members are similar to respondent in terms of race, gender, and education)	0.09	0.29	0-1	25582
Density of Associations				
Mean of “Associational involvement” by community	0.82	0.03	0.74-0.88	29233
Density of Informal Neighbourhood relations				
Mean of “Informal neighbourhood relations” by community	1.41	0.07	1.20-1.57	29233
Density of Friendship relations				
Mean of “Friendship relations” by community	1.57	0.06	1.45-1.70	29233
Mean Income				
Mean of “income level” in respondent’s community	3.56	0.36	2.29-3.94	29233
Mean Education				
Mean of “education level” in respondent’s community	3.33	0.31	2.72-4.15	29233
Herfindahl index of Ethnic Homogeneity				
$(\text{Percentage White in respondent's community})^2 + (\text{Percentage Black in respondent's community})^2 + (\text{Percentage Asian in respondent's community})^2 + (\text{Percentage Hispanic in respondent's community})^2$	0.59	0.17	0.29-0.92	29233

The dependent variable, “Generalized Trust”, is measured using the standard question: “Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people?” Subjects who answered, “People can be trusted” are coded as 1, while if they opted for the option “You can't be too careful”, they are coded as 0.

Three variables are taken into account in this study to assess the role of social connectedness: “Associational Involvement”, “Friendship relations” and “Informal Neighbourhood relations”. “Associational Involvement” is a binary variable,

indicating whether or not respondents are involved in any of the 18 organizations asked in the survey. “Informal Neighbourhood relations” indicates the level of respondents' interaction with their neighbours and it is constituted by three categories (“Low”, “Medium” and “High”), which are constructed by answers to this single-question: “About how often do you talk to or visit with your immediate neighbours?”. “Friendship relations” is an index composed by three categories (“Low”, “Medium” and “High”), combining two variables “Number of close friends” and “Number of people you can confide in”, which are respectively based on the following questions: “About how many close friends do you have these days?” and “Right now, how many people do you have in your life with whom you can share confidences or discuss difficult decision?”. Notice that friendship ties are not necessarily geographically bounded, as respondents might mention individuals who live in other cities or (even) countries. However, the way the questionnaire was constructed should have limited this issue to some extent: friendship questions were asked right after the section on immediate neighbours, where the interviewer specified that he was referring to the “10 or 20 households that live closest to [the respondent]” (SCCBS 2000). This should have led the interviewee to think to friends located (at the very least) in the same community, reducing bias.

Diversity within friendship relations is measured by using questions concerning the religious and racial patterns of respondents' friendship network, excluding people of the same race or religion. Differently, measures of diversity within associations are based on inquiries asking what proportion of other group members is college educated, has the same race or gender as the respondent. When respondent declares that “some”, “only few” or “none” of other group members are like him/her, then

he/she is coded as a member of a heterogeneous association (see table 2.1 for more details³⁴).

Finally, the density of social connections has been measured by calculating the mean of respondents' social connections ("Associational involvement", "Friendship relations", and "Informal Neighbourhood relations") by community. Given the clustered design of the SCCBS, such proxies can be seen as a reasonable aggregate estimate of how socially interweaved a community is, especially considering the lack of factual data concerning the number of associations or the frequency of neighbourhood meetings in the area, or in comparison to surveys that draw a single random sample nationwide.

2.4 Results and Discussion

Testing H1: Which types of social ties matter in the placement of generalized trust?

Let us now proceed by providing a brief general description of correlational relationships with trust, moving subsequently to the assessment of the role of social ties. I begin by commenting results from a multivariate logistic regression on generalized trust, which includes all relevant covariates selected as well as indicators of social connectedness (Table 2.2). Coefficients displayed are average marginal effects and they can be interpreted as the change in the probability that people will trust at a unit change of the independent variable, controlling for all other covariates.

³⁴ Results are robust across different recodings. For instance, the results for diversity (in terms of gender, education or race) within associations do not change even when we consider "some" as a basis for belonging to a homogeneous group instead of a heterogeneous one.

Notice that using average marginal effects allows me to compare coefficients across different models.

According to Model 1, Education (in compliance with the rest of the literature) operates as an extremely effective social glue: other things held constant, the likelihood of trusting for people who have received some graduate or professional training are 28.7 percentage points higher than for people who have never completed high school. The effect follows a linear trend with a relevant gap between individuals who carried on studies at the Bachelor's level (or higher) and those who did not. Conversely, Race has an incisive detrimental effect, and it constitutes the most powerful fount of social division in the regression: the predicted probabilities to trust for a Black subject are about 21 percentage points lower than for a White, while for a Hispanic are 15 percentage points lower, and for people of other races are 8 percentage points lower. Controlling for other possible sources of social cleavage, such as religious orientation or economic status (not shown), it emerged that they did not have any particular role in affecting levels of generalized trust. Under this perspective, Race rather than other features appears to be (once again) the central element of fracture in the American society. Only the generational gap creates a negative propensity to trust loosely comparable to the one of Race: in line with Putnam's claim that a general decline of social trust in the US after the 60s has taken place, Model 1 shows that people born after 1964 (that is, younger than 36) are indeed less likely to trust than previous generations.

Table 2.2 – Fixed effect model assessing the role of social connectedness on generalized trust³⁵

<i>(DV – Generalized Trust)</i>	Model 1 <i>(dy/dx)</i>	Model 2 <i>(dy/dx)</i>	Model 3 <i>(dy/dx)</i>
Female (reference: Male)	-0.004 (0.007)	-0.005 (0.007)	-0.009 (0.007)
Age (ref: 18-25)			
26-35	0.027* (0.012)	0.020 (0.013)	0.034** (0.012)
36-55	0.093*** (0.011)	0.085*** (0.011)	0.106*** (0.011)
55 +	0.098*** (0.012)	0.084*** (0.012)	0.103*** (0.012)
Race (ref: White)			
Black	-0.209*** (0.011)	-0.200*** (0.012)	-0.188*** (0.012)
Other	-0.083*** (0.015)	-0.079*** (0.015)	-0.074*** (0.015)
Hispanic	-0.154*** (0.016)	-0.148*** (0.016)	-0.140*** (0.016)
Education (ref: less than high school)			
High School	0.091*** (0.016)	0.090*** (0.016)	0.091*** (0.016)
Some College or Associate's Degree	0.162*** (0.016)	0.170*** (0.016)	0.163*** (0.016)
Bachelor's Degree	0.257*** (0.017)	0.265*** (0.017)	0.255*** (0.017)
Some Graduate or Professional Training	0.287*** (0.017)	0.300*** (0.016)	0.286*** (0.016)
Perceived economic status	0.073*** (0.005)	0.072*** (0.005)	0.068*** (0.005)
Associational Involvement (ref: Not involved in any association)	0.074*** (0.009)		
Informal neighbourhood relations (ref: Low)			
Medium		0.102*** (0.012)	
High		0.123*** (0.012)	
Friendship (ref: Low)			
Medium			0.087*** (0.015)
High			0.165*** (0.014)
<i>N</i>	27786	27618	27762
F adjusted	41.416	40.822	41.62
GOF (p-value)	0.421 (0.925)	0.812 (0.605)	0.739 (0.673)

Note: All models control for community differences. Coefficients are average marginal effects. Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Source: SCCBS 2000

³⁵ Several different specifications for associational involvement have been explored in preliminary stages of the analysis. In this sense, it emerged that the positive effect of associational involvement did not change greatly by type of associations. Differently, the scope of involvement appeared to be a potentially meaningful dimension of membership, as suggested by Wollebaek and Selle (2002).

Another particularly interesting result concerns the self-perception of economic status: while income level tends to be barely significant in multivariate regression when relevant covariates are included (not shown), the perception of personal financial situation clearly is. This indicates the importance of the psychological aspect in placing trust. Apparently, trusting is not associated with an effective reduction of financial risk (represented by a higher level of income) but rather with our tolerance to it (namely the perception of our economic situation). In other words, it could be argued that trusting “does not consist in an increase of security with a corresponding decrease in insecurity; it lies conversely in an increase of bearable security at the expense of security” (Luhmann, 1979:79-80).

As regards H1, Models 1, 2 and 3 support Putnam's core argument: not only “Associational involvement”, “Informal Neighbourhood relations”, and “Friendship relations” are all significantly correlated ($p < 0.001$) with generalized trust, but they also tend to have quite large coefficients, suggesting that these social connections have a central part in its occurrence (as also confirmed in Glanville and Andersson 2013's panel study). More interestingly, it can be observed that a peculiar tendency seems to unfold from the models: as the social tie taken into account is stronger (that is, it is prone to require more time, emotional intensity, intimacy and reciprocal services – Granovetter, 1973), its effect on generalized trust is stronger as well. While being a member of an association would produce a change in the likelihood of trusting of 7.4 percentage points (Model 1), the predicted probabilities to trust for an individual with a high Neighbourhood relations level are 12.3 percentage points higher than someone with a low level (Model 2), while they are 16.5 percentage points higher for a subject with a high Friendship network level (the strongest tie

among those considered) in comparison to one with a low level (Model 3)³⁶. However, this result should be evaluated carefully, as these measures are not based on the same underlying scale. This makes a direct comparison of the magnitude of the marginal effect difficult to interpret, and might mislead our conclusions. In other words, though it is worth pointing out the potential relevance of this trend (of which we have some evidence also in other studies - Glanville and Andersson 2013), we cannot make any meaningful and solid inference in this respect.

On a general ground, these findings remain encouraging for Putnam's claims, and they are also rather robust: conducting a sensitivity analysis (calculated through Generalized Sensitivity Analysis – Harada 2013 – graphs in Appendix A) for the three types of social connections, it emerges that they should be affected by rather strong unobserved confounders to become statistically insignificant. Only “Associational involvement” appears to have a less robust trend, in line with the mixed evidence in the literature: its statistical significance would indeed disappear (at 0.05 level) once we include a variable that has a partial correlation with “Associational involvement” slightly greater than .1 and a partial correlation with social trust around .3³⁷.

Testing H2 and H3: The Bridging and the Spillover effects

To provide some elucidations on why interacting with people we know is important to develop trust in our unknown fellow citizens, I will now turn to test H2 and H3.

³⁶ Notice that no interaction term among social ties considered has emerged as significant in the analysis. In addition, bivariate correlations among associations, friendship and neighborhood relations were moderate (i.e. point biserial correlation between associations and friendship relations was .17, while between associations and neighborhood relations was .13).

³⁷ For instance, the inclusion of measures of respondents' political interest and involvement, as well as tendency to volunteer and make donations (not shown) tend to lower almost all coefficients, but only associational involvement is significantly affected by them.

Tables 2.3 and 2.4 illustrate the relationship between bridging networks and trust by means of logistic regressions. Data allows me to explore the role of heterogeneous contact in terms of race and religion for friendship connections, and in terms of gender, race, and education for associations.

In contrast with studies that have examined the relationship between generalized trust and bridging ties by focusing on the degree of ethnic diversity at the contextual level, results show that actual *contact with people unlike ourselves across all types of social networks and dimensions of diversity considered is positively correlated with generalized trust*: having friends of a diverse religion and race, or interacting with individuals of a different education level, race or gender within associations are beneficial to social trust, net of all community differences. For instance, the predicted probabilities to trust for people having at least 1 friend of another religion and race are 10.3 percentage points higher than people who do not³⁸ (Table 2.3 – Model 6).

³⁸ Notice that using the same dataset employed here, Uslaner (2012) finds that having friends of different backgrounds is not sufficient to promote trust. Such a divergence might be due to a variety of factors such as differences in the sample used (Uslaner analyzes data only for 20 of the 40 communities).

Table 2.3 – Fixed effect model assessing the correlation between bridging friendship networks and generalized trust

<i>(DV – Generalized Trust)</i>	Model 4 <i>(dy/dx)</i>	Model 5 <i>(dy/dx)</i>	Model 6 <i>(dy/dx)</i>
Female (reference: Male)	-0.006 (0.007)	-0.007 (0.007)	-0.006 (0.007)
Age (ref: 18-25)			
26-35	0.030* (0.013)	0.027* (0.013)	0.030* (0.013)
36-55	0.101*** (0.011)	0.095*** (0.011)	0.100*** (0.011)
55+	0.109*** (0.012)	0.099*** (0.012)	0.108*** (0.012)
Race (ref: White)			
Black	-0.211*** (0.011)	-0.203*** (0.012)	-0.208*** (0.012)
Other	-0.091*** (0.015)	-0.085*** (0.015)	-0.091*** (0.015)
Hispanic	-0.162*** (0.016)	-0.159*** (0.015)	-0.161*** (0.015)
Education (ref: less than high school)			
High School	0.097*** (0.016)	0.092*** (0.016)	0.091*** (0.016)
Some College or Associate's Degree	0.175*** (0.016)	0.164*** (0.016)	0.163*** (0.016)
Bachelor's Degree	0.272*** (0.017)	0.259*** (0.017)	0.258*** (0.017)
Some Graduate or Professional Training	0.302*** (0.017)	0.291*** (0.017)	0.288*** (0.017)
Perceived economic status	0.074*** (0.005)	0.073*** (0.005)	0.073*** (0.006)
Having at least 1 friend of a different race (ref: Not having friends of a different race)	0.048*** (0.008)		
Having at least 1 friend of a different religion (ref: Not having friends of a different religion)		0.080*** (0.009)	
Diversity in friendship relations (ref: Not having friends of a different religion or race)			
Having at least 1 friend either of a different religion or race			0.056*** (0.013)
Having at least 1 friend of a different religion and race			0.103*** (0.012)
<i>N</i>	27548	27153	26951
F adjusted	40.582	40.601	39.679
GOF (p-value)	1.302 (0.230)	1.236 (0.267)	1.430 (0.169)

Note: All models control for community differences. Coefficients are average marginal effects. Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Source: SCCBS 2000

This evidence clearly provides empirical support to the idea that out-group contact is related to the collapse of our negative stereotypes about others. However, it remains debatable whether this mechanism is the main responsible behind the “leap of faith” (Stolle, 1998), which would lead us to trust people outside our social networks. Indeed, if we compare the impact of indicators of associational or friendship diversity on generalized trust with (respectively) the one of “Associational involvement” and “Friendship relations” (Table 2.2, Models 1 and 3), it emerges that the coefficients of the latter are visibly larger, raising uncertainty about the explanatory strength of the bridging mechanism. In addition, when we look at the role of homogeneity in associational networks, such doubts are further stimulated.

Contradicting the notion that bonding ties could only promote in-group trust but not generalized trust (e.g. Putnam, 2000; Uslaner 2012, 2002), Models 7, 8, 9 and 10 (Table 2.4) show that being part of homogeneous associations in respect to race, gender, education, or all three dimensions combined relate positively to trust towards our unknown fellow citizens. In fact, as the magnitude of the coefficient seems to suggest, socializing with people that are like us in some important ways might be a driving factor behind the correlation between associational involvement and social trust: the coefficient for individuals who are part of associations where “all” or “most of” group members are similar to respondent in terms of gender, race and education (that is, they are involved in “very homogeneous associations” – Table 2.4, Model 10) is larger than the one of “Associational involvement” (Table 2.2, Model 1) ($F = 17.26; p < 0.001$)³⁹, accounting for an increase of 10.9 percentage points in the predicted probabilities to trust (in comparison to individuals who are not involved in any association).

³⁹ Calculated in Stata through `suest` command.

Table 2.4 – Fixed effect model assessing the correlation between bridging associational networks and generalized trust

<i>(DV – Generalized Trust)</i>	Model 7 <i>(dy/dx)</i>	Model 8 <i>(dy/dx)</i>	Model 9 <i>(dy/dx)</i>	Model 10 <i>(dy/dx)</i>
Female (reference: Male)	-0.004 (0.007)	-0.005 (0.007)	-0.005 (0.007)	-0.004 (0.007)
Age (ref: 18-25)				
26-35	0.027* (0.013)	0.027* (0.013)	0.029* (0.013)	0.029* (0.013)
36-55	0.094*** (0.011)	0.094*** (0.011)	0.098*** (0.012)	0.097*** (0.012)
55+	0.101*** (0.012)	0.100*** (0.012)	0.106*** (0.013)	0.103*** (0.013)
Race (ref: White)				
Black	-0.206*** (0.012)	-0.211*** (0.012)	-0.202*** (0.012)	-0.200*** (0.012)
Other	-0.076*** (0.016)	-0.086*** (0.015)	-0.082*** (0.016)	-0.079*** (0.016)
Hispanic	-0.148*** (0.016)	-0.156*** (0.016)	-0.149*** (0.016)	-0.146*** (0.016)
Education (ref: less than high school)				
High School	0.090*** (0.016)	0.088*** (0.016)	0.091*** (0.018)	0.087*** (0.018)
Some College or Associate's Degree	0.162*** (0.016)	0.161*** (0.016)	0.164*** (0.017)	0.161*** (0.017)
Bachelor's Degree	0.254*** (0.017)	0.255*** (0.017)	0.251*** (0.018)	0.247*** (0.018)
Some Graduate or Professional Training	0.286*** (0.017)	0.286*** (0.017)	0.280*** (0.018)	0.279*** (0.018)
Perceived economic status	0.072*** (0.006)	0.072*** (0.006)	0.073*** (0.006)	0.072*** (0.006)
Ethnic Diversity in Associations (ref: Not involved)				
Ethnically homogenous associations	0.089*** (0.009)			
Ethnically heterogeneous associations	0.056*** (0.011)			
Gender Diversity in Associations (ref: Not involved)				
Homogenous associations in terms of gender		0.082*** (0.010)		
Heterogeneous associations in terms of gender		0.071*** (0.010)		

Education Diversity in Associations (ref: Not involved)				
Homogenous associations in terms of education			0.091 ^{***}	(0.010)
Heterogeneous associations in terms of education			0.071 ^{***}	(0.010)
Overall Diversity in associations (ref: Not involved)				
Very homogenous associations			0.109 ^{***}	(0.012)
Homogenous associations			0.090 ^{***}	(0.010)
Heterogeneous associations			0.065 ^{***}	(0.011)
Very heterogeneous associations			0.055 ^{***}	(0.016)
<i>N</i>	26762	26755	24896	24450
F adjusted	40.144	39.664	37.768	36.159
GOF (p-value)	0.644 (0.761)	0.519 (0.862)	0.541 (0.846)	0.536 (0.849)

Note: All models control for community differences. Coefficients are average marginal effects. Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Source: SCCBS 2000

From a theoretical point of view, this strong and positive relationship could be explained by reflecting more carefully on how people perceive other members of associations. More specifically, it could be argued that since associations allow people who do not know each other to meet and interact, individuals may quite plausibly see other group members as unknown random individuals from the society they live in (even if the process for which people gather in associations is actually not random and due to self-selection). Though we might become friends with some of our group members over time, we will probably not be able to engage with most of them, who (on the contrary) will remain substantially strangers to us. Thus, by interacting with individuals who are similar to ourselves in associations, it will be more likely for

us to believe that we share common views and/or ideas with our fellow citizens, so that we will be more inclined to evaluate them as more predictable and reliable⁴⁰.

To complete the examination of the reasons why social ties and generalized trust are correlated, I now test H3, employing a random-intercept multilevel model⁴¹.

Models 11 and 12 (table 2.5) show no effect of density for associational involvement or neighbourhood relations. However, this is not the case for friendship density, whose coefficient is incisive in the regression and capable to sensibly lower the significance of a typical predictor of generalized trust such as the Herfindahl index of Ethnic Homogeneity⁴². In particular, evidence in Model 13 demonstrate that people living in communities with a higher density of friendship relations, regardless of their personal level of social connections, have more chances to trust. Such a “spillover effect” has been largely sustained in the literature, (Putnam, 2000; Marschall and Stolle, 2004; Stolle, 2003; van der Meer, 2003) which, nevertheless, has found little support for the argument. In this sense, this study contributes importantly on the present debate, providing evidence that whereas trust developed within association or neighbourhood networks does not go beyond their boundaries (as the empirical evidence in the literature seems to point out), trust developed within friendship networks *does* spill over, influencing larger portions of the society. As a matter of fact, evidence in Model 13 show that living in communities with higher density of friendship relations increases the predicted probability to trust by 58.4 percentage points. Consistently with Putnam’s view (Putnam, 2000), this should be due to the

⁴⁰ Notice however that this mechanism is likely to work in a weaker manner for individuals who belong to minorities, since their values are by definition less common in the society they live in.

⁴¹ All random slopes were not significant.

⁴² Note that the Herfindal Index is here calculated on the basis of data gathered at the community level and it is therefore not directly comparable to the one employed by Putnam (2007).

fact that as friendship ties in a community are denser, their related reciprocity and reputation structures overlap and create broader obligations. This would promote wider and more effective communication channels, which increase the probability that individuals' defection (either inside or outside the network) will be spotted out and sanctioned. As a result, generalized trustworthiness and trust should be ultimately stimulated. Though such an interpretation relies on various logical passages that cannot be tested in this study, its empirical implications have received a solid corroboration, supporting its plausibility.

Following this reading of the phenomenon, the empirical confirmation of H3 can also allow us to understand why friendship relations (the closest of networks considered) affect generalized trust. Although the reputation and reciprocity structures developed in the friendship network concern directly only individuals *in* the network, people having more friends will be subjected to a greater variety of reputation and reciprocity systems (possibly also interconnected among them). This would produce a twofold effect. On the one hand, people having more friends will be less prone to defection because their negative behaviour can be detected and punished more easily. On the other hand (as the “spillover” effect suggests), people interacting with individuals having a high friendship network level will be discouraged from behaving untrustworthily with them because their unreliable actions are more likely to be known to people outside that specific interaction, harming their reputation. Thus, not only people more interconnected through friendship ties will be inclined to behave in a more reliable manner, but they will also hear about and experience trustworthy behaviours from a variety of actors (not only members of the network) more often, making the placement of trust in our unknown fellow citizens easier to occur for them. Differently, the insignificance of density for neighbourhood relations and

associations tells us that their reputation structures are not probably strong enough to have an impact on actions of people outside the network, so that we should look at other mechanisms to explain their correlation with generalized trust.

Table 2.5 – Multilevel model assessing the effect of networks' density on generalized trust

DV – Generalized Trust	Model 11 (dy/dx)	Model 12 (dy/dx)	Model 13 (dy/dx)
<i>Level 1 variables</i>			
Female (reference: Male)	-0.007 (0.006)	-0.007 (0.006)	-0.007 (0.006)
Age (ref: 18-25)			
26-35	0.028** (0.011)	0.028** (0.011)	0.027* (0.011)
36-55	0.099*** (0.010)	0.099*** (0.010)	0.098*** (0.010)
56+	0.091*** (0.011)	0.091*** (0.011)	0.090*** (0.011)
Race (ref: White)			
Black	-0.191*** (0.010)	-0.191*** (0.010)	-0.188*** (0.010)
Other	-0.085*** (0.013)	-0.085*** (0.013)	-0.086*** (0.013)
Hispanic	-0.127*** (0.013)	-0.128*** (0.013)	-0.128*** (0.013)
Education (ref: less than high school)			
High School	0.101*** (0.014)	0.101*** (0.014)	0.100*** (0.014)
Some College or Associate's Degree	0.168*** (0.014)	0.168*** (0.014)	0.167*** (0.014)
Bachelor's Degree	0.264*** (0.015)	0.264*** (0.015)	0.263*** (0.015)
Some Graduate or Professional Training	0.289*** (0.015)	0.289*** (0.015)	0.288*** (0.015)
Perceived economic status	0.068*** (0.005)	0.068*** (0.005)	0.067*** (0.005)
Associations (ref: not involved)	0.048*** (0.008)	0.048*** (0.008)	0.048*** (0.008)
Informal neighbourhood relations (ref: Low)			
Medium	0.091*** (0.010)	0.091*** (0.010)	0.091*** (0.010)
High	0.110*** (0.010)	0.110*** (0.010)	0.110*** (0.010)
Friendship (ref: Low)			
Medium	0.076*** (0.013)	0.076*** (0.013)	0.076*** (0.013)
High	0.153*** (0.012)	0.153*** (0.012)	0.152*** (0.012)
<i>Level 2 variables</i>			
Mean Income	-0.041 (0.024)	-0.036 (0.024)	-0.055** (0.020)
Mean Education	0.064* (0.029)	0.074** (0.027)	0.025 (0.025)
Herfindahl Index of Ethnic homogeneity	0.192*** (0.039)	0.189*** (0.046)	0.067 (0.043)
Association density	0.284 (0.237)		
Neighborhood relation density		0.079 (0.110)	
Friendship relation density			0.584*** (0.129)
<i>N(groups)</i>	24756 (40)	24756 (40)	24756 (40)

Note: Coefficients are average marginal effects. Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Source: SCCBS 2000

2.5 Conclusion

In this paper, I drew attention upon the lack of theory explaining why we observe that interactions with people we know lead us to trust people we do not know, both in cross-sectional and longitudinal analyses. In the effort to address this theoretical puzzle, I reviewed the bridging and spillover mechanisms, proposing that out-group contact and social networks' density can clarify why we generalize our positive expectations about others from specific social interactions.

Using US data (SCCBS), I first assessed if and how different types of social networks are indeed correlated to generalized trust in the sample. Results showed that all forms of social connections taken into account significantly affect trust. More specifically, it emerged that having a larger number of intense and intimate relationships is a very relevant dimension for social trust.

In addition, I have tested hypotheses for the bridging and spillover mechanisms. The findings suggest a number of points. In the first place, contrary to studies that have analysed the role of diversity only at the contextual level, it emerged that out-group contact (in terms of race, gender, religion and education within associations or friendship networks) is positively correlated with generalized trust, in line with contact theory. However, the cross-sectional design of this study does not allow me to conclude that out-group contact causes social trust. Indeed, the possibility that this relationship is due to self-selection (meaning that high-trusting individuals are more likely to socialize and have more contact with people different from them – see, for instance, Van Der Meer 2016) cannot be ruled out. In this respect, it is relevant to point out that our measure of associational diversity is based on self-reported

questions, which are likely to be endogenous with trust, and might not reflect the real level of heterogeneity in individuals' networks. On the other hand, our variable for friendship ties diversity (i.e. whether at least 1 of respondent's friends is different from him/her in respect to religion and/or race) offers a more "neutral" assessment of subjects' heterogeneous ties. However, this measure is likely to capture only extreme cases, leaving unclear the real size of individual's social ties diversity or the context of these interactions. Such issues limit strongly the causal implications of the study, as we cannot determine if and to what extent reverse causality is affecting our measures and results.

Nevertheless, it must be noticed that this kind of interpretation would be inconsistent with some of the results presented here. In particular, it would be unclear why we observe a positive correlation with social trust both for bridging and bonding ties: if high-trusting individuals self-select themselves in heterogeneous networks, how can we explain the simultaneous occurrence of the opposite tendency? Clearly, arguing that individuals self-select themselves both in homogeneous and heterogeneous social networks is logically inconsistent. Differently, if we look at the relationship as running from social ties to generalized trust, the possibility that both bridging and bonding ties promote trust, though in different ways (possibly one more predominant over the other depending on the social network considered), seems more plausible. In this sense, for instance, it has been suggested that people in associations might see other group members as a random sample of individuals from the society they live in. Thus, when we interact with individuals similar to us in associations, we would be more likely to think that we share important characteristics and points of view with

our fellow citizens, ultimately leading us to consider them as more predictable and trustworthy.

However, as concerns how people transfer trust beyond the boundaries of a particular network, evidence showed that out-group contact has a smaller impact in comparison to other measures of socialization, raising some doubts about the explanatory strength of the bridging mechanism. Conversely, results supported the spillover effect, indicating that the density of social ties in a community might explain how generalized trust emerges from personal and close relationships, such as friendship networks. Indeed, findings revealed that people living in communities connoted by a higher density of friendship ties, independently from their individual level of social connections, were much more likely to trust. This outcome represents the first clear empirical corroboration of the spillover effect.

Future studies should aim to collect longitudinal information on out-group contact, networks' reciprocity norms and reputation systems, as well as contextual diversity and social networks' density, testing the causal implications of hypotheses discussed here in a more solid manner.

Chapter 3

Does Community Social Embeddedness Promote Generalized Trust? An Experimental Test of the “Spillover Effect”

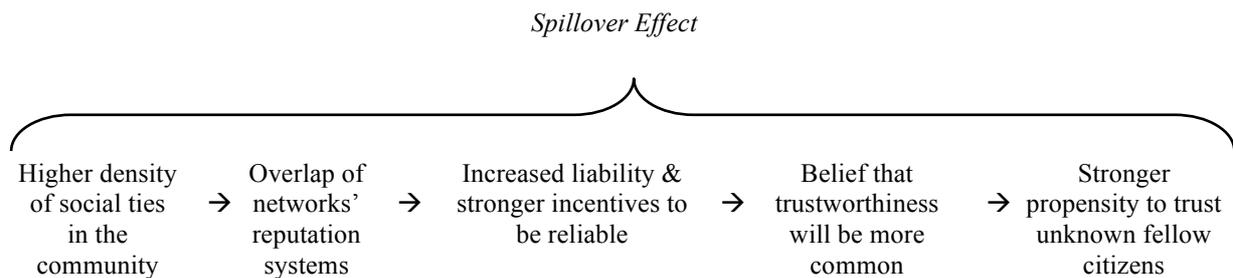
3.1 Introduction

In current academic and policy debates, there is a widespread agreement on the importance of social cohesion in the development of pro-social attitudes. A number of research initiatives have collected data (e.g. the Community Life Survey in the UK or the Social Capital Community Benchmark Survey in the US) to facilitate the elaboration of effective policy guidelines meant to improve the wellbeing of local communities. Along these lines of inquiry, scholars have examined how dense and more cohesive neighbourhoods can promote individual cooperation (e.g. Browning et al., 2004; Elliott et al., 1996; Helliwell and Putnam, 2004; Ross and Jang, 2000; Sampson and Morenoff, 2002). Most noticeably, Sampson's (1988, 1991, 2006, 2012) and Putnam's (1993, 2000) theories and empirical analyses on the density of social ties, trust, collective efficacy and social disorder indicate the relevance of community social embeddedness to foster pro-social behaviours.

A particularly interesting point of this branch of the literature concerns how generalized trust (that is, trust towards strangers) is developed. Society-centred arguments in this regard tend to be based on the so-called "*Spillover*" effect (Putnam, 2000; Stolle, 2003; Van der Meer, 2003). This relies on the following logic: each social network entails a reputation system that is valid and compelling for people within the network (as well-discussed, for instance, in Fu et al., 2008). When the density of social ties in a community reaches a certain level, the degree of potential contact among residents grows, creating an overlap among the different reputation systems. This implies a more fluid flow of information and a higher probability of knowing other people's deeds. As a consequence, liability increases for all people in

the community, while defection with fellow citizens is discouraged: even a deceitful interaction with a stranger might harm our prestige in the community, as the other party could be (directly or indirectly) connected to several other fellow citizens. In this sense, the form of social control that a network-based reputation system exercises on members of the network will overcome its boundaries and “Spillover”, constraining *also* the actions of individuals who are outside the network (and potentially more isolated). Ultimately, this will lead people to think that being trustworthy is the best course of action, and placing trust will appear as a “safe bet” in most of the cases (see Figure 3.1).

Figure 3.1 – The theoretical argument behind the Spillover Effect



Surprisingly enough, despite the prominence of the “Spillover” effect in countering social isolation’s detrimental consequences, the neighbourhood effects literature has mostly overlooked this mechanism. In fact, only very few studies have specifically addressed the relationship between the overall density of social ties in the community and the emergence of generalized trust, reporting a weak or insignificant positive correlation (Freitag and Traummuller, 2009; Van der Meer, 2003; Welch, Sikkink and Loveland, 2007). For instance, using information from the 1975-1976 Detroit Area Study and 1970 Census tract data, Marschall and Stolle (2004) found no significant

impact of average informal links and associational connections at the neighbourhood level on individuals' propensity to trust.

These contextual analyses, however, rely largely on cross-sectional observational data, which are inadequate to assess causal effects as they poorly address endogeneity issues. In particular, the impossibility to manipulate the independent variable does not allow us to rule out unobserved confounders or establish the actual cause or effect in the relationship. In addition, these studies employ measures of neighbourhood or community social density that are calculated as aggregate averages of respondents' number of social ties. These indicators are an easily calculable and quite reasonable approximation of community social density, but they are strongly dependent on individual measures of social connections, making extremely difficult to distinguish the actual impact of one from the other.

On the other hand, although experimental research can effectively assess the internal validity of the "Spillover" effect, no design seems to have directly investigated it. Instead, most experiments concerning the role of social networks have focused on how individuals' level of social integration (i.e. the number of individuals' social links) and distance (i.e. how "close" subjects are) affect players' altruistic and cooperative decisions – as measured in Dictator Games, and Prisoner's Dilemmas⁴³

⁴³ Research from evolutionary game theory has also found support for the "indirect reciprocity mechanism" (i.e. cooperation with strangers on the basis of their reputation - Gallo and Yan, 2015; Milinski et al., 2002; Nowak and Sigmund, 2005; Pfeiffer et al., 2012), suggesting that "those who have been cooperative previously [...] tend to receive more cooperation. Thus, having a reputation of being a cooperator is valuable, and cooperation is maintained: it is worth paying the cost of cooperation today to earn the benefits of a good reputation tomorrow" (Rand and Nowak, 2013:417). This is certainly encouraging for the Spillover effect, as it shows that being aware that our past actions will be known to other people lead us to be more cooperative in general. In other words, when the reputational structure in the community is strong enough, pro-social behaviors among unknown fellow citizens should be fostered. Evolutionary game theory, however, does not investigate if the overall

(d'Exelle and Riedl, 2010; Branas-Garza et al., 2010, Goeree et al., 2010; Leider et al., 2009), which incidentally *do not allow us to separate trusting behaviours from trustworthy ones* (Yamagishi et al., 2005).

In addition, experiments that do separate trusting and trustworthy behaviours (employing Trust Games – hereafter TG) do not aim to test the “Spillover” effect and suffer of several limitations: (1) the overall density of the social networks in the community is not the treatment variable or it is not taken into account (Bracht and Feltovich, 2009; Charness et al., 2011; Di Cagno and Sciubba, 2010; Huck et al., 2012) (2) no information flow across networks is allowed, impeding the formation of network-based reputation systems (Bellemare and Kroeger, 2007; Ermisch et al., 2009; Fehr et al., 2002; Glaeser et al., 2000; Sapienza et al., 2007) (3) the TGs are played between friends or neighbours, but not strangers (Karlan et al., 2009).

Thus, prior research left unclear if a high overall density of social networks in a community creates reputational systems that “Spillover”. Also, current observational evidence is unable to show if this mechanism has an effect that is distinguished from the one reported for individuals’ social connections (or social integration – i.e. the number of individual social links). In other words, do people living in communities characterized by a higher average number of social ties tend to be more trusting and reliable with strangers regardless of their individual social connections?

Addressing these gaps in the literature, the present study aims to provide a solid test to the “Spillover” effect. In this sense, we conduct an experiment where subjects play a series of TGs with anonymous others and are able to report their games’ experience

density of social networks in a community can sustain such reputational structures and effectively boost trustworthy and/or trusting behaviors with absolute strangers.

to their social links, simulating the functioning of the “grapevine”. Changing the average number of social links among subjects modifies the level of interconnectedness in the community, allowing us to (1) check if in communities characterized by a higher overall density of social ties, network-based reputation systems “Spillover”, fostering trustworthy and trusting behaviours with strangers; (2) test if the “Spillover” effect is independent from the one of social integration by changing the average number of social links across treatments, while keeping constant the number of individual social links⁴⁴.

3.2 Experimental Setup and Hypotheses

Subjects

The experiment was programmed with Z-tree (Fischbacher, 2007) and conducted at the ESSEXLab (University of Essex). The lab is equipped with 32-networked computers (separated by partitions to ensure privacy and anonymity) to allow interactive experiments. Participants were sampled through the ESSEXLab recruitment system (currently including over 1,500 subjects), which provides a more heterogeneous sample pool than experiments using only students (see table 3.1 for sample characteristics and descriptives of main variables). In total, 158 subjects took part to the experiment⁴⁵ over 10 different sessions⁴⁶.

⁴⁴ Note that we employ fixed networks. This means that social links are assigned at the beginning of the game and they do not change thereafter. Given the purpose of this study, this is a particularly adequate analytical strategy because it allows us to separate the role of the overall social density in the community from the one of individual social integration.

⁴⁵ Each treatment had 32 subjects, except for the baseline treatment, which had 30 participants.

⁴⁶ Each session had exactly 16 participants. Only one session for the baseline treatment had 14 participants.

Design

Each experimental session was preceded by a brief Qualtrics questionnaire gathering information on individuals' demographics (e.g. age, gender, ethnicity) and general attitudes (e.g. social trust, risk propensity). After, each subject is given an ID number (e.g. 002) and is randomly allocated to a treatment. Within every treatment, subjects are assigned n links with other participants, so that each subject is directly connected to p individuals and indirectly connected to q other individuals. The main difference between direct and indirect links is that in the former case players know the ID of their social link, while in the latter case they do not.

Table 3.1 – Descriptives and operationalization of concepts

Variables' description	Mean	S.D.	Range	Obs
Generalized Trust – Amount sent as first mover	43.76	33.11	0-100	789
Trustworthiness – Percentage returned as second mover	.30	.23	0-1	691
Age	28.13	12.70	19-83	1576
Gender 1 = Male; 0 = Female	0.35	0.47	0-1	1576
Education 1 = First degree level qualification or higher; 0 = Other	.56	.50	0-1	1576
1 = High school Diploma or equivalent; 0 = Other	.34	.47	0-1	1576
1 = AS level or lower; 0 = Other	.10	.23	0-1	1576
Religion: 1 = Belonging to a Religion; 0 = No Religion	.43	.49	0-1	1576
Race 1 = White; 0 = Other	.64	.48	0-1	1576
1 = Mixed; 0 = Other	.08	.26	0-1	1576
1 = Asian; 0 = Other	.11	.31	0-1	1576
1 = Black; 0 = Other	.11	.32	0-1	1576
1 = Other Minority; 0 = Other	.06	.23	0-1	1576
Trust Strangers: 1 = Cannot be trusted at all 5 = Can be trusted a lot	2.25	.84	1-5	1576
Generalized Trust: 0 = You can't be too careful 10 = Most people can be trusted	4.20	2.12	0-10	1576
Most people are fair: 0 = Most people try to take advantage of me 10 = Most people try to be fair	4.53	2.18	0-10	1576
Most people are helpful: 0 = People mostly look for themselves 10 = People mostly try to be helpful	4.73	2.12	0-10	1576
Risk propensity: 0 = Unwilling to take risks 10 = Fully prepared to take risks	5.89	2.06	0-10	1576
Altruism (it is very important to help people around me): 1 = Not like me at all; 6 = Very much like me	2.34	1.02	1-6	1576
First mover in past round 1 = he/she was first mover; 0 = he/she was second mover	.5	.5	0-1	1415
Disappointed from last round 1 = received 0 as second mover or received back 0 as first mover in last round; 0 = received more than 0 as second mover or received back more than 0 as first mover in last round	.12	.32	0-1	1415

An experimental session consists of 10 rounds, each constituted by four stages. In the first stage, players are randomly matched with a ‘stranger’ (that is, individuals with whom they had no previous interaction) and play a one-shot TG. The TG is conducted between two players, the truster (or first mover) and the trustee (or second mover). The truster is given an endowment (£1 per round⁴⁷) and has the choice to send any amount of money to the trustee. This sum is multiplied by 3 by the researcher. Then the trustee decides if returning all, a part or none of the money he received. Subjects are matched with the same player only once across all 10 rounds. Differently from the classic version of the TG, in this setting, players have the possibility to identify each other through the ID numbers, which is always displayed during the game⁴⁸ (apart from this, players’ identity is fully anonymized). Each round, subjects play the TG either as “first movers” or “second movers”. The allocation to one of the two roles is randomized⁴⁹.

In the second stage, all players visualize a short summary of the round and their payoff (screenshots of the game are available in the Appendix B). Also, if the subject plays as “second mover” and his partner had at least one report on his past behaviour, he will be informed of this. In the third stage, subjects who played as “first movers” report to their social links the ID number of the trustee they have played with as well as the sum of money he returned⁵⁰. Finally, in the last stage, players get the reports

⁴⁷ All subjects received also £ 2.50 for showing up.

⁴⁸ Notice that in the first round all subjects play with their direct social links to simulate a real-life evolution of interactions. However, since such interactions do not involve absolute strangers and do not concern reputational effects, they are excluded from the analysis.

⁴⁹ As a result of randomization of roles, in very few instances subjects played as “first mover” or “second mover” only once. These observations have been excluded from the analysis.

⁵⁰ Subjects cannot choose not to report. This means that we assume a perfect information flow among players that are connected between each other. This condition is necessary to avoid confounding effects across treatments. However, it represents an approximation of real-life situations, and it should be further explored in future studies (Rand and Nowak, 2013).

from their social links. This information is saved and automatically displayed in future rounds if the subject is matched with that trustee.

The repetition of these steps across several rounds is necessary to simulate the evolution of the flow of information, allowing for the different reputation systems to overlap and let actors perceive that their cooperative or uncooperative behaviours can be spotted out. More specifically, this setup gives us the opportunity to examine if players act differently with strangers in more socially embedded environments (where their unreliable behaviour is more likely to be identified), and how the number of individual social links can change their conduct in the game.

In this respect, three main treatments are applied. In the baseline or “no density” treatment, no information flow is possible since subjects are assigned 0 links between each other. In this treatment, participants will only play the TG, and they will not take part to stages three and four. Differently, in the “low density” treatment (T1), half of the group will have 1 direct link and 1 indirect link (subgroup A) with other participants, while the other half will have 1 direct link and 0 indirect links (subgroup B) (Figure 3.2). Thus, the overall density (given by the ratio between the actual links of all subjects in the community over all the possible links within that community) will be equal to 0.2 (in a range that goes from 0 to 1).

Figure 3.2 – Treatment 1 (Low Density)

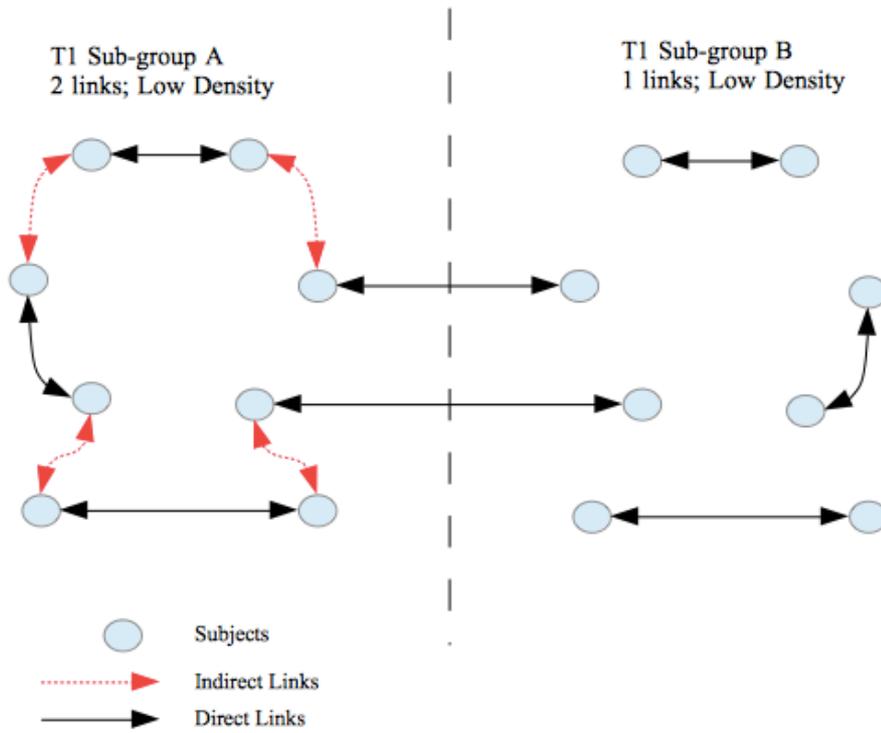
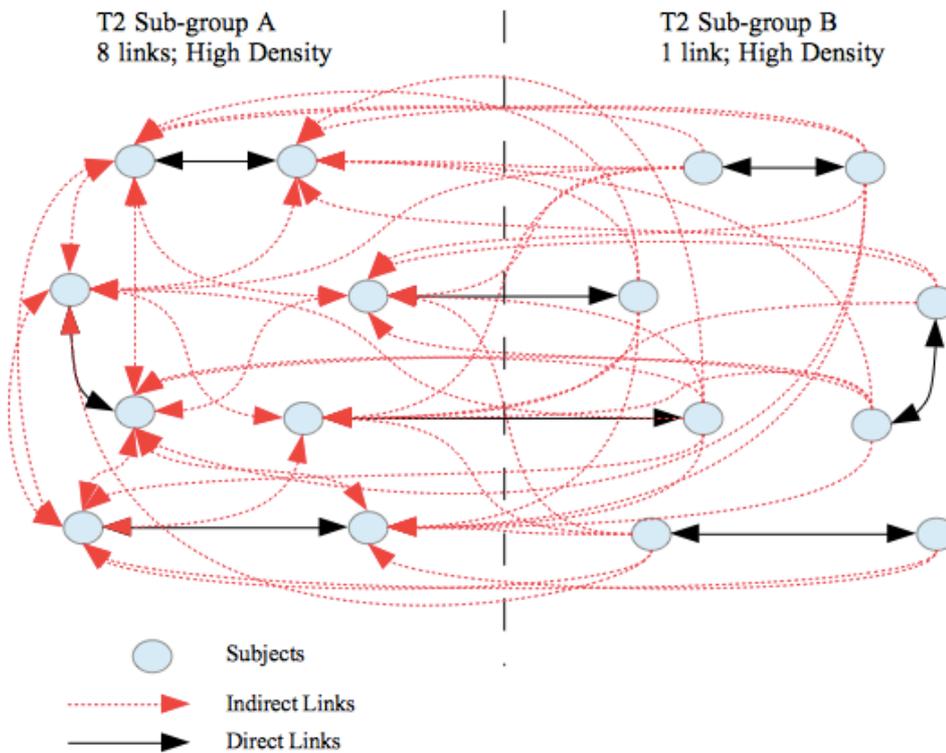


Figure 3.3 – Treatment 2 (High Density)



Finally, in the “high density” treatment (T2) half of the group will have 1 direct link and 7 indirect links (subgroup A) with other participants, whereas the other half of the group will have (again) 1 direct link and 0 indirect links (subgroup B). The overall density of social links will be equal to 0.6⁵¹(Figure 3.3). As a result, subjects in T1 subgroup b and T2 subgroup b will share exactly the same network’s features (e.g. number of social links, network’s structure etc.) apart from the level of overall density, allowing us to estimate its impact while controlling for alternative factors.

Note that subjects in both treatments will be told that they are in an environment denoted by a low or high density of social links, under the assumption that people who live in such conditions are broadly aware of the level of social embeddedness of the community.

Hypotheses

Given experiment’s settings, participants are likely to have a good perception of how interconnected people are when they are allocated to a treatment with a higher density. Subjects in such conditions should be aware of the stronger level of social control (due to the increased information flow) and assume that the best strategy for all players is to be trustworthy, leading them to (1) believe that trusting is a “safe bet” and (2) act in a more reliable manner.

Another important aspect that can drive subjects’ behaviour in the game is the content of reports available. Indeed, though having more information *per se* does not

⁵¹ To be more accurate, as the nature of direct and indirect links is substantially different (direct links imply a bi-directional relationship between subjects, while indirect links do not), we should calculate their density separately (more info on formulas in the Appendix B). Subjects, however, are unlikely to recognize this distinction, as all links will appear to be bi-directional. Thus, for the sake of simplicity, in the main text we report a plainer measure of overall density, which is calculated on the assumption that all links are direct.

necessarily create a higher propensity to trust (Hardin, 2002), the nature of the information can play an essential role: reports telling us that other players did not behave reliably in past rounds should lead us to be more sceptic, while positive reports⁵² should lead us to believe in the good will of other people. That is, a prevalence of positive reports would reinforce pro-social attitudes.

As a consequence, people in the high density treatment should have an additional boost to trust due to the information available to them: if the experiment is fully working according to theory, trustworthy behaviours will be more common in high density environments and, therefore, reports will tend to have a positive content rather than a negative one, facilitating the placement of trust.

Differently, people with a higher level of social integration (i.e. number of individual links) will have no specific information advantage (or disadvantage), as no element in the experiment affects their chances to receive one type of report over the other (unless they are also in the high density treatment): while people with more social links will have more information about other actors' behaviour because of their broad social connections, the content of such reports will be neither prevalently positive nor negative. However, people with more social links are likely to have a strong perception of the interconnectedness of the community, creating a solid incentive to be trusting and trustworthy.

⁵²Second movers' behavior is considered negative (or not cooperative) when subjects returned roughly less than 30% in one of their past interactions, while it is defined positive (or cooperative) when subjects always returned roughly more than 30% in their past interactions. The 30% threshold has been chosen because of the multiplying factor in the game, which is equal to 3. Thus, when subjects returned less than 30% of what they received, they are giving back less than what it has been originally sent to them.

Ultimately, if the “Spillover” effect is working (whether because of a stronger perception of interconnectedness or because of the content of information available), we should observe that the higher overall level of social embeddedness has an effect on pro-social attitudes towards absolute strangers. In more formal terms, we should expect that:

(H1) subjects in low and high density treatments will be significantly more trusting (i.e. give money as first movers) and trustworthy (i.e. they will return more money as second movers) than subjects from the baseline treatment.

Also, if this effect is independent from the one of individual social integration, then

(H2) subjects having the same number of individual social links but playing in a setting with a higher overall density will tend to be more trusting and trustworthy.

3.3 Measures, Controls, and Statistical Model

As already mentioned, we use as an indicator of trustworthiness the amount of money returned by second movers, and as an indicator of generalized trust the amount of money sent by first movers (Berg et al., 1995).

Table 3.2 - Correlation between trusting behaviour with strangers and survey questions measuring generalized trust

	Trusting behaviour (Average amount sent as first mover) <i>Partial correlation – controlling for Risk Propensity and Altruism</i>
Trust strangers	0.178***
Generalized trust	0.182***
Most people are fair	0.166***
Most people are helpful	0.205***

*p < 0.05, ** p < 0.01, ***p < 0.001

Previous studies in the literature have pointed out that trusting behaviours in the TG do not necessarily correspond to trusting attitudes as measured in surveys (Glaeser et al., 2000). Also, the action of giving might imply other motivations and attitudes, such as stronger altruism or higher risk propensity (Eckel and Wilson, 2004). Table 3.2 shows that in our experiment we have a moderate correlation between trusting behaviours and typical questions employed in surveys to measure generalized trust (in line with Fehr et al., 2003; Sapienza et al., 2007), even when controlling for relevant possible confounders. This advocates the validity of our indicator of generalized trust and its comparability to measures of the same concept in surveys.

Given the iterated structure of the game, observations on the dependent variables (trust and trustworthiness) are going to be repeated. Consequently, to correctly

analyse data, I employ a random effect model where observations are nested within subjects⁵³. Using this model, I also adjust for baseline covariates reported in the literature as moderately correlated with the outcomes in order to obtain a more precise estimate of the treatment effect (that is, I remove differences between the dependent variable values which can be due to differences in the baseline covariates among groups). Thus, the random effect model includes measures of race, gender, age, education, risk propensity, and altruism attitudes (derived from the questionnaire). In addition, I employ covariates indicating whether the subject played as first or second mover in past rounds, and if he did not received any experimental points as second mover or did not receive any money back as first mover. While the former aims to capture if the playing order affects subjects' decisions, the latter measures if subjects who received a relevant disappointment in past rounds are less likely to give or be trustworthy.

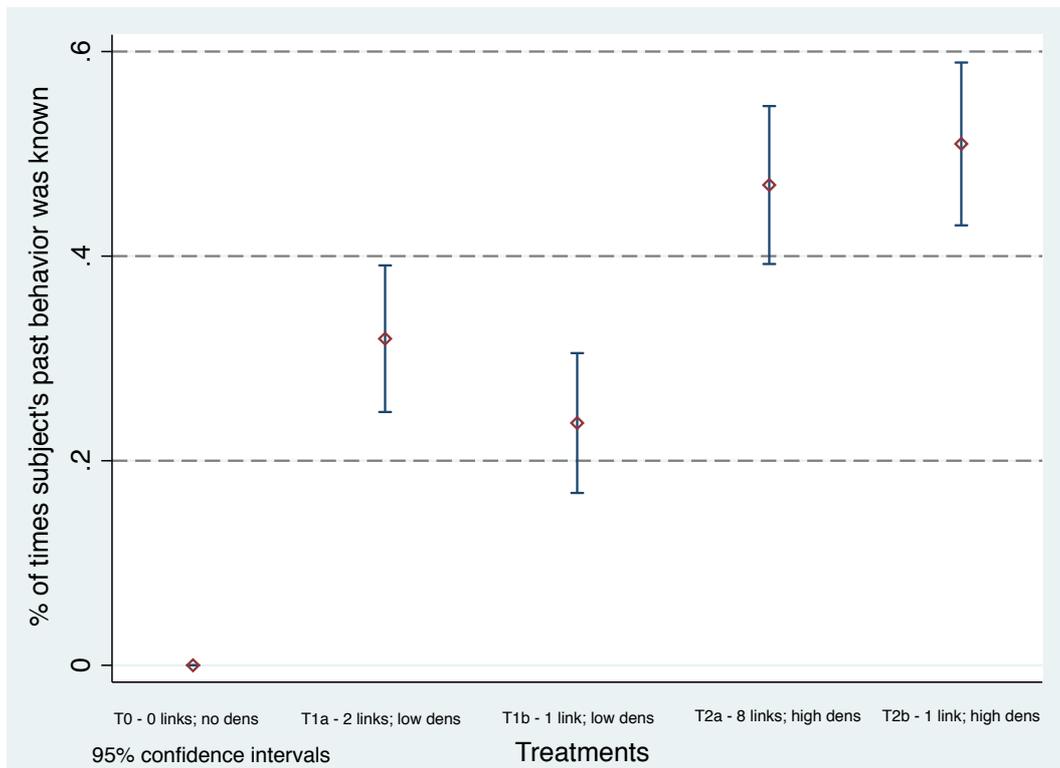
3.4 Results and Discussion

Let us now begin by looking at how treatments worked. Graph 3.1 shows how often subjects' behaviour was known by other players across all rounds, indicating that changing the number of social links increased the information flow as intended. Indeed, subjects in the high density treatment (T2a and T2b) are more likely to interact with players who are aware of their past behaviour than subjects in the low density treatment (T1a and T1b). Clearly, this does not depend on the amount of individual social connections, but on the overall density of social links: having 8

⁵³ This is implemented in Stata 13 using "xtreg, re".

social links or 1 social link is irrelevant in determining how often subjects' past behaviour was known, while the higher density of social ties in the community modifies significantly the level of liability (Graph 3.1). Thus, by increasing density we successfully created a stronger reputation system.

Graph 3.1 – Average number of times subjects' behaviour was known by other players



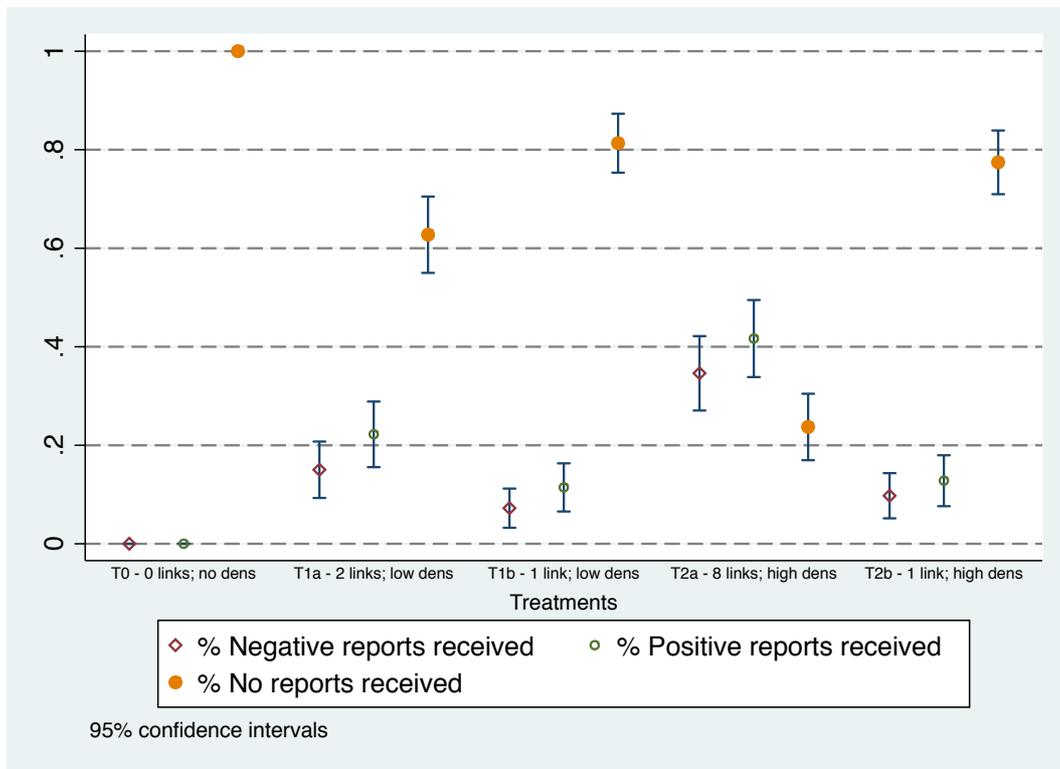
In respect to the role of information, graph 3.2 shows the number of times participants receive positive (green), negative (red), or no reports at all (orange). As it can be observed, people with more social links (T1a and T2a) have more information about other actors during the game – the percentage of times they did not receive a report is significantly lower than other treatments. Also, the content of reports received is similar to the one available to other subjects, as predicted. In fact, the ratio

between positive and negative reports tends to be roughly the same *across all treatments*.

In this respect, it is relevant to point out that no significant difference between the quality of reports received from subjects in the low (T1) and high density (T2) treatments emerges. This is in contrast with our theoretical argument and it suggests that the content of reports did not play any part in boosting trusting behaviours in the high density treatment. Indeed, since the content of reports received is essentially the same for all groups, eventual differences in trusting behaviours across treatments cannot be due to differences in the quality of the information received⁵⁴.

⁵⁴ In addition, the fact that people in the high density treatment did not receive more positive reports entails that subjects in this treatment did not behave more reliably (despite the higher level of social control). This point is further explored in graph 3.4.

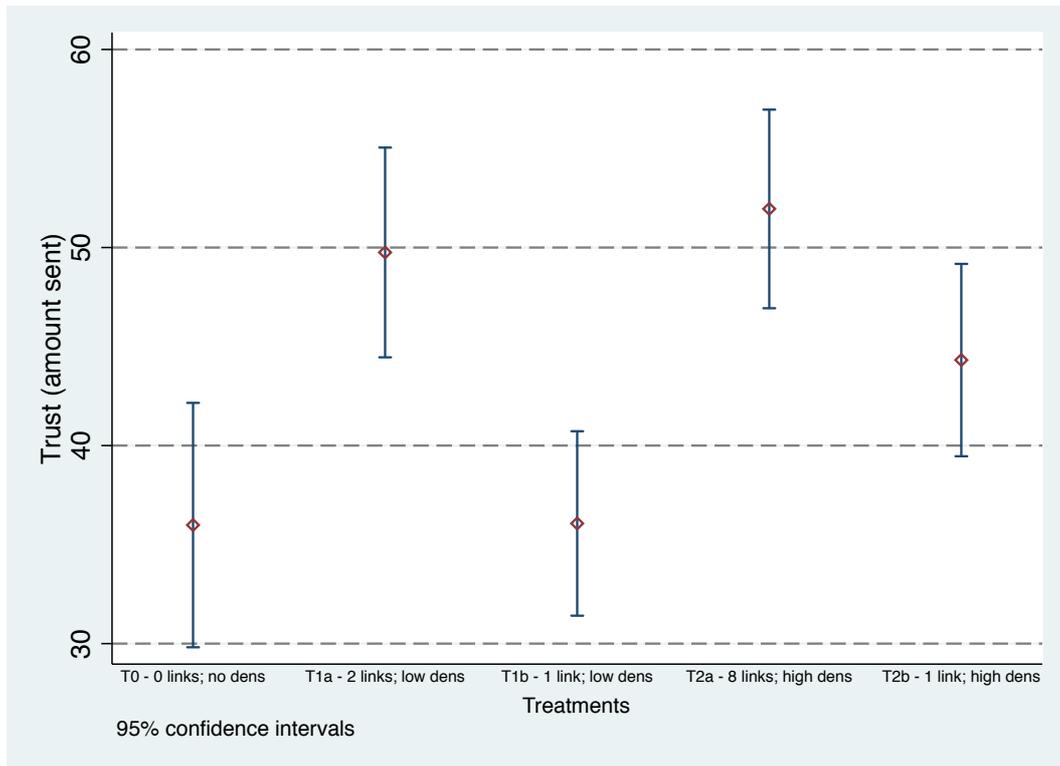
Graph 3.2 – Reports received by type



Moving to the analysis of behaviours in the game, graphs 3.3 and 3.4 show the average amount of money sent (our measure of trust) and returned (our measure of trustworthiness) in the treatments. In accordance with previous literature, evidence support the positive impact of individual’s connections on trusting and trustworthy behaviours: subjects with more individual social links (T1a and T2a) are more likely to send and return money to strangers than people in other conditions. This is hardly attributable to the amount of information received, as the number of reports available to players is significantly lower in T1a than T2a (see graph 3.2) while the propensity to be trusting and trustworthy is essentially the same for the two treatments. Their pro-social behaviour is more likely connected to a greater perception of the interconnectedness of the game: having more social links leads subjects to realize how fluently information flows and how easily defective behaviours can be spotted

out⁵⁵. As a consequence, adopting a cooperative strategy when playing as first or second movers will be encouraged.

Graph 3.3 – Trusting behaviours across treatments

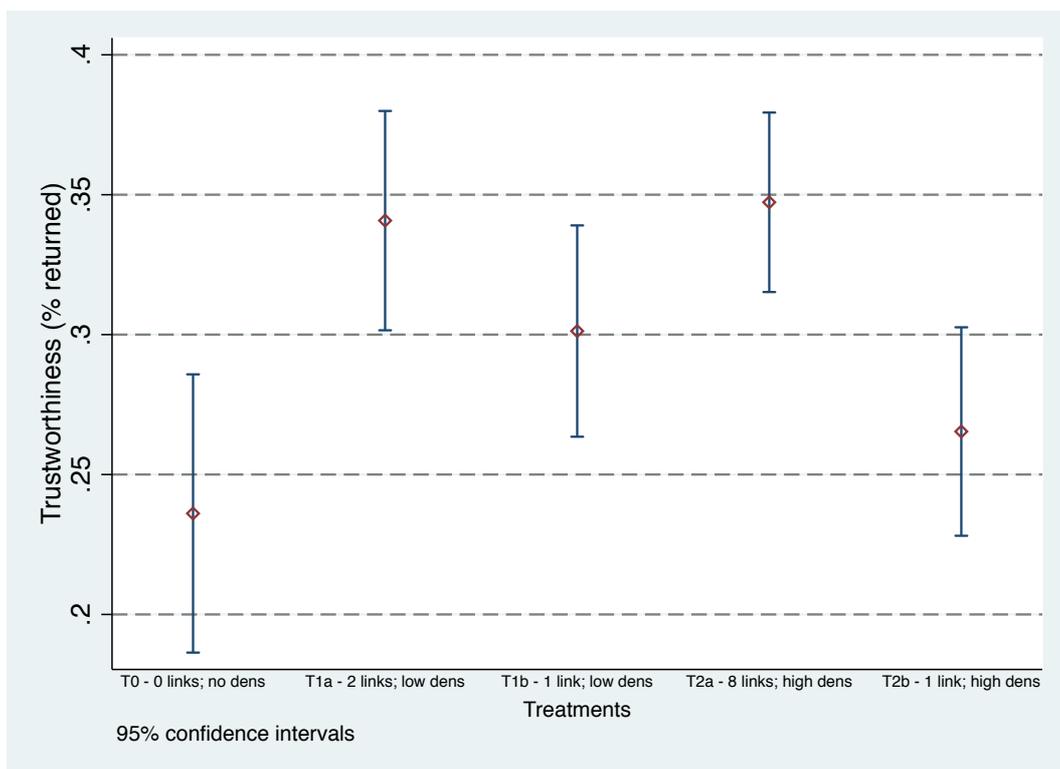


As regards H1 and H2, graph 3.3 suggests that *density promotes trust towards strangers regardless of individual social connections*. Subjects with a single social link but lower levels of density display a weaker propensity to trust than people with the same number of individual social links but higher density levels: people in T1b (1 link; low density) have a trusting behaviour that is virtually indistinguishable from the one of people in the baseline treatment (T0 – 0 social links; no density). On the other hand, subjects in T2b (1 link; high density) have stronger trusting behaviours

⁵⁵ Subjects are likely to believe that all links are bi-directional, as instructions mention the bi-directionality of direct links, but they do not specify the possibility that some links can be uni-directional. This should create a stronger sense of interconnectedness and social control for subjects with more links.

across all rounds. This trend emerges as statistically significant when we adjust for differences in the baseline covariates among groups by employing the random effect model (Table 3.3). These more precise estimates are presented in Table 3.3 Model 1, which shows that subjects in T2b (1 link; high density) give on average 14 experimental points more than people in T0 ($p < 0.05$), while players in a low density environments and a single social link (T1b) follow trusting behaviours similar to people in T0.

Graph 3.4 – Trustworthy behaviours across treatments



Model 3 in Table 3.4 provides an ulterior insight, illustrating that this is due to a stronger expectation of subjects in the high density group that other actors will be trustworthy. More specifically, it shows that when positive information about other players' past behaviour is available, subjects with 1 individual social link playing in a

high density treatment (T2b) tend to give 29 experimental points more than subjects with 1 social link playing in a low density treatment (T1b) ($p < 0.01$).

Table 3.3 – Random effect model on trustworthy and trusting behaviours with strangers⁵⁶

	Model 1 DV (Trust)	Model 2 DV (Trustworthiness)
Male	12.890**(4.450)	0.052+ (0.029)
Education	3.033 (3.128)	0.020 (0.020)
Age	-0.112 (0.161)	0.001 (0.001)
Religion (ref: no religion)	-7.014 (4.340)	0.016 (0.029)
Race (ref: White)		
Asian	7.600 (6.959)	0.141**(0.047)
Mixed	-3.246 (7.851)	-0.031 (0.053)
Black	-10.739 (6.766)	-0.068 (0.045)
Other	-11.234 (9.280)	-0.044 (0.060)
Risk aversion	-1.485 (1.041)	-0.012+ (0.007)
Altruism	5.253* (2.116)	0.027* (0.014)
Treatments (ref: T0 – no density; no social links)		
T2 subgroup A (High density; 8 social links)	18.244**(6.583)	0.115**(0.044)
T2 subgroup B (High density; 1 social link)	14.087* (6.517)	0.046 (0.044)
T1 subgroup A (Low density; 2 social links)	17.659** (6.829)	0.093*(0.044)
T1 subgroup B (Low density; 1 social link)	5.990 (6.774)	0.062(0.045)
First Mover in past round	-0.819 (1.932)	0.006 (0.016)
Disappointment in past round	-3.956 (3.042)	-0.052+ (0.027)
N (Subjects)	707 (157)	613 (155)
R2 within	0.046	0.063
R2 between	0.170	0.219
R2 overall	0.129	0.129

Note: All models control for round differences. Standard error in parentheses.

+ p < 0.1 *p < 0.05 ** p < 0.01 ***p < 0.001

Overall, this evidence indicates that individuals who are socially isolated but live in denser communities are prone to engage with other citizens, as they are more willing to take a first step and trust their unknown fellow citizens. Simply put, being part of a

⁵⁶ According to the protocol, individuals had 60 seconds to take their decision (both as first or second mover). Some subjects used consistently less time than others (see Appendix B – Figures B.1 and B.2). Excluding such observations from the analysis does not change significantly results.

close-knit community creates an environment where people with very few connections have incentives to believe in the “good will” of other people and therefore they are more likely to start novel and potentially beneficial relationships. In this sense, a higher overall density at the community level counters the detrimental consequences of social seclusion, increasing the likelihood of new connections.

Such results support the validity of the “Spillover” effect for trusting behaviours, showing that its impact is separated from the one observed for social integration. In particular, they advocate that when a community is socially embedded, trusting behaviours towards strangers are more common even for individuals who have few social connections. That is, dense webs of relations in a community allow the development of pro-social conducts *also* for individuals who are socially isolated.

Nonetheless, the effect is not as straightforward as theory predicts: though trusting behaviours are more frequent in the high density treatment, no significant difference emerges if we compare directly the high and low groups (performing a Wald test⁵⁷ to check the equality of the two coefficients in table 3.3, we cannot reject the equality hypothesis as $p > \chi^2 = 0.20$). This leaves unclear what density levels create enough incentives to trust and what is the exact threshold that triggers the mechanism⁵⁸.

⁵⁷ This is implemented in Stata 13 using the post-estimation command “test”.

⁵⁸ In this respect, eventual replications of this study might consider more extreme values of overall density or a larger sample size to reduce the standard error and obtain more precise estimates of the effect.

Table 3.4 - Random effect model on trusting behaviours towards strangers for whom positive reports are available

	Model 3
	DV (Trust)
	<i>Restricted Sample – Only known cooperators</i>
Male	11.362 (7.362)
Education	-0.916 (4.806)
Age	-0.547* (0.254)
Religion (ref: no religion)	-2.292 (7.058)
Race (ref: White)	
Asian	0.652 (10.712)
Mixed	-14.442 (15.832)
Black	-18.196 (11.257)
Other	-31.546 (12.881)
Risk aversion	1.565 (1.814)
Altruism	1.295 (3.808)
Treatments (ref: T1 subgroup B – Low density; 1 social link)	
T2 subgroup A (High density; 8 social links)	35.104*** (10.606)
T2 subgroup B (High density; 1 social link)	29.612** (11.149)
T1 subgroup 1 (High density; 2 social links)	35.037** (10.888)
First Mover in past round	4.737 (4.881)
Disappointment in past round	-0.294 (7.698)
N (Subjects)	138 (83)
R2 within	0.123
R2 between	0.304
R2 overall	0.270

Note: All models control for round differences. Standard error in parentheses.

+ p < 0.1 *p < 0.05 ** p < 0.01 ***p < 0.001

More importantly, graph 3.4 shows a different trend for trustworthy behaviours⁵⁹: the high density treatment displays a lower average value of trustworthiness than the low density treatment. This is further confirmed in Model 2 (Table 3.3), where density has

⁵⁹ Identical reputation systems or networks' features seem often to influence trusting and trustworthy behaviors in different manners (as shown, for instance, in Charness et al., 2011 or Di Cagno and Sciubba, 2010), reinforcing the notion that these complementary dimensions of cooperation can rely on distinct motivational structures.

no significant impact. In fact, subjects both in low and high density treatments with 1 individual link (T1b and T2b) return an amount of money similar to people from the baseline treatment (T0), for which no density effect can occur. This disconfirms the existence of a “Spillover” effect for trustworthy behaviours.

In other words, though individuals with few social links in denser communities are more likely to trust, they are not more likely to be trustworthy. This implies that the higher level of social control of denser treatments does not create enough incentives to constrain individual actions and discourage treacherous behaviours: even if allocated to a socially embedded environment, more isolated individuals feel unlikely that their defection will be spotted out. However, they believe that their fellow citizens will be trustworthy because they tend to be better interconnected.

If we think to cooperation as a sequential combination of trusting and trustworthy behaviours, results indicate that density promotes only the first part of the cooperative action. Living in a socially embedded community will lead us to trust others regardless of our personal connections, but it will not be enough to convince us to be more reliable. Density creates a “Spillover” effect that incentivizes new opportunities and connections, but it does not provide solid foundations for their sustainment over time – a constructive proposal will always fail to generate something more without reciprocation. In this sense, social integration plays a central role to promote cooperation: individuals with more social links not only trust more, but also they are more trustworthy, possibly transforming occasional positive interactions in stable and durable relationships. In other words, while density boosts individuals that are less connected in the community to open up and bet on the good intentions of their fellow

citizens, only the presence of a relevant number of well-connected individuals increases the chances of reciprocation allowing the formation of positive cooperative circles in the long-term.

3.5 Conclusion

Addressing the lack of experimental research on the validity of the “Spillover” effect (Putnam 2000), this study proposed a novel design to test if the overall density of social links in a community fosters our trustworthy and trusting behaviours with absolute strangers.

Controlling for social integration (i.e. the individual number of social connections), we found that density does foster higher levels of trust. In particular, it emerged that (1) people in the high density treatment gave more to strangers than people in the baseline group (where no social links or density effects were possible), while people in the low density treatment behaved similarly to individuals in the baseline group; (2) subjects in the high density treatment gave more than subjects in the low density treatment when they knew that the other player behaved cooperatively in past rounds. Such results are likely to be due to players’ belief that other subjects will reciprocate when there is a denser reputation system in the community – being aware that our past actions will be probably known to others will lead us to think that trusting is indeed a “safe” bet.

However, we found no evidence to support the idea that the overall density of social links causes an increase of trustworthiness, and we concluded that the “Spillover”

effect works only in respect to trust. This is interesting because it indicates that density promotes generalized trust without necessarily stimulating more reliable behaviours in the community. In this sense, in our experiment trust is sustained by the conviction that people have incentives to be trustworthy, rather than actual experiences of such behaviours.

Different levels of social integration in a society imply disparities in the number of individual connections. As it has been shown, this generates different incentives to cooperate: while well-connected subjects will tend to be trustworthy and trusting, badly connected subjects will have a more sceptic and suspicious behaviour towards others. Strongly embedded communities address exactly this deleterious outcome by influencing individuals with fewer links to engage with other citizens. That is, a higher overall density of links in a society increases the chances of creating positive cooperative circles, encouraging isolated individuals to open up and start new relationships. On the other hand, social integration is likely to play an important part in the long run by capitalizing on the pro-social propensities created within denser environments. Indeed, the stronger tendency to reciprocate by well-connected subjects should allow these occasional positive interactions to stabilize and form long-lasting partnerships.

Though this study demonstrated the validity of the “Spillover” effect, much more research is required in order to assess the exact extent and limitations of this mechanism. In particular, future studies should explore if in longer iterations of the game trusting behaviours in socially dense environments can sustain themselves even if trustworthiness levels remain the same, or whether reliability could increase over

time. Along similar lines, research should attempt to establish at which density levels the mechanism triggers, and if there is a specific threshold in this regard. Finally, it would be interesting to disentangle why trustworthy behaviours are not promoted in communities characterized by a high density of social relations, and if this is due to a lack of formal sanctions (e.g. giving the possibility to break relationships) in the current design of the experiment.

Conclusion

In this thesis, I analysed two leading perspectives (namely, the institution-centred and the society-centred views) on social trust. Building upon previous contributions, I re-elaborated some central notions of these theoretical approaches, proposing empirical hypotheses to test their validity.

As concerns the institutional standpoint, I suggested that poor macro-level conditions affect our propensity to trust strangers because of a common root, namely our lost faith in the state. Evidence illustrated that institutional trust has indeed a broad and strong intervening function, mediating the effect of a great variety of factors (e.g. GDP, long-term unemployment, homicide rate). Such results confirmed the notion that the mediating role of institutional trust does rely on a responsibility-based mechanism, as argued in my first chapter. Further research is certainly required to assess the radius of this mediation and define with more accuracy what types of macro-conditions are affected by it.

Moving to the society-centred perspective, I focused on the Bridging and Spillover mechanisms. While findings from the analysis of observational data (SCCBS 2000) corroborated the Bridging mechanism only to some extent, the Spillover effect was more convincingly supported: individuals living in communities with a higher average number of friendship ties were found to be more likely to trust their unknown fellow citizens regardless of their personal social links. On this basis, in my second chapter I suggested that the perception of interconnectedness and the overlapping of different reputation systems might play an essential role in fostering social trust. This conjecture was more thoroughly tested in an experiment conducted at the ESSEXlab in the summer of 2016. In this sense, results presented in Chapter 3 illustrate that

community social embeddedness causes generalized trust, and counters the detrimental effects of individual social isolation. Such findings point out the explanatory importance of the Spillover effect, advocating for a greater attention on this mechanism in the social science research agenda.

Reference List

Abascal, M., and Baldassarri, D. (2015). Love Thy Neighbor? Ethnoracial Diversity and Trust Reexamined. *American Journal of Sociology*, 121(3), 722-782.

Alesina, A. and La Ferrara, E. (2002) 'Who trusts others?', *Journal of Public Economics* 852:207-234.

Allum, N., Patulny R., Read S., Sturgis P. (2010) 'Re-evaluating the links between social trust, political trust and civic association in Europe', In Stillwell J., Norman P., Thomas C., and Surridge P. (eds.), *Spatial and Social Disparities*, London: Springer Verlag.

Anheier, H., and Kendall, J. (2002) Interpersonal trust and voluntary associations: examining three approaches. *British Journal of Sociology* 53(3):343-362.

Ariely, G., & Uslaner, E. M. (2014) 'Corruption, Fairness, and Inequality', *Available at SSRN 2460399*.

Baron, R. M., & Kenny, D. A. (1986) 'The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations', *Journal of personality and social psychology*, 51 (6), 1173.

Bauer, P. C. (2014) 'Negative experiences and trust: a causal analysis of the effects of victimization on generalized trust', *European Sociological Review*, jcu096.

Bellemare, C., & Kröger, S. (2007). On representative social capital. *European Economic Review*, 51(1), 183-202.

Berg, J., Dickhaut, J., & McCabe, K. (1995). Trust, reciprocity, and social history. *Games and economic behavior*, 10(1), 122-142.

Bjørnskov, C. (2007) 'Determinants of generalized trust: A cross-country comparison', *Public choice*, 130(1-2), 1-21.

Bracht, J., & Feltovich, N. (2009). Whatever you say, your reputation precedes you: Observation and cheap talk in the trust game. *Journal of Public Economics*, 93(9), 1036-1044.

Branas-Garza, P., Cobo-Reyes, R., Espinosa, M. P., Jiménez, N., Kovářik, J., & Ponti, G. (2010). Altruism and social integration. *Games and Economic Behavior*, 69(2), 249-257.

Brehm, J., and Rahn, W. (1997) 'Individual-Level Evidence for the Causes and Consequences of Social Capital', *American Journal of Political Science* 41:999-1023.

Browning, C. R., Feinberg, S. L., & Dietz, R. D. (2004). The paradox of social organization: Networks, collective efficacy, and violent crime in urban neighborhoods. *Social Forces*, 83(2), 503-534.

Charness, G., Du, N., & Yang, C. L. (2011). Trust and trustworthiness reputations in an investment game. *Games and economic behavior*, 72(2), 361-375.

Charron, N., Dijkstra, L., & Lapuente, V. (2014) 'Regional governance matters: quality of government within European Union member states', *Regional Studies*, 48(1), 68-90.

Claibourn, M.P., Martin, P.S. (2000) Trusting and Joining? An Empirical Test of the Reciprocal Nature of Social Capital. *Political Behavior* 22:267-291.

Costa, D.L., Kahn, M.E. (2003) 'Civic Engagement and Community Heterogeneity: An Economist's Perspective', *Perspective on Politics*, 1:103-111.

Delhey, J., and Newton, K. (2003) Who Trusts? The Origins of Social Trust in Seven Societies. *European Societies* 5:93-137.

d'Exelle, B., & Riedl, A. (2010). Directed generosity and network formation: network dimension matters.

Dinesen, P. T., & Sønderskov, K. M. (2015). Ethnic Diversity and Social Trust Evidence from the Micro-Context. *American Sociological Review*, 0003122415577989.

Di Cagno, D., & Sciubba, E. (2010). Trust, trustworthiness and social networks: Playing a trust game when networks are formed in the lab. *Journal of Economic Behavior & Organization*, 75(2), 156-167.

Elliott, D. S., Wilson, W. J., Huizinga, D., Sampson, R. J., Elliott, A., & Rankin, B. (1996). The effects of neighborhood disadvantage on adolescent development. *Journal of Research in Crime and Delinquency*, 33(4), 389-426.

Eckel, C. C., & Wilson, R. K. (2004). Is trust a risky decision?. *Journal of Economic Behavior & Organization*, 55(4), 447-465.

Ermisch, J., Gambetta, D., Laurie, H., Siedler, T., & Noah Uhrig, S. C. (2009). Measuring people's trust. *Journal of the Royal Statistical Society: Series A (Statistics in Society)*, 172(4), 749-769.

Fehr, E., Fischbacher, U., & Gächter, S. (2002). Strong reciprocity, human cooperation, and the enforcement of social norms. *Human nature*, 13(1), 1-25.

Fehr, E., Fischbacher, U., Von Rosenblatt, B., Schupp, J., & Wagner, G. G. (2003). A nation-wide laboratory: examining trust and trustworthiness by integrating behavioral experiments into representative survey.

Fieldhouse, E., & Cutts, D. (2010) 'Does diversity damage social capital? A comparative study of neighbourhood diversity and social capital in the US and Britain', *Canadian Journal of Political Science*, 43(02), 289-318.

Fischbacher, U. (2007). z-Tree: Zurich toolbox for ready-made economic experiments. *Experimental economics*, 10(2), 171-178.

Freitag, Markus, and Marc Bühlmann. (2009) 'Crafting trust the role of political institutions in a comparative perspective', *Comparative Political Studies* 42(12):1537-1566.

Freitag, M., & Traunmüller, R. (2009) Spheres of trust: An empirical analysis of the foundations of particularised and generalised trust. *European Journal of Political Research*, 48(6):782-803.

Fu, F., Hauert, C., Nowak, M. A., & Wang, L. (2008). Reputation-based partner choice promotes cooperation in social networks. *Physical Review E*, 78(2), 026117.

Galea, S., Karpati, A., & Kennedy, B. (2002) 'Social capital and violence in the United States, 1974–1993', *Social science & medicine*, 55(8), 1373-1383.

Gallo, E., & Yan, C. (2015). The effects of reputational and social knowledge on cooperation. *Proceedings of the National Academy of Sciences*, 112(12), 3647-3652.

Gesthuizen, M., Van der Meer, T., & Scheepers, P. (2009) 'Ethnic diversity and social capital in Europe: tests of Putnam's thesis in European countries', *Scandinavian Political Studies*, 32(2), 121-142.

Giddens, A. (1984) *The constitution of society: Outline of the theory of structuration*. Univ of California Press.

Glaeser, E. L., Laibson, D. I., Scheinkman, J. A., & Soutter, C. L. (2000). Measuring trust. *Quarterly Journal of Economics*, 811-846.

Glanville, J. L., and Andersson, M. A., (2013) Do social connections create trust? An examination using new longitudinal data. *Social Forces*, 1-18.

Glanville, J. L., and Paxton, P. (2007) How do we learn to trust? A confirmatory tetrad analysis of the sources of generalized trust. *Social Psychology Quarterly*, 70(3):230-242.

Goeree, J. K., McConnell, M. A., Mitchell, T., Tromp, T., & Yariv, L. (2010). The 1/d law of giving. *American Economic Journal: Microeconomics*, 2(1), 183-203.

Granovetter, M. S. (1973) The strength of weak ties. *American journal of sociology*, 1360-1380.

Gundelach, B., & Freitag, M. (2014) 'Neighbourhood diversity and social trust: An empirical analysis of interethnic contact and group-specific effects', *Urban Studies*, 51(6), 1236-1256.

Harada, M. (2013) "Generalized sensitivity analysis and its application to quasi-experiments", *Working paper*.

Helliwell, J. F., & Putnam, R. D. (2004). The social context of well-being. *Philosophical transactions-royal society of London series B biological sciences*, 1435-1446.

Herreros, F. (2004) *The problem of forming social capital: Why trust?*, Palgrave Macmillan.

Herreros, F. (2012) 'The state counts: State efficacy and the development of trust', *Rationality and Society*, 24(4), 483-509.

Herreros, F., & Criado, H. (2008) 'The state and the development of social trust', *International Political Science Review*, 29(1), 53-71.

Hooghe, M., Reeskens, T., Stolle, D., & Trappers, A. (2009) 'Ethnic diversity and generalized trust in Europe A cross-national multilevel study', *Comparative Political Studies*, 42(2), 198-223.

Huck, S., Lünser, G. K., & Tyran, J. R. (2012). Competition fosters trust. *Games and Economic Behavior*, 76(1), 195-209.

Leider, S., Möbius, M. M., Rosenblat, T., & Do, Q. A. (2009). Directed altruism and enforced reciprocity in social networks. *The Quarterly Journal of Economics*, 1815-1851.

- Imai, K., Keele, L., & Yamamoto, T. (2010) 'Identification, inference and sensitivity analysis for causal mediation effects', *Statistical Science*, 51-71.
- Kawachi, I., Kennedy, B. P., & Wilkinson, R. G. (1999) 'Crime: social disorganization and relative deprivation', *Social science & medicine*, 48(6), 719-731.
- Kennedy, B. P., Kawachi, I., Prothrow-Stith, D., Lochner, K., & Gupta, V. (1998) 'Social capital, income inequality, and firearm violent crime', *Social science & medicine*, 47(1), 7-17.
- Knack, S., & Keefer, P. (1997) 'Does social capital have an economic payoff? A cross-country investigation', *The Quarterly journal of economics*, 1251-1288.
- Laurence, J. (2009) 'The effect of ethnic diversity and community disadvantage on social cohesion: A multi-level analysis of social capital and interethnic relations in UK communities', *European Sociological Review*, jcp057.
- Lederman, D., Loayza, N., & Menendez, A. M. (2002) 'Violent Crime: Does Social Capital Matter?', *Economic Development and Cultural Change*, 50(3), 509-539.
- Levi, M. (1998) 'A state of trust', *Trust and governance*, 1, 77-101.
- Li, Y., Pickles A., and Savage, M. (2005) Social Capital and Social Trust in Britain. *European Sociological Review* 21:109-123.

Luhmann, N. 1979 *Trust and Power*, Chichester: Wiley.

MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002) 'A comparison of methods to test mediation and other intervening variable effects' *Psychological methods*, 7(1), 83.

Macy, M. W., & Skvoretz, J. (1998) The evolution of trust and cooperation between strangers: A computational model. *American Sociological Review*, 638-660.

Marschall, M. and Stolle, D. (2004) Race and the city: neighborhood context and the development of generalized trust. *Political Behavior* 26(2):125-153.

Mayer, N. (2003) Democracy in France: Do Associations Matter? in Hooghe M., and Stolle (eds.). *Generating Social Capital: Civil Society and Institutions in Comparative Perspective* New York: Palgrave Macmillan.

Messner, S. F., Baumer, E. P., & Rosenfeld, R. (2004) 'Dimensions of social capital and rates of criminal homicide', *American Sociological Review*, 69(6), 882-903.

Milinski, M., Semmann, D., & Krambeck, H. (2002). Donors to charity gain in both indirect reciprocity and political reputation. *Proceedings of the Royal Society of London B: Biological Sciences*, 269(1494), 881-883.

Minhaj, H. (2017) *White House Correspondents' Association Dinner*, C-Span, 27 April.

- Muthén, B. (2011). Applications of causally defined direct and indirect effects in mediation analysis using SEM in Mplus. *Manuscript submitted for publication*, 1-110.
- Newton, K., and Delhey, J. (2005) Predicting cross-national levels of social trust: global pattern or nordic exceptionalism? *European Sociological Review* 21(4):311-327.
- Nowak, M. A., & Sigmund, K. (2005). Evolution of indirect reciprocity. *Nature*, 437(7063), 1291-1298.
- Paxton, P. (2007) Not All Association Membership Increase Trust: A Model of Generalized Trust in Thirty-One Countries. *Social Forces* 86:47-76.
- Pfeiffer, T., Tran, L., Krumme, C., & Rand, D. G. (2012). The value of reputation. *Journal of the Royal Society Interface*, 9(76), 2791-2797.
- Phan, Mai B. (2008) 'We're all in this together: context, contacts, and social trust in Canada', *Analyses of Social Issues and Public Policy* 8(1):23-51.
- Portes A, Vickstrom E. (2011) 'Diversity, social capital, and cohesion', *Annual Review of Sociology* 37:461-79.
- Preacher, K. J., Zyphur, M. J., & Zhang, Z. (2010) 'A general multilevel SEM framework for assessing multilevel mediation', *Psychological methods*, 15(3), 209.

Preacher, K. J. (2011). Multilevel SEM strategies for evaluating mediation in three-level data. *Multivariate Behavioral Research*, 46(4), 691-731.

Preacher, K. J. (2015) 'Advances in mediation analysis: A survey and synthesis of new developments', *Annual Review of Psychology*, 66, 825-852.

Prell, C. (2012). *Social network analysis: History, theory and methodology*. Sage.

Putnam, R. (1993) *Making Democracy Work: Civic Traditions in Modern Italy*, Princeton: Princeton University Press.

Putnam, R. (1995a) Tuning In, Tuning Out: The Strange Disappearance of Social Capital in America, *Political Science & Politics* 28(4):664-683.

Putnam, R. (1995b) Bowling Alone: America's Declining Social Capital. *Journal of Democracy* 6(1):65-78.

Putnam, R. (2000) *Bowling Alone: The Collapse and Revival of American Community*, New York: Simon and Schuster.

Putnam, R. (2001) Social capital: Measurement and consequences. *Canadian Journal of Policy Research* 2(1):41-51.

Putnam, R. (2007) 'E Pluribus Unum: Diversity and Community in the Twenty-first Century', *Scandinavian Political Studies* 30(2):137-174.

Rand, D. G., & Nowak, M. A. (2013). Human cooperation. *Trends in cognitive sciences*, 17(8), 413-425.

Richey, S. (2010) 'The impact of corruption on social trust', *American Politics Research*, 38(4), 676-690.

Robbins, B. G. (2011) 'Neither government nor community alone: A test of state-centered models of generalized trust', *Rationality and Society*, 23(3), 304-346.

Robbins, B. G. (2012) 'A blessing and a curse? Political institutions in the growth and decay of generalized trust: A cross-national panel analysis, 1980–2009', *PloS one*, 7(4), e35120.

Rosenfeld, R., Baumer, E., & Messner, S. F. (2007) 'Social trust, firearm prevalence, and homicide', *Annals of Epidemiology*, 17(2), 119-125.

Ross, C. E., & Jang, S. J. (2000). Neighborhood disorder, fear, and mistrust: The buffering role of social ties with neighbors. *American journal of community psychology*, 28(4), 401-420.

Rothstein, B. (2013) 'Corruption and social trust: Why the fish rots from the head down', *Social Research: An International Quarterly*, 80(4), 1009-1032.

Rothstein, B., & Eek, D. (2009) 'Political corruption and social trust an experimental approach', *Rationality and Society*, 21(1), 81-112.

Rothstein, B., & Stolle, D. (2008) 'The state and social capital: An institutional theory of generalized trust', *Comparative politics*, 441-459.

Rothstein, B., & Uslaner, E. M. (2005) 'All for all: Equality, corruption, and social trust', *World politics*, 58(01), 41-72.

Sampson, R. J. (1988). Local friendship ties and community attachment in mass society: A multilevel systemic model. *American Sociological Review*, 766-779.

Sampson, R. J. (1991). Linking the micro-and macrolevel dimensions of community social organization. *Social Forces*, 43-64.

Sampson, R. J. (2006). How does community context matter? Social mechanisms and the explanation of crime rates. *The explanation of crime: Context, mechanisms, and development*, 31-60.

Sampson, R. J. (2012). *Great American city: Chicago and the enduring neighborhood effect*. University of Chicago Press.

Sampson, R. J., Morenoff, J. D., & Gannon-Rowley, T. (2002). Assessing "neighborhood effects": Social processes and new directions in research. *Annual review of sociology*, 28(1), 443-478.

Sapienza, P., Toldra, A., & Zingales, L. (2007). *Understanding trust* (No. w13387). National Bureau of Economic Research.

Scott, J. (2012). *Social network analysis*. Sage.

Sønderskov, K. (2011) Does generalized social trust lead to associational membership? Unraveling a bowl of well-tossed spaghetti. *European Sociological Review* 27(4):419-434.

Sønderskov, K. M., & Dinesen, P. T. (2015) 'Trusting the state, trusting each other? The effect of institutional trust on social trust', *Political Behavior*, 1-24.

Sønderskov, K. M., & Dinesen, P. T. (2014) 'Danish exceptionalism: Explaining the unique increase in social trust over the past 30 years', *European Sociological Review*, jcu073.

Stolle, D. (2003) The Sources of Social Capital. In Hooghe M., and Stolle (eds.). *Generating Social Capital: Civil Society and Institutions in Comparative Perspective*, New York: Palgrave Macmillan.

Stolle, D. and Harell, A. (2013) Social Capital and Ethno-Racial Diversity: Learning to Trust in an Immigrant Society. *Political Studies* 61(1):42-66.

Stolle, D., Petermann, S., Schmid, K., Schönwälder, K., Hewstone, M., Vertovec, S., Schmitt, T. and Heywood, J. (2013) 'Immigration-related diversity and trust in German cities: the role of intergroup contact', *Journal of Elections, Public Opinion & Parties* 23(3): 279-298.

Stolle, D., and Rochon, T. (1998) Are All Associations Alike? Member Diversity, Associational Type and the Creation of Social Capital. *American Behavioral Scientist* 42:47-65.

Stolle, D., and Rochon T. (1999) The Myth of American Exceptionalism: A Three Nation Comparison of Associational Membership and Social Capital. In Van Deth, J., Marraffi, M., Newton, K., and Whiteley. P. (eds.). *Social Capital and European Democracy*, London: Routledge.

Stolle, D., Soroka, S., and Johnston, R. (2008) When does diversity erode trust? Neighborhood diversity, interpersonal trust and the mediating effect of social interactions. *Political Studies*, 56(1), 57-75.

Sturgis, P., Brunton-Smith, I., Read, S., & Allum, N. (2011) Does ethnic diversity erode trust? Putnam's 'hunkering down' thesis reconsidered, *British Journal of Political Science*, 41(01), 57-82.

Sturgis, P., Patulny, R., Allum, N., Buscha F. (2012) Social Connectedness and Generalized Trust: A Longitudinal Perspective, *ISER working paper series* 19.

Tao, R., Yang, D. L., Li, M., & Lu, X. (2014) 'How does political trust affect social trust? An analysis of survey data from rural China using an instrumental variables approach', *International Political Science Review*, 35(2), 237-253.

Tingley, D., Yamamoto, T., Hirose, K., Keele, L., & Imai, K. (2014) 'Mediation: R package for causal mediation analysis'.

Twenge, J. M., Campbell, W. K., & Carter, N. T. (2014) 'Declines in trust in others and confidence in institutions among American adults and late adolescents, 1972–2012', *Psychological Science*.

Uslaner, E. M. (2002) *The Moral Foundations of Trust*. Cambridge: Cambridge University Press.

Uslaner, E.M. (2010) Segregation, mistrust and minorities. *Ethnicities* 10(4):415-434.

Uslaner, E.M. (2012) *Segregation and Mistrust: Diversity, Isolation, and Social Cohesion*, Cambridge: Cambridge University Press.

Van der Meer, T.W.G., (2016). Neither bridging nor bonding: A test of socialization effects by ethnically diverse voluntary associations on participants' inter-ethnic tolerance, inter-ethnic trust and intra-ethnic belonging. *Social science research*, 55, 63-74.

Van der Meer, j. (2003) Rain or Fog? An Empirical examination of Social Capital's Rainmakers Effects.” in Hooghe M., and Stolle (eds.). *Generating Social Capital: Civil Society and Institutions in Comparative Perspective*, New York: Palgrave Macmillan.

Van der Meer, T., & Dekker, P. (2011) ‘Trustworthy states, trusting citizens? A multilevel study into objective and subjective determinants of political trust’, *Political trust: why context matters*, 95-116.

Van der Meer, T.W.G., and Tolsma, J. (2014). Ethnic diversity and its effects on social cohesion.

Van Ingen, E. and Bekkers, R. (2015) Generalized Trust through Civic Engagement? Evidence from Five National Panel Studies. *Political Psychology*, 36(3), 277-294.

Wagner, U., Van Dick, R., Pettigrew, T. F., and Christ, O. (2003) Ethnic prejudice in East and West Germany: The explanatory power of intergroup contact. *Group Processes & Intergroup Relations*, 6(1):22-36.

Welch, M. R., Sikkink, D., and Loveland, M. T. (2007) The radius of trust: Religion, social embeddedness and trust in strangers. *Social Forces*, 86(1):23-46.

Wollebaek, D., and Selle, P. (2002) Does participation in voluntary associations contribute to social capital? The impact of intensity, scope, and type. *Nonprofit and Voluntary Sector Quarterly* 31:32-61.

You, J. S. (2005) *Corruption and inequality as correlates of social trust: Fairness matters more than similarity*, Hauser Center for Nonprofit Organizations, Harvard University.

You, J. S. (2012) 'Social trust: Fairness matters more than homogeneity', *Political Psychology*, 33(5), 701-721.

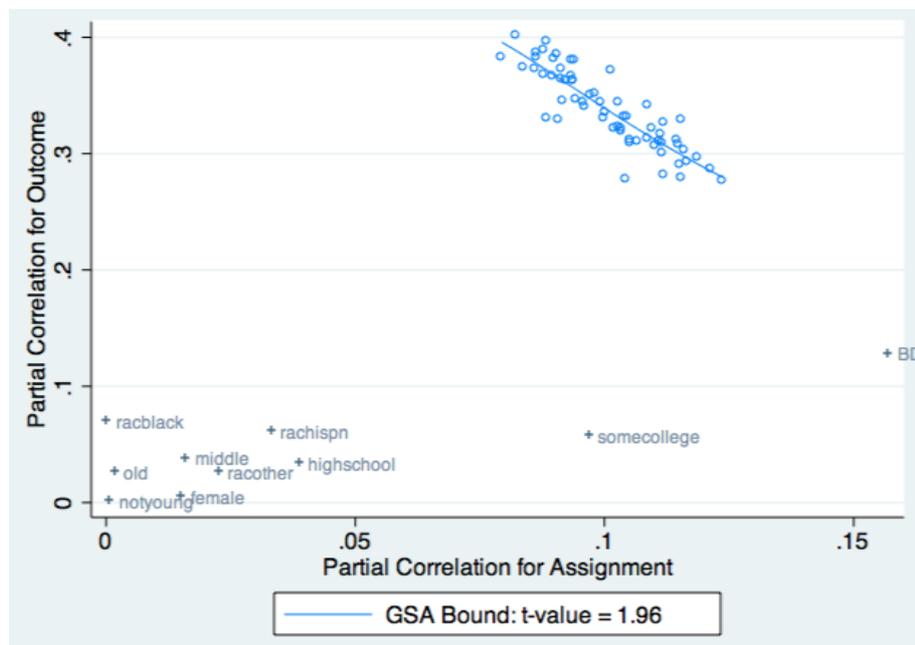
Zak, P. J., & Knack, S. (2001) 'Trust and growth', *The economic journal*, 111(470), 295-321.

Zmerli, S., & Hooghe, M. (2011) *Political trust: Why Contexts Matter*, ECPR Press.

Appendix A (Chapter 2)

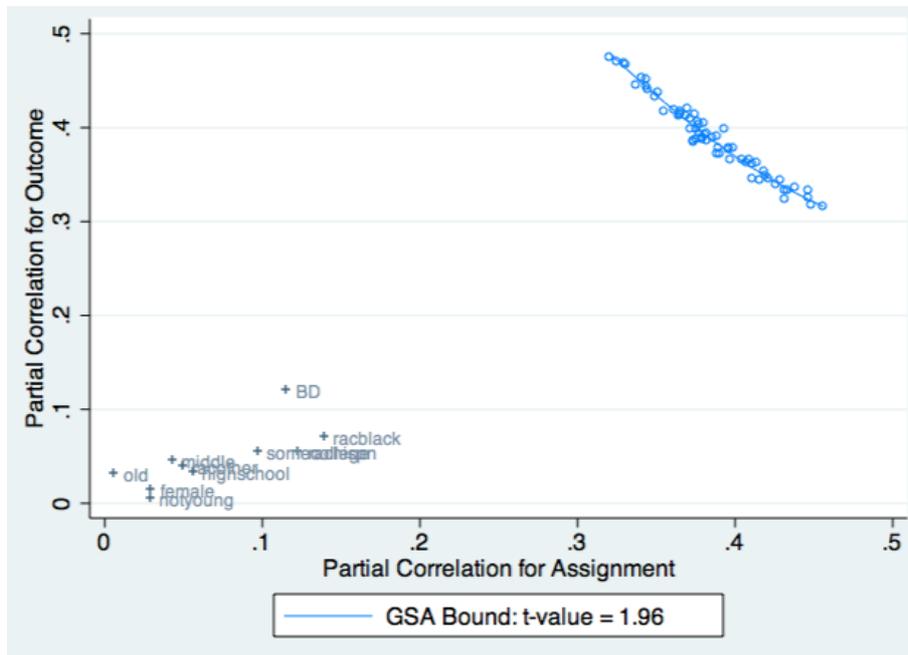
Graphs A.1, A.2 and A.3 show three sensitivity analyses (calculated through generalized sensitivity analysis – Harada, 2013) for “Associational involvement”, “Friendship relations” and “Neighbourhood relations”, using the same covariates of Model 1 – Table 2.2. Blue points forming the contour curve in the graphs represent possible confounders whose partial correlation with the treatment and outcome variable would change the test statistic of the treatment effect to an insignificant level (in this case, I have set a level of 0.05).

Graph A.1 – Sensitivity analysis for Associational involvement



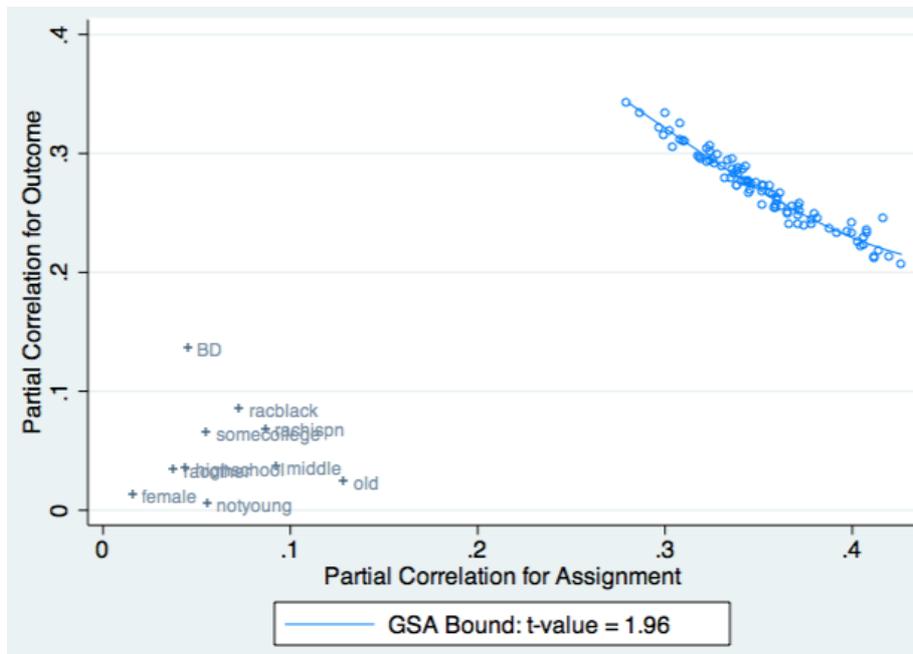
Source: SCCBS 2000

Graph A.2 – Sensitivity analysis for Friendship relations



Source: SCCBS 2000

Graph A.3 – Sensitivity analysis for Neighbourhood relations



Source: SCCBS 2000

Appendix B (Chapter 3)

The overall density of links in a community is the ratio between the actual links of all nodes in the community over all possible links within that community. As the nature of direct and indirect links is different (direct links imply a bi-directional relationship, while indirect links do not), we need to calculate their density separately.

Thus, the overall density of direct links in the community can be calculated as follows:

$$\text{overall density of direct links} = (a + b) / \frac{n * (n - 1)}{2}$$

where $n > 2$ and n is the number of nodes (i.e. subjects per session), a is the number of links in subgroup A and b is the number of links in subgroup B.

Whereas the overall density of indirect links in the community was calculated according to the following formula:

$$\text{overall density of indirect links} = (a + b) / n * (n - 1)$$

where $n > 2$ and n is the number of nodes (i.e. subjects per session), a is the number of links in subgroup A and b is the number of links in subgroup B.

Table B.1 – Mean trust (amount sent) and trustworthiness (amount returned) by treatment.

	Mean Trust	Standard Error	95% Conf. Interval	N
Treatment 2 subgroup A	51.95	2.54	46.93 – 56.96	156
Treatment 2 subgroup B	44.32	2.46	39.46 – 49.17	164
Treatment 1 subgroup A	49.75	2.68	44.45 – 55.05	153
Treatment 1 subgroup B	36.07	2.36	31.41 – 40.72	166
Treatment 0	35.99	3.11	29.81 – 42.16	135

	Mean Trustworthiness	Standard Error	95% Conf. Interval	N
Treatment 2 subgroup A	.35	.02	.31 - .38	150
Treatment 2 subgroup B	.26	.02	.23 - .30	141
Treatment 1 subgroup A	.34	.02	.30 - .38	147
Treatment 1 subgroup B	.30	.02	.26 - .34	138
Treatment 0	.24	.02	.19 - .28	100

Figure B.1 – Average Seconds used to make a decision as First mover (across all rounds)

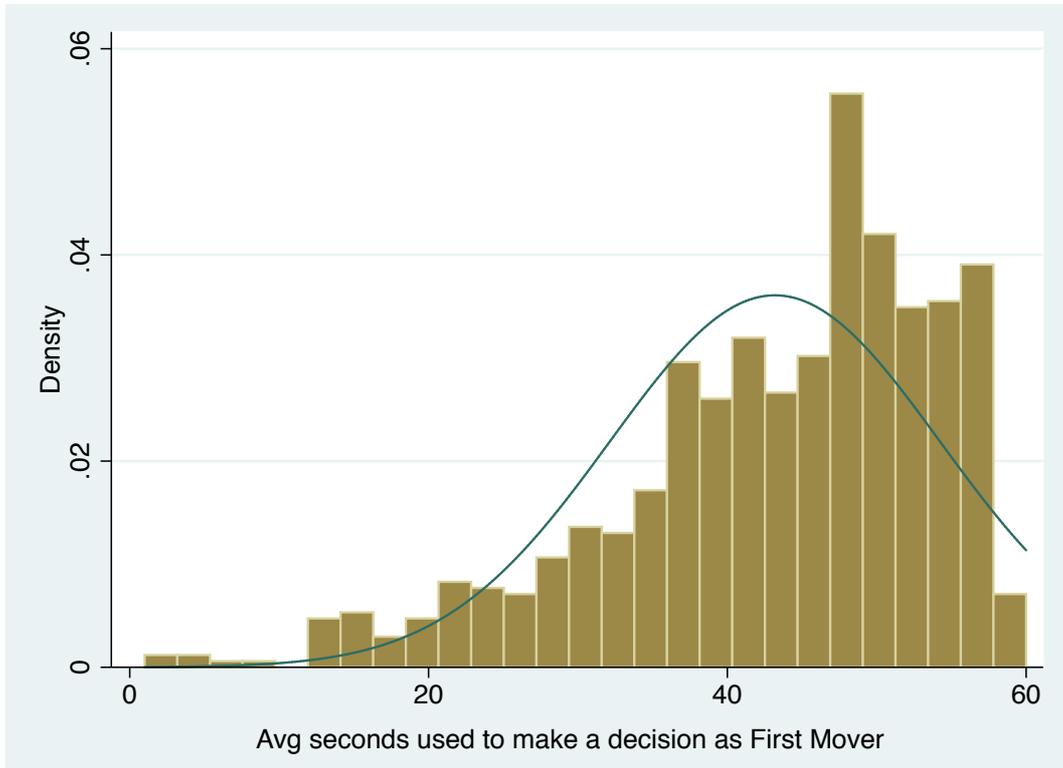


Figure B.2 – Average Seconds used to make a decision as Second mover (across all rounds)

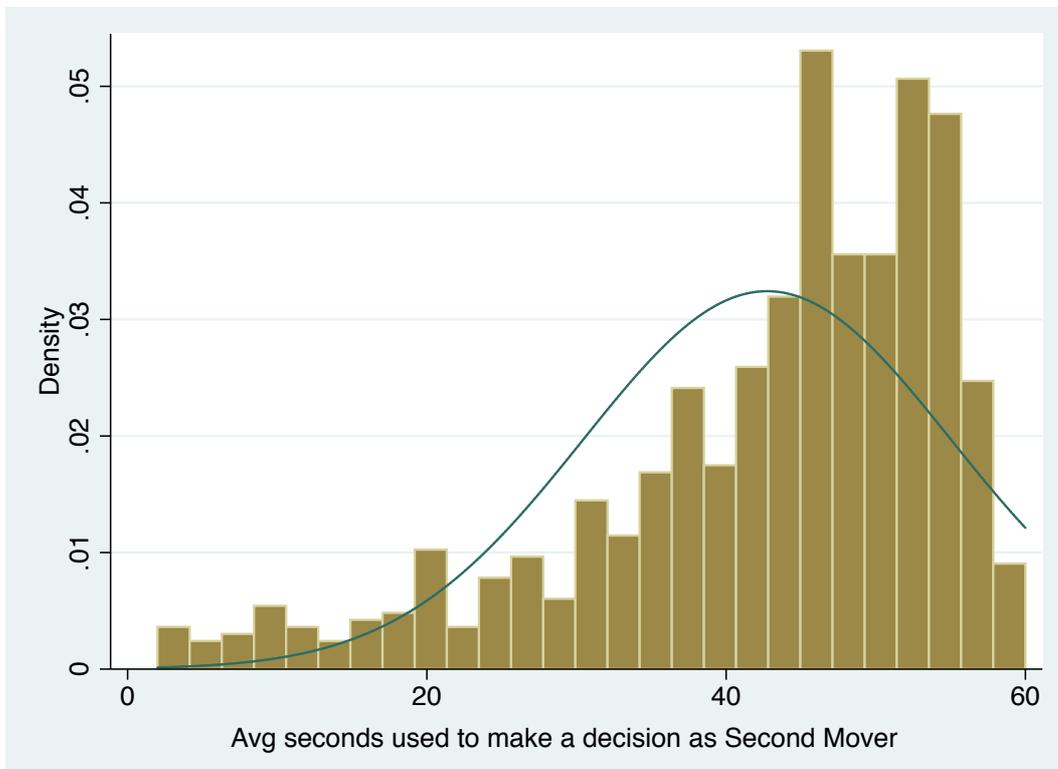


Figure B.3 – 1st Mover Choice (Screenshot)



Figure B.4 – 1st Mover Payoff (Screenshot)

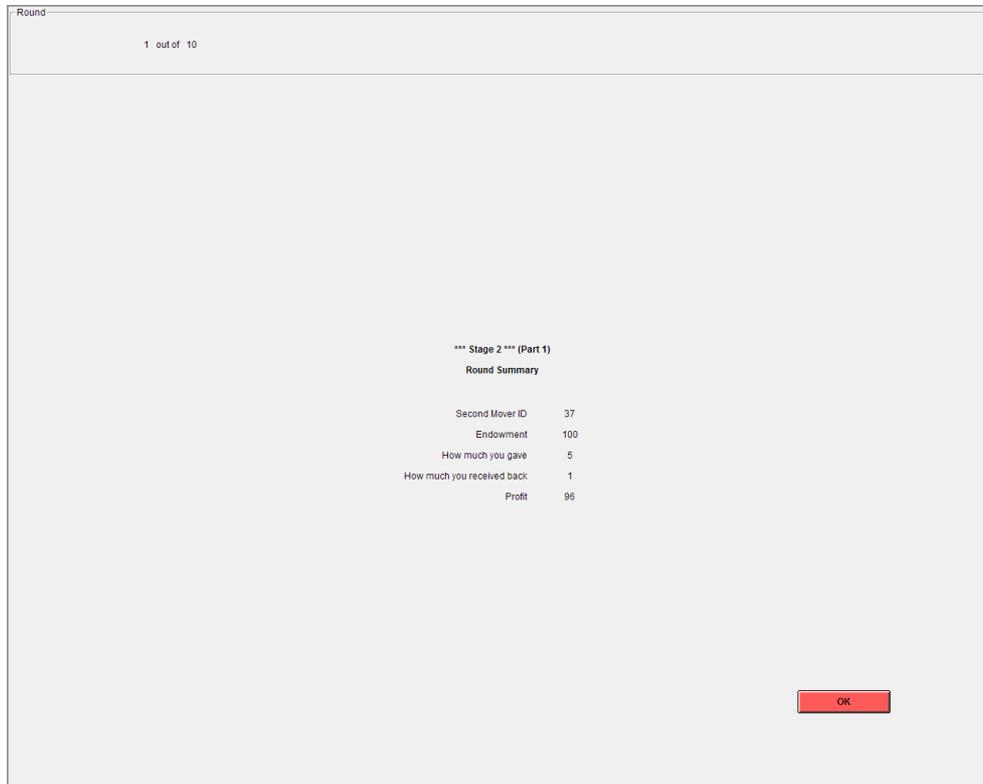


Figure B.5 – 1st Mover Reporting (Screenshot)

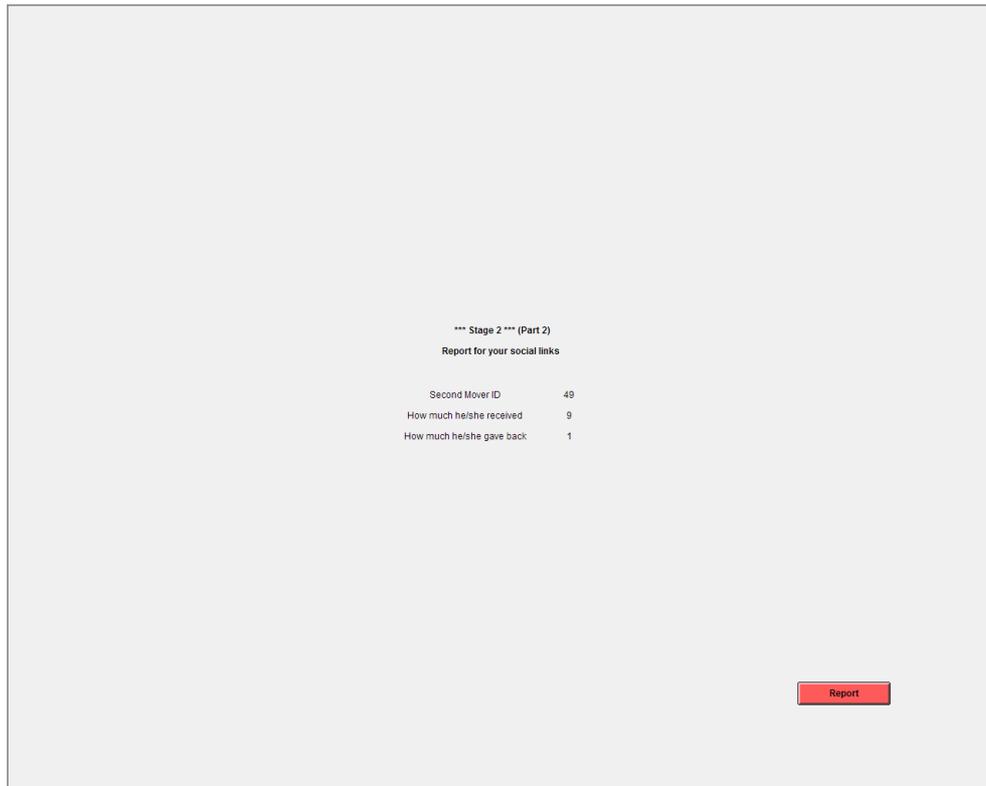


Figure B.6 – 1st or 2nd Mover receive Report (Screenshot)

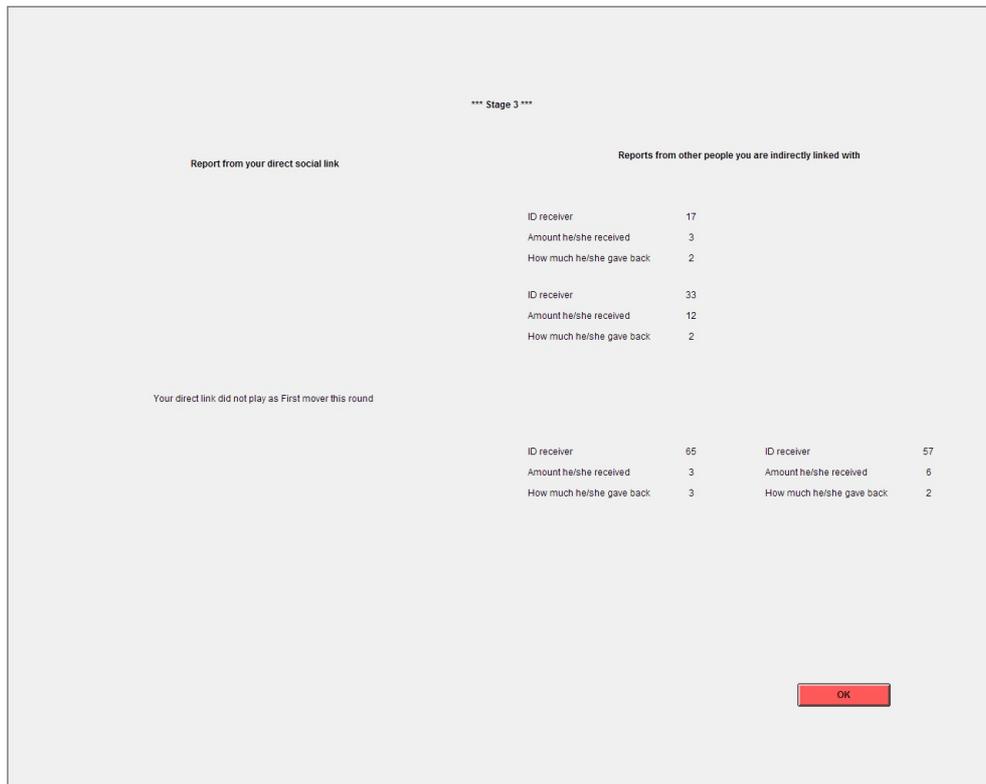


Figure B.7 – 2nd Mover Choice (Screenshot)

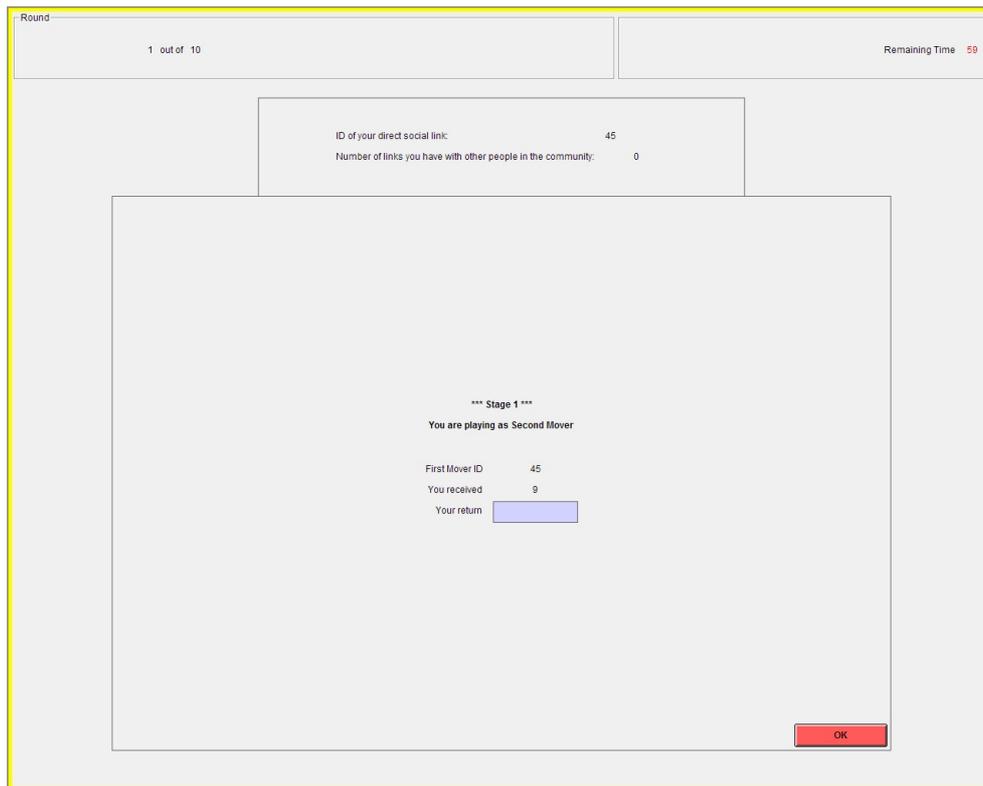
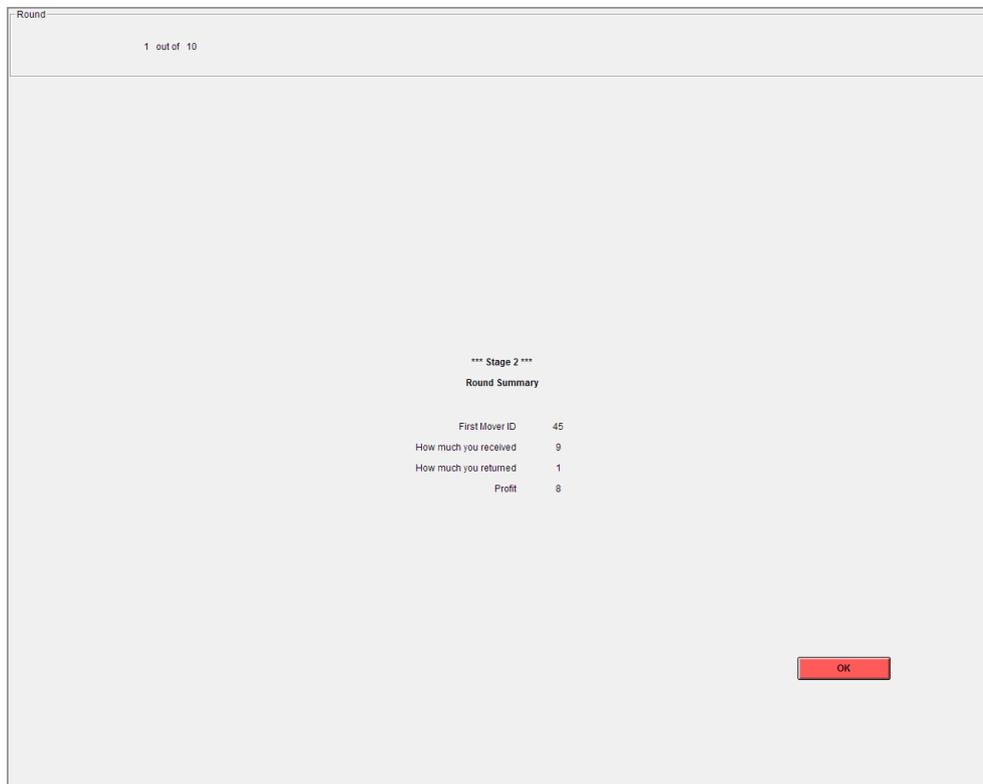


Figure B.8 – 2nd Mover Payoff (Screenshot)



TREATMENT 0 – NO DENSITY

GENERAL INSTRUCTIONS

There are 3 parts to the Experiment:

- Questionnaire
- Detailed Instructions
- Game

To thank you for participating in this Experiment, we have given you £2.5. In addition, you can earn Experimental Points that will be converted into real earnings. We expect the average total earning to be within the £8 - £12 range, but your actual earnings may vary considerably depending on your performance. The expected duration of the Experiment is about 60 minutes, and you need to fully dedicate your time to this Experiment for the next 60 minutes. The aim of this Experiment is to study how individuals make decisions in certain contexts. You will make decisions that will affect the amount of points you earn and the amount of points other players earn. Before starting the Experiment, you will be asked to take a brief questionnaire. After the questionnaire, you will be provided with the Detailed Instructions. Note that each participant is shown exactly the same Instructions.

[Here followed the Questionnaire]

DETAILED INSTRUCTIONS

The game

You will now play 10 rounds of a “game”. At the beginning of each round you will be randomly assigned to a role. There are two possible roles in the game: “First Mover” and “Second Mover”. Each round is the same and consists of 2 stages. If you are playing as a “First Mover”, in stage 1 you will be given 100 Experimental Points (equivalent to £1). You can decide to send any amount of Experimental Points to another person we have randomly matched you with. This amount will be multiplied by 3. The other person will then decide whether to return part of the Experimental points or not. The other person is absolutely free to choose either options. Notice that you will play with the same person only once across all rounds.

In stage 2, you will be able to visualize a short summary of the round. If you are playing as a “Second Mover”, in stage 1 you will receive a certain amount of Experimental Points from a player you have been randomly matched with. The amount originally sent by the other player is multiplied by 3. You can decide to return or not any amount of the Experimental Points to the other person. Notice that you will play with the same person only once across all rounds. In stage 2, you will be able to visualize a short summary of the round.

TREATMENT 1 – LOW DENSITY

GENERAL INSTRUCTIONS

There are 3 parts to the Experiment:

- Questionnaire
- Detailed Instructions
- Game

To thank you for participating in this Experiment, we have given you £2.5. In addition, you can earn Experimental Points that will be converted into real earnings. We expect the average total earning to be within the £8 - £12 range, but your actual earnings may vary considerably depending on your performance. The expected duration of the Experiment is about 60 minutes, and you need to fully dedicate your time to this Experiment for the next 60 minutes. The aim of this Experiment is to study how individuals make decisions in certain contexts. You will make decisions that will affect the amount of points you earn and the amount of points other players earn. Before starting the Experiment, you will be asked to take a brief questionnaire. After the questionnaire, you will be provided with the Detailed Instructions. Note that each participant is shown exactly the same Instructions.

[Here followed the Questionnaire]

DETAILED INSTRUCTIONS

The game

Each player will now be assigned a numeric ID that is kept the same throughout the game. ID assignments are random and carry no particular meaning. Each player will also be assigned a certain number of social links. Social links are connections with other people taking part to the experiment. You can have social links with people of whom you know the ID (Direct social links) or not (Indirect social links). Each player will have between 1 and 2 social links. This means that there is going to be a low density of social links among participants. You will play 10 rounds of a “game”. At the beginning of each round you will be randomly assigned to a role. There are two possible roles in the game: “First Mover” and “Second Mover”. Each round is the

same and consists of 3 stages. If you are playing as a “First Mover”, in stage 1 you will be given 100 Experimental Points (equivalent to £1). After, you will be randomly matched with another player whom you will be able to identify by his/her ID. If the other player was matched with one of your social links in a previous round and he/she was playing as Second Mover, you will also be able to see how he/she behaved in that occasion. You can decide to send any amount of Experimental Points to the other person. This amount will be multiplied by 3. The other person will then decide whether to return part of the Experimental Points or not. The other person is absolutely free to choose either options. Notice that you will play with the same person only once across all rounds. In stage 2, you will be able to visualise a short summary of the round and report your experience to your social links. Each report will include how much you sent, the amount returned by the other player, and his/her ID. Finally, in stage 3 you will receive reports from your social links who played as First Movers. This information will be saved and automatically displayed in future Rounds. If you are playing as a “Second Mover”, in stage 1 you will receive a certain amount of Experimental Points from a player you have been randomly matched with. The amount originally sent by the other player is multiplied by 3. You can decide to return or not any amount of the Experimental Points to the other person. Notice that you will play with the same person only once across all rounds. In stage 2, you will be able to visualize a short summary of the round. Finally, in stage 3 you will receive reports from your social links who played as First Movers in the current Round. This information will be saved and automatically displayed.

TREATMENT 2 – HIGH DENSITY

GENERAL INSTRUCTIONS

There are 3 parts to the Experiment:

- Questionnaire
- Detailed Instructions
- Game

To thank you for participating in this Experiment, we have given you £2.5. In addition, you can earn Experimental Points that will be converted into real earnings. We expect the average total earning to be within the £8 - £12 range, but your actual earnings may vary considerably depending on your performance. The expected duration of the Experiment is about 60 minutes, and you need to fully dedicate your time to this Experiment for the next 60 minutes. The aim of this Experiment is to study how individuals make decisions in certain contexts. You will make decisions that will affect the amount of points you earn and the amount of points other players earn. Before starting the Experiment, you will be asked to take a brief questionnaire. After the questionnaire, you will be provided with the Detailed Instructions. Note that each participant is shown exactly the same Instructions.

[Here followed the Questionnaire]

DETAILED INSTRUCTIONS

The game

Each player will now be assigned a numeric ID that is kept the same throughout the game. ID assignments are random and carry no particular meaning. Each player will also be assigned a certain number of social links. Social links are connections with other people taking part to the experiment. You can have social links with people of whom you know the ID (Direct social links) or not (Indirect social links). Each player will have between 1 and 8 social links. This means that there is going to be a high density of social links among participants. You will play 10 rounds of a “game”. At the beginning of each round you will be randomly assigned to a role. There are two possible roles in the game: “First Mover” and “Second Mover”. Each round is the

same and consists of 3 stages. If you are playing as a “First Mover”, in stage 1 you will be given 100 Experimental Points (equivalent to £1). After, you will be randomly matched with another player whom you will be able to identify by his/her ID. If the other player was matched with one of your social links in a previous round and he/she was playing as Second Mover, you will also be able to see how he/she behaved in that occasion. You can decide to send any amount of Experimental Points to the other person. This amount will be multiplied by 3. The other person will then decide whether to return part of the Experimental Points or not. The other person is absolutely free to choose either options. Notice that you will play with the same person only once across all rounds. In stage 2, you will be able to visualise a short summary of the round and report your experience to your social links. Each report will include how much you sent, the amount returned by the other player, and his/her ID. Finally, in stage 3 you will receive reports from your social links who played as First Movers. This information will be saved and automatically displayed in future Rounds. If you are playing as a “Second Mover”, in stage 1 you will receive a certain amount of Experimental Points from a player you have been randomly matched with. The amount originally sent by the other player is multiplied by 3. You can decide to return or not any amount of the Experimental Points to the other person. Notice that you will play with the same person only once across all rounds. In stage 2, you will be able to visualize a short summary of the round. Finally, in stage 3 you will receive reports from your social links who played as First Movers in the current Round. This information will be saved and automatically displayed.

QUESTIONNAIRE

The questionnaire should take about 10 minutes. Each question can be answered simply by ticking the box next to the answer. We hope you will find it interesting and enjoyable. Note that all answers will be coded so that your anonymity will be protected in any work that will result from this project.

Please indicate your workstation number
Workstation number

Gender:

- Male
- Female

Highest educational or school qualification you have obtained:

- University Higher Degree (e.g. MSc, PhD)
- First degree level qualification including foundation degrees, graduate membership of a professional Institute, PGCE
- Diploma in higher education
- Teaching qualification (excluding PGCE)
- Nursing or other medical qualification not yet mentioned
- A Level
- Welsh Baccalaureate
- International Baccalaureate
- AS Level
- Certificate of sixth year studies
- GCSE/O Level
- CSE
- Other school (including school leaving exam certificate or matriculation)
- None of the above

Using the list below, can you please indicate your civil status?

- Married
- Widowed
- Divorced
- Separated
- Never married

Are you cohabiting with your partner?

- Yes
- No
- I don't have a partner

Principal occupation:

- Paid employment
- Student/attend university
- Work or assist in family business
- Autonomous professional, freelancer, or self-employed
- Job seeker following job loss
- First-time job seeker
- Exempted from job seeking following job loss
- Take care of the housekeeping
- Retired/pensioner
- Perform unpaid work while retaining unemployment benefit
- Perform voluntary work
- Does something else

What is your present citizenship?

- UK
- Other

In which country were you born?

- UK
- Other

Ethnic group:

- British/English/Scottish/Welsh/Northern Irish
- Irish
- Gypsy or Irish Traveller
- Any other White background
- White and Black Caribbean
- White and Black African
- White and Asian
- Any other mixed background
- Indian
- Pakistani
- Bangladeshi
- Chinese
- Any other Asian background
- Caribbean
- African
- Any other Black background
- Arab
- Any other ethnic group

Do you regard yourself as belonging to any particular religion?

- Yes
- No

Date of birth:

Year

Month

Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks? Please tick a box on the scale, where 0 means 'unwilling to take risks' and the value 10 means 'fully prepared to take risks'.

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

Do you think that most people would try to take advantage of you if they got the chance, or would they try to be fair?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

Would you say that most of the time people try to be helpful or that they are mostly looking out for themselves?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

How much do you trust each of the following groups of people:

People in your neighbourhood

- 1 - Cannot be trusted at all
- 2
- 3
- 4
- 5 - Can be trusted a lot

Strangers

- 1 - Cannot be trusted at all
- 2
- 3
- 4
- 5 - Can be trusted a lot

People in your family

- 1 - Cannot be trusted at all
- 2
- 3
- 4
- 5 - Can be trusted a lot

The next questions are about the types of groups, organisations or associations to which you may belong. These could be formally organized groups or just groups of people who get together regularly to do an activity or talk about things.

Can you indicate, for each of the organisations listed, what applies to you at this moment or has applied to you over the past 12 months? (more than one answer possible)

	No connection	Donated Money	Performed Voluntary work	Member	Participated in an activity
A political party or group	<input type="checkbox"/>				
A sports or recreational organisation	<input type="checkbox"/>				
A religious-affiliated group	<input type="checkbox"/>				
A neighbourhood, civic or community association	<input type="checkbox"/>				
Ethnic or immigrant association or club	<input type="checkbox"/>				
Other type of organisation	<input type="checkbox"/>				

Did you perform any other voluntary work over the past 12 months, other than indicated above?

- Yes
- No

Did you donate money for any cause over the past 12 months, other than indicated above?

- Yes
- No

Display This Question:

If Can you indicate, for each of the organisations listed, what applies to you at this moment or has applied to you over the past 12 months? (more than one answer possible) - Member Is Selected

Or Can you indicate, for each of the organisations listed, what applies to you at this moment or has applied to you over the past 12 months? (more than one answer possible) - Participated in an activity Is Selected

Or Can you indicate, for each of the organisations listed, what applies to you at this moment or has applied to you over the past 12 months? (more than one answer possible) - Performed Voluntary work Is Selected

Over the past year, would you say that your involvement in organisations has ...?

- Increased
- Decreased
- Stayed the same

Display This Question:

If Can you indicate, for each of the organisations listed, what applies to you at this moment or has applied to you over the past 12 months? (more than one answer possible) - Member Is Selected

Or Can you indicate, for each of the organisations listed, what applies to you at this moment or has applied to you over the past 12 months? (more than one answer possible) - Performed Voluntary work Is Selected

Or Can you indicate, for each of the organisations listed, what applies to you at this moment or has applied to you over the past 12 months? (more than one answer possible) - Participated in an activity Is Selected

What is the organisation you are most active in?

- A political party or group
- A sports or recreational organisation
- A religious–affiliated group
- A neighbourhood, civic or community association
- Ethnic or immigrant association or club
- Other type of organisation

Display This Question:

If Can you indicate, for each of the organisations listed, what applies to you at this moment or has applied to you over the past 12 months? (more than one answer possible) - Performed Voluntary work Is Selected

Or Can you indicate, for each of the organisations listed, what applies to you at this moment or has applied to you over the past 12 months? (more than one answer possible) - Member Is Selected

Or Can you indicate, for each of the organisations listed, what applies to you at this moment or has applied to you over the past 12 months? (more than one answer possible) - Participated in an activity Is Selected

How long have you been involved with this organisation?

From:

To:

Now, how about friends? About how many close friends do you have these days?

These are people you feel at ease with, can talk to about private matters, or call on for help. Would you say that you have:

- no close friends
- one or two
- three to five
- six to ten
- or more than that

Right now, how many people do you have in your life with whom you can share confidences or discuss a difficult decision?

- nobody
- one
- two
- three or more

Next questions are about public affairs.

How interested are you in politics and national affairs?

- Very interested
- Somewhat interested
- Only slightly interested
- Not at all interested

If there were to be a general election tomorrow, which political party do you think you would be most likely to support?

- Conservatives
- Labour
- Liberal Democrat
- Green Party
- UK Independence Party
- None
- Can't vote
- Other party

Moving on, please tick a box for each of the following statements whether you think it can always be justified, never be justified, or something in between

Claiming government benefits to which you are not entitled

- 0 - never be justified
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 - always be justified

Avoiding a fare on public transport

- 0 - never be justified
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 -always be justified

Cheating on taxes if you have a chance

- 0 - never be justified
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 -always be justified

Now a brief description of some people will be provided. Please read each description and tick a box to indicate how much each person is or is not like you.

“It is important to her/him to help the people around her/him. She/he wants to care for their well-being.”

- Very much like me
- Like me
- Somewhat like me
- A little like me
- Not like me
- Not like me at all

“It is important to her/him always to behave properly. She/he wants to avoid doing anything people would say is wrong.”

- Very much like me
- Like me
- Somewhat like me
- A little like me
- Not like me
- Not like me at all