UNIVERSITÀ DEGLI STUDI DI TORINO

Dipartimento di Psicologia

Dottorato di ricerca in
Scienze Psicologiche, Antropologiche e dell'Educazione
XXX ciclo

THE INSTITUTIONAL ROOTS OF INTERPERSONAL TRUST: THE ROLE OF INSTITUTIONS IN PROMOTING TRUST TOWARD STRANGERS

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A.A. 2014-2017

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CHAPTER 1

Introduction

The role of Institutions in Promoting Trust Toward Strangers

Trust is a fundamental process for political and economic well-being of countries, as well as a crucial factor for solving several real-world problems that arise when conflict of interests and fear of exploitation is at stake, such as the management of social dilemmas (Balliet & Van Lange, 2013). Indeed, from the very first influential works on trust (e.g., Rotter, 1967), research on the topic has constantly received growing attention from many disciplines (e.g., according to ProQuest web search, in the last decade published research articles on trust are over ten times more numerous than those published after Rotter's seminal paper). Across the years, this heterogeneity of contributions was reflected in a huge variety of different discipline-specific definitions of trust (Walterbusch, Gräuler, & Teuteberg, 2014). However, there is a common agreement in conceptualizing trust as a psychological state that entails the possibility to incur in some vulnerability and risk in situations of uncertainty and interdependence with others (Rousseau, Sitkin, Burt, & Camerer, 1998). Thus, finding ways to promote trust in these situations poses a fundamental challenge, given that individuals may prefer to not take the risk of being exploited and, more generally, miss the occasion to benefit from cooperative interactions.

So what is shaping these positive expectations about others' behavior? Among the most effective mechanisms that have been proposed, there is the reliance on previous interaction history, reputational mechanisms, and reciprocity (Delgado, Frank, & Phelps, 2005; King-Casas, Tomlin, Anen, Camerer, Quartz, & Montague, 2005). However, most social interactions in modern globalized societies occur with strangers. These kind of situation involve a significant degree of social uncertainty, since individuals cannot rely on past reputational information to detect others' potentially exploitative intentions. On the one hand, a huge body of work since the earliest contributions has recognized that individuals possess some stable or dispositional

tendencies to approach socially uncertain situations, determining a baseline level of interpersonal trust that is then generalized across different domains (Yamagishi, 2001). Accordingly, this dispositional attitude can be, at least in part, explained by inheritability and it is subsequently shaped by further interactions (Reimanna, Schilkeb, & Cook, 2017).

Along with these individual roots of trust, also structural factors and the integration between the micro and the macro levels of trust have been taken into account for a deeper understanding of how trust is shaped (Levi & Stoker, 2000; Uslaner, 2000). Indeed, even the most uncertain and, thus, risky social interactions at zero acquaintance never occur in a social vacuum. Instead, they are embedded in institutions, which constitute "rules of the game" and procedures that help structuring and increase predictability of social life (North, 1990). Past research offers some insight about the possibility that institutions regulating social interactions may promote or undermine trust among strangers (Levi, 1998). However, these contributions are mainly based on large-scale correlational data and do not entirely help in providing a clear picture on the directions of this relation (see e.g., Seifert, 2017). Moreover, existing evidence did not try to systematically investigate *when*, *why*, and *how* institutions influence trust towards others.

The present dissertation provides an empirical contribution that aims to address these issues by: (a) investigating when and why institutions promote or undermine trust with strangers, and (b) testing whether trustworthy or, conversely, corrupt institutions directly influence interpersonal trust toward strangers. Below, a brief theoretical overview on the role of trustworthy and corrupt institutions in shaping interpersonal trust is presented, as well as the current state of art on these issues. Finally, an overview of the chapters of the dissertation is provided.

Seminal theoretical perspectives advance the idea that the development of institutions is related to the emergence of modern large-scale human societies (Richerson et al., 2016), however, the theoretical debate on their actual relation is controversial. Indeed, two perspectives have emerged in literature, putting forward opposite predictions about the direction of the relation between institutions and trust. The so-called *political-institutional perspective* strongly argues in favor of the idea that institutions provide a springboard for trust among strangers to develop because of their key role to decrease risk and vulnerability in social interaction (North, 1990). This effect is mainly driven by the presence of rules and legal regulations that make the situations more predictable for individuals. On the other hand, the *crowding-out perspective* predicts that institutions have a negative effect on trust (e.g., Mulder, Van Dijk, De Cremer, & Wilke, 2006). Accordingly, scholars theorize that the mere presence of rules and law regulations makes people more suspicious when interacting with strangers and, then, less willing to incur the cost of being exploited. In other words, rules and regulations would convey a message suggesting that external systems of control are in place because strangers are not benevolent per se (Irwin, Mulder, & Simpson, 2014).

Evidence in support for one or the other perspective is scarce and mainly based on correlational designs that cannot provide a direct test for these hypotheses. Importantly, neither of these approaches has tried to put an experimental effort in understanding in which circumstances and why societal institutions may shape trust between unrelated citizens. Past research suggested that a possible factor that may account for the direction of the relation between institutions and interpersonal trust is the degree to which citizens trust those institutions (e.g., Cassar, d'Adda, & Grosjean, 2014). So that, when institutions are perceived as competent and trustworthy, individuals are also more inclined to trust more strangers (Schyns &Koop, 2010;

Sønderskov & Dinesen, 2016). However, as mentioned above, this evidence is merely correlational and there is very little research that investigate for example whether the actual implementation of a trustworthy or corrupt institution is able to affect trust toward stranger (e.g., Rothstein & Eek, 2009).

Besides the discrepancies among the two above mentioned perspectives, they both do not elaborate on possible psychological mechanisms explaining the relation between institutions and trust. Also, a coherent framework to understand the role of institutions in promoting trust with strangers has not been proposed yet. In general, it has been advanced that individuals make use of information about public institutions as heuristic to gain information about fellow citizens (Rothstein & Stolle, 2008a). Accordingly, individuals would think that if public representatives - who received power and responsibility to pursue the public interest - cannot be trusted, then "most other people" cannot be trusted either. However, this does not tell much about why it is the case. A possible hypothesis is that trustworthy institutions can fulfill individuals' need of feeling secure and protected (Mayseless & Popper, 2007). This hypothesis has contact points with research on compensatory control theory (e.g., Kay, Whitson, Gaucher, & Galinsky, 2009), and it is also coherent with evolutionary-historical perspectives that propose the emergence of institutions as responding to fundamental human needs (Hruschka & Henrich, 2013).

A vast amount of information individuals get about their institutional representatives consists in their degree of effectiveness and competence in carrying out their tasks and duties, as well as their adherence with shared moral standards (McGraw, 2011; Lautsen & Bor, 2017). Corruption is widespread across several countries and represents a threat for the functioning and the well-being of most societies, both from an economic and social perspective (Mauro, 1995; Rose-Ackerman, 2006). Corruption's devastating consequences are not only harmful when

actually occurring, but also when citizens perceive that their institutions regulating their socio-economic life are mostly engaging in corrupt practices (Chang & Chu, 2006). In general, corruption is broadly defined as a form of dishonest behavior that endangers the trust that each citizen poses in institutions (Rose-Ackerman, 2001). In other words, when institutions are perceived as dishonestly gaining an advantage from their invested public power, they are perceived corrupt as well.

Psychological research on corruption is a newly research area and mainly focuses on the processes that make individuals engaging in corrupt behaviors (for a review, see Köbis, Van Prooijen, Righetti, & Van Lange, 2016). To do so, past research employed experimental paradigms that made participants more or less prone to engage in corrupt behaviors and practices. For example, some research focused on some individual differences that can make people more corrupt (Frank & Schulze, 2000), or on intrinsic psychological mechanisms such as fear of being punished (Schulze & Frank, 2003). Other more recent research found that individuals tend to be more corrupt when this behavior is the product of a collaborative effort (Weisel & Shalvi, 2015), and that they tend to engage more in corrupt behaviors when corruption is abrupt, rather than presented gradually (Köbis, Van Prooijen, Righetti, Van Lange, 2017).

Surprisingly, empirical evidence on the deleterious effect of corrupt institutions on interpersonal processes such as trust and cooperation is still scarce. As noted from Judge and colleagues (2011), research investigating what make people corrupt is double than the research trying to understand the effect of corruption on the “institutional landscape”. Therefore, this area is less explored and much more need to be understood on these issues. The few research on the effect of corruption seems to suggest that there is a negative effect on social capital and trust, since it implicates an abuse of entrusted power to serve personal interests (Graycar & Smith,

2011; Rothstein & Uslaner, 2005). Using cross-national survey datasets, this research showed that countries characterized by high levels of corruptions are also correlated with high levels of distrust toward strangers (e.g., Banerjee, 2016; Richey, 2010; Uslaner, 2003). However, given that this research mostly employed correlational designs, it is worth to further explore this relationship, understanding whether a direct relation between corruption and trust is actually in place as well as its direction. Indeed, even though most research posits that corruption is the cause for the erosion of social capital and trust (Anderson & Tverdova, 2003; Chang & Chu, 2006), there is also research proposing that the relation is reversed (Bjonskov, 2011), or even mutual (Uslaner, 2002).

Overview of the Present Dissertation

The present dissertation aims to contribute to the understanding the role of institutions in the development of trust toward strangers. We test the effect of different perceptions of institutions (i.e., trustworthy and corrupt) on trust perception and behavior, investigating possible mechanisms that underline this relation, testing the model across multiple cultures, and integrating different research methods. In particular, the present dissertation consists of two empirical chapters in which (a) we test whether the mere presence of institutions promotes or undermines trust, in which circumstances this happens, and the generalizability of this effect across several countries (Chapter 2). Moreover, (b) we test whether perception and real interaction with a corrupt institution is able to undermine trust toward strangers (Chapter 3). Below a brief overview of each chapter is presented.

In Chapter 2, we advance a theoretical model where we predict that institutions, when trusted, make people experience a feeling of security that, in turn, affects interpersonal trust. Across four studies, we address several hypotheses derived from this model. In Study 2.1, our

goal was to understand whether the mere presence of institutions (present vs absent) promotes interpersonal trust. We also investigate whether this effect could be mediated by institutional trust. A political-institutional perspective predicts that the presence of institutions enhances interpersonal trust, while a crowing-out perspective predicts that institutions undermine trust. We experimentally tested this hypotheses, advancing the idea that institutional trust – and not the mere presence of institutions per se – plays a key role. In Study 2.2, we proceeded to further test our model by examining the role of a possible mechanism underlying why trustworthy institutions would increase interpersonal trust. Study 2.2 was a survey study where we examine whether trust towards five different type of public institutions elicits a sense of security and, in turn, trust in strangers. Therefore, using a different design, our goal was to replicate and extend findings on the relationship between institutional trust and interpersonal trust by testing for the mediating role of the sense of security. In Study 2.3, we replicate findings from Study 2.2 employing a between-subjects experimental design that allowed to manipulate institutional trust. To do so, we devised a scenario-paradigm in which participants got information about police performance in the country from where their fictitious partner came from. In the *high institutional trust* condition, the institution was extremely skilled, committed and responsible while in the *low institutional trust* condition participants received an opposite description. Our prediction was that in the high trustworthy institutions condition, individuals would feel more protected, and then would trust more strangers. In Study 2.4, we generalized our model across 16 countries (N = 180,051) using the European Social Survey (ESS) open access database with data on a time span of 12 years, and controlling for several indicators of objective quality of the political and economic institutions of these countries.

In Chapter 3, we investigated the negative effects of corrupt institutions on interpersonal trust and cooperation. In particular, we examined whether corruption influences interpersonal trust with strangers in an economic-game setting. Across two online studies, we used a between-subjects experimental design in which we manipulated the dishonesty of a target who would then be acting as a third party institution in an economic game. In a third online study we aimed to replicate the findings with real interaction among participants. To do so, we revisited the sequential dyadic die-rolling paradigm (Weisel & Shalvi, 2015), and then we assessed trust perception and subsequent cooperation with an unrelated stranger in three different mixed-motive situations: a trust game (Study 3.1), a prisoner's dilemma game (Study 3.2), and a dictator game (Study 3.3). In Study 3.1, participants were randomly assigned in a between-subjects experimental design were they were exposed to corruption of the institution by making them observing a fictitious behavior of a player (lately acting as the institution). Then, they played a trust game where a third party, i.e. the fictitious player they observed earlier, was dishonest (corrupt condition), honest (trustworthy condition), or was an unrelated player (control condition). Then, we measured our main dependent variable of trust perception toward their partner in the trust game. We predicted that individuals in the corrupt condition would have displayed less trust toward their partner, compared to those in the other two conditions, and that this in turn would affect cooperation in the trust game. In Study 3.2, participants were randomly assigned in a 2 (institution: corrupt vs trustworthy) × 2 (communication: present vs absent) between-subject design. Participants were exposed to the same manipulation as in Study 1, but this time we used another measure of cooperation: behavior in a prisoner's dilemma game. To test the robustness of the negative effect of corrupt institutions on interpersonal trust, we added a condition where participants could receive a cooperative message (or not) from the unknown

partner. Our main measure of interpersonal trust remained the same. In Study 3.3, our aim was to replicate results of our main prediction about institutions on trust in a real interaction task. The procedure was the same of previous studies, besides the aspect that participants were no longer interacting with fictitious partners. Moreover, we here employed a dictator game to understand whether our results were consistent across a wide range of economic paradigms. So, participants actually engaged in an interaction with the institution, who had all the incentives to act dishonestly. Then, as in the previous studies, this institution played the role of third party in the dictator game.

Each chapter represents an independent research article on the theme of the role of institutions in promoting - or undermining - trust toward strangers. Studies presented in Chapter 2 have been conducted under the supervision of Prof. Cristina Mosso and Dr. Katharina Gangl. Prof. Paul Van Lange and Dr. Jan-Willem Van Prooijen provided detailed feedback on an earlier draft of the work. Studies presented in Chapter 3 have been conducted under the supervision of Prof. Cristina Mosso, Prof. Paul Van Lange, and Dr. Jan-Willem Van Prooijen. Both Chapters 2 and 3 will be submitted in 2018 to peer-reviewed psychology journals.

CHAPTER 2

From Trustworthy Institutions to Trustful Citizens

From Trustworthy Institutions to Trustful Citizens: Short Summary

The present Chapter proposes a model where we hypothesize that institutions affect trust between unrelated strangers indirectly via institutional trust, which fosters a feeling of security for individuals. Study 2.1 revealed experimentally that the presence of institutions directly leads to higher interpersonal trust, and that institutional trust mediates this relationship. Study 2.2 used survey data on a wide range of state institutions, Study 2.3 manipulated institutional trust, and in Study 2.4 we test our model across 16 countries. Across the studies, we find support for the hypothesis that trust in institutions affects interpersonal trust beliefs and behavior indirectly via the mediational role of feelings of security. The results remain consistent even when we consider the influence of individual differences linked to interpersonal and institutional trust (Study 2.1-2.3) and country level indicators of institutional performance (Study 2.4).

Introduction

Trust among citizens is crucial for the societal, political, and economic functioning of a state (Sullivan & Transue, 1999). Interpersonal trust is defined as a psychological state that involves the intention to accept vulnerability in social interactions, under conditions of risk and interdependence (Mayer, Davis, & Schoorman, 1995; Rousseau et al., 1998). Societies with high interpersonal trust have happier citizens (Portela, Neira, & del Mar Salinas-Jiménez, 2013), more political participation (La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 1997) and stronger economic growth (Algan & Cahuc, 2010). Importantly, social interactions involving trust do not occur in a social vacuum, but are directly or indirectly embedded in a context regulated by institutions, which constitute "rules of the game" and procedures that help structuring and increasing predictability of social life (North, 1990).

Indeed, many accounts suggest that the evolution of institutions is related to the development of modern large-scale human societies (Richerson et al., 2016). However, little research has been done to understand whether and why societal institutions shape trust between unrelated citizens. In particular, past research focusing on the association between institutions and interpersonal trust has yielded somewhat different conclusions. For example, there is scientific debate about the effectiveness of societal institutions in promoting interpersonal trust, and whether institutions may sometimes undermine rather than promote trust (Robbins, 2011). Also, this literature relies largely on correlational studies within one particular society and a limited set of institutions, with little attempt to examine the key mechanisms underlying an often assumed association between societal institutions and interpersonal trust (Rothstein & Eek, 2009).

In the present Chapter, we formalize a model that argues for a central role of societal institutions, which can stimulate trust between citizens through enhanced feelings of security.

Specifically, the model, depicted in Figure 2.1, suggests that trustworthy institutions serve as cues conveying that one is not completely at the mercy of potentially hostile strangers, but instead that one is protected in case strangers have exploitative intentions. Put differently, societal institutions can increase trust between unacquainted citizens through a reputation of being trustworthy themselves. These hypotheses are tested by investigating the predictive value of several (trustworthy) political and social institutions and their ability to convey a feeling of security, which in turn should foster interpersonal trust.

Do institutions promote or undermine trust among strangers?

Trust is a pervasive phenomenon of social life and a lubricant for many societal processes. It comes into play in situations of interdependence, risk and free choice (Righetti & Finkenauer, 2011). Moreover, trust is a multidimensional construct that can be differentiated into trusting beliefs and the resulting trusting intentions or behavior (Clark & Payne, 1997; Das & Teng, 2004; Gill, Boies, Finegan, & McNally, 2005; McKnight, Cummings, & Chervany, 1998). The former refers to individuals' perceptions of trustworthiness of a specific person, while the latter reflect the acceptance of vulnerability and actions undertaken to gain possible advantages (Yu, Saleem, & Gonzalez, 2014).

Most research on trust proposes previous interaction history (e.g., Chang, Doll, van't Wout, Frank, & Sanfey, 2010; Delgado, Frank, & Phelps, 2005; Frank, Gilovich, & Regan, 1993) and reputation among individuals (e.g., King-Casas, Tomlin, Anen, Camerer, Quartz, & Montague, 2005) as important determinants of interpersonal trust. However, in modern societies, individuals often need to cooperate with strangers whose past cooperative behavior is unknown, thus resulting in a high degree of vulnerability and uncertainty (Campbell, 2010). Here, institutions such as public administration or the police come into play as important pillars of

interpersonal trust. They may offer individuals cues that allow to assess other individuals' trustworthiness, after which they decide whether to cooperate (Robbins, 2011), even without reputational information. Citizens make inferences about these institutions, which subsequently may affect their behavior.

One way to reduce uncertainty in social exchanges is the establishment of institutions, which are defined as formal and informal "rules of the game" and procedures that help structuring and increasing the predictability of social life (Helmke & Levitsky, 2004; North, 1990). Two competing theoretical accounts still debate on the positive or negative effect that institutions have on interpersonal trust (Robbins, 2012). The political-institutional perspective suggests that institutions are central in building interpersonal trust since they constrain and enable individuals' actions and may reduce vulnerability based on mere expectations (Hodgson, 2006; Herreros, 2008; Mayer et al., 1995). Institutions thus provide formal and informal rules (e.g., via social norms and legal regulations), which in turn increase the social costs of offenses and exploitative behavior, allowing interpersonal trust to develop (Knight, 2001; Rothstein & Stolle, 2008b). By contrast, the crowding-out perspective (e.g., Bohnet & Baytelman, 2007) argues that external systems and rules can signal others' untrustworthiness and, therefore, decrease the motivation to trust (Tenbrunsel & Messick, 1999). According to this perspective, social constraints may even undermine trust among individuals (Malhotra & Murnighan, 2002; Strickland, 1958).

Empirical evidence also follows this mixed trend. While establishing a sanctioning system (even if costly for the individuals, e.g., Fehr & Gächter, 2002) may effectively change people's expectations regarding others, resulting in higher contribution to the public good (Yamagishi, 1986), it has also been observed that that individuals tend to trust others less when

such a sanctioning institution is in place (Mulder, Van Dijk, De Cremer, & Wilke, 2006; Irwin, Mulder, & Simpson, 2014), and this also occurs when they are merely primed with constructs related to law enforcement (e.g., Callan, Kay, Olson, Brar, & Whitefield, 2010). However, there are reasons to think that examining whether these institutional constraints are considered legitimate or trustworthy themselves may be beneficial for understanding the broader picture. Although external institutions may actually undermine interpersonal trust in some situations, this effect is conditional to whether people perceive them as legitimate (e.g., Cassar, d'Adda, & Grosjean, 2014). In the next section, we will focus on research addressing the effect of institutions, perceived as trustworthy, on interpersonal trust.

Do trustworthy institutions promote trust among strangers?

Institutional trust refers to the extent to which people accept and perceive institutions as serving the common interest in accordance with their normative expectations (Miller & Listhaug, 1990; Morselli, Spini, & Devos, 2015). This perception depends on the belief that institutions are benevolent, competent, reliable, and responsible (Devos, Spini, & Schwartz, 2002). Evidence drawn from correlational survey studies suggests that institutions may be associated with interpersonal trust, particularly when they themselves are considered trustworthy (Freitag & Bühlmann, 2009). A number of survey studies indeed reveals that institutional trust is correlated with interpersonal trust, e.g., in Europe (Nannestad, Svendsen, Dinesen & Sønderskov, 2013), Asia (Tan & Tambyah, 2011, Sun & Wang, 2012) and the USA (Schyns & Koop, 2010). Moreover, although some authors propose that this relationship might actually be reversed (i.e., with interpersonal trust influencing institutional performance; e.g., Knack, 2002) or mutual (e.g., Brehm & Rahn, 1997), other more recent studies with individual fixed effects and cross-lagged panel models (Sønderskov and Dinesen, 2014; 2016) suggested that this is not the case.

Although the effect of institutional on interpersonal trust has been extensively discussed (e.g., Seifert, 2017), empirical evidence to illuminate this relationship, as well as its underlying processes, is scarce. For instance, to the best of our knowledge the only study offering evidence for a causal effect of institutions on interpersonal trust is Rothstein and Eek's experiment (2009), which manipulated the trustworthiness of institutions by using scenarios that described the corruption level of institutional representatives in a fictitious country. In this study, two samples from Sweden and Romania - countries differing for corruption and interpersonal trust levels - were exposed to eight experimental conditions in a within-subjects design. The different scenarios respectively manipulated a bribe (present or absent), the initiator (the authority or the citizen), and the outcome of the exchange (positive or negative). The results showed that when public authorities in the scenario were depicted as corrupt, the participants reported similar distrust toward the citizens of the fictitious country. While these findings are in line with our reasoning, the authors did not test the mechanisms underlying this effect, nor did they test the relationship between institutional and interpersonal trust in the context of real existing institutions and considering real trusting behavior. As such, little is known about the question of whether institutional trust influences interpersonal trust among unrelated strangers, or what underlying processes are responsible for this hypothesized relationship. In the present research, we provide a first attempt to systematically test this relationship in four studies, utilizing different research methods including a survey, two experimental studies, and a large cross-national databank analysis across a time range of 12 years.

The protective value of trustworthy institutions

Individuals are motivated to avoid victimization and exploitation from others (Gollwitzer & Rothmund, 2011) and to pursue safety and security by reducing personal threats (Kenrick,

Neuberg, Griskevicius, Becker, & Schaller, 2010) in interdependent situations (e.g., in close relationships; Murray, Derrick, Leder, & Holmes, 2008). Among their other functions, we propose that institutions may have a crucial role in enhancing feelings of security and safety in social life (Rothstein & Stolle, 2008b). Trustworthy institutions hence may be an effective way to achieve a sense of security and reassurance (Mayseless & Popper, 2007). This line of reasoning is consistent with various theoretical perspectives. For instance, research on compensatory control theory (e.g., Kay, Whitson, Gaucher, and Galinsky, 2009) suggests that the presence of benevolent institutions provides structure in daily life, which allows individuals to achieve a greater sense of control over threatening events (Kay, Gaucher, Napier, Callan, & Laurin, 2008).

In this regard, institutions related to law and order may lead citizens to feel protected against potential offenses from other fellow citizens (Rothstein and Stolle, 2008a). Social institutions (Mayseless & Popper, 2007), religious institutions (Kirkpatrick, 1999) or the government (Berg & Johansson, 2010) are supposed to serve this motive and increase individuals' feeling of security. Also in experimental studies, individuals prefer to interact in settings where sanctioning and rewarding institutions are in place, compared to situations where no such institutions exist (Gürerk, Irlenbusch, & Rockenbach, 2006). These institutionalized societal models are particularly effective in mitigating people's fear of exploitation and, thus, to establish a culture of cooperation over time (Gächter, Renner, & Sefton, 2008). Further evidence in this vein comes from empirical research using country-level correlations from large datasets, suggesting that efficient institutions promote less parochial behavior and more trust toward strangers (Hruschka & Henrich, 2013; Knack, 2002). Moreover, recent survey data support the protective function of trust toward governmental and legal institutions (Berg & Johansson, 2016),

showing that crime-related insecurity mediated the relationship between institutional trust and interpersonal trust. However, no previous research has tested the prediction that trustworthy institutions enhance a feeling of security, which in turn indirectly explains the emergence of interpersonal trust.

Overview of the Current Chapter

In this Chapter, we propose a theoretical model in which trustworthy institutions indirectly promote trust among strangers by providing a feeling of security, which in turn allows people to accept vulnerability and to trust others. Put differently, even when trustworthy institutions have no feasible power to influence the behavior of a stranger in a given situation, they may install feelings of security which increases trust. Across four studies, we address several hypotheses derived from this model. In Study 2.1, we address the first part of the model by testing whether institutions (present vs absent) promote interpersonal trust through institutional trust. A political institutional perspective predicts that the presence of institutions promotes interpersonal trust, while a crowing-out perspective predicts that institutions undermine trust. Our hypotheses are in line with the former perspective, but we expand it by hypothesizing that the effect of institutions on interpersonal trust is mediated by trust in institutions.

In Study 2.2 to 2.4, we explore the role of the feeling of security in the relation between trustworthy institutions and interpersonal trust. In Study 2.2, we investigate whether trust toward several societal institutions is related to a feeling of security and subsequently trust in strangers through a survey study. In Study 2.3, we address the same hypothesis by directly manipulating trustworthy institutions in a between-subjects design. Finally, in Study 2.4 we generalize our model with a multilevel mediation analysis on European Social Survey (ESS) data across 16 countries.

Moreover, to test the robustness of our results, all studies included relevant control variables related to interpersonal and institutional trust, in order to rule out possible alternative explanations. To increase the generalizability of the findings, across Study 2.1 to 2.3, we controlled for individual differences related to interpersonal and institutional trust, namely trust propensity, conservative ideology, and security values. Trust propensity is a stable individual difference and one of the most significant predictors of trust in interactions with strangers (Colquitt, Scott, & LePine, 2007; Mayer et al., 1995). Conservative ideology and right-wing political orientation (Wilson, 1973) may both be associated with the need to reduce uncertainty (Jost et al., 2007) and support of external control systems. Security values are also related to trust in institutions and characterize individuals who prioritize security and predictability (Devos et al., 2002). To further clarify the predictive value of institutional trust on interpersonal trust, in Study 2.4, we included several country level macro-institutional indicators of institutional performance that strongly correlate with both the independent and the dependent variables (e.g., political and economic performance; Balliet & Van Lange, 2013; Mishler & Rose, 2001). Summary tables containing all path coefficients and standard errors of all studies are presented in the Supplemental Materials section.

Study 2.1

Past research presents controversial findings on the effect of institutions on interpersonal trust, suggesting that institutions either undermine or sustain the development of trust among individuals (Robbins, 2011). However, research suggests that considering the degree in which these institutions are trusted can inform this debate (e.g., Cassar, d'Adda, & Grosjean, 2014). To test this hypothesis, in Study 2.1, we included institutional trust as mediator of the relationship and examined whether the mere presence of institutions impacts trusting beliefs and,

consequently, the related trusting intentions (see Chang et al., 2010 for an example of this serial process) through the indirect effect of institutional trust.

Method

Participants. Participants were 80 Italians who volunteered to take part in an online experiment. Most were male (55%), with an average age of 37.25 (*SD* = 13.51, range: 18-67), and had a high school diploma (58.8%). Participants described themselves as moderate on a 10-point political orientation scale ranging from left to rightwing (*M* = 5.60, *SD* = 2.91).

Materials and Procedure. Participants were recruited via social media postings. After their anonymity was assured, they were randomly assigned to one of the two experimental conditions and received the scenario-based manipulation of the high or low presence of institutions. They then completed a questionnaire section in which trusting beliefs, trusting intentions, institutional trust, security values, and trust propensity were assessed.

***Manipulation*.** The institutions were manipulated by asking participants to imagine visiting a fictitious foreign country called Garovia as vividly as possible and to read a travel guide to plan their stay. According to the definition of institutions as rules and procedures that structure human interaction (e.g., North, 1990; Helmke & Levitsky, 2004), in the *high presence of institutions* condition, the fictitious country was described as a highly regulated country where many rules are in place. Conversely, in the *low presence of institutions* condition, the participants read a description of a country governed by few and flexible regulations (see Supplemental Materials). Importantly, since we were interested in testing the effect of institutions *per se* on interpersonal trust, our manipulation did not include any information on institutions' trustworthiness, sanctioning, monitoring, or rewarding power. A manipulation check comprising four items was used (e.g., "*many laws are in place*", $\alpha = .91$).

***Trusting intentions*.** Trusting intentions were assessed by asking participants to play a framed trust game (Berg, Dickhaut & McCabe, 1995). Participants were asked to imagine meeting a stranger when they had arrived at the Garovia train station, asking them for money with the promise of giving the entire amount back the following day in addition to a voucher of equivalent value (see Supplemental Materials). Participants were then asked to indicate the amount of money that they would hypothetically lend the stranger (in a range of 0-20 Euros). This situation presents a real-world example of the most common games measuring trust (Evans & Krueger, 2009). In our scenario, the outcome of the exchange is entirely determined by the decision of the trustee/participant as to whether to trust the stranger, earning some benefits when their trust is honored and implying the risk of loss when it is betrayed. Importantly, trustworthiness cues or information about the stranger (such as gender) were not provided.

***Trusting beliefs*.** Trusting beliefs regarding the stranger were assessed with an adaptation of the General Trust Scale (Yamagishi & Yamagishi, 1994; six items, e.g., "*I believe that this person is basically honest*", $\alpha = .93$). Similarly, trusting beliefs toward the citizens of Garovia were assessed as well (six items, e.g., "*I believe that most citizens of Garovia will respond in kind when they are trusted by others",* $\alpha = .93$).

***Institutional trust*.** Institutional trust was assessed as reason-based trust (Castelfranchi & Falcone, 2010), adapted from tax institutions (Hofmann, Gangl, Kirchler, & Stark, 2014) to the general public institutions of Garovia (seven items, e.g., "*I trust public institutions in Garovia (e.g. ministries, police, government, etc.) because they behave benevolently towards citizens*", $\alpha = .92$).

***Control variables*.**

***Trust propensity*.** Propensity to trust was measured through the Van Lange, Vinkhuyzen and Posthuma's (2014) Trust in Others Scale (three items, e.g., "*I dare to put my fate in the hands of most other people*", $\alpha = .68$).

***Security values*.** We assessed the endorsement of security values using the respective subscale from the Schwartz et al.'s (2001) Portrait Values Questionnaire (13 items, e.g., "*It is important to him to live in secure surroundings. He avoids anything that might endanger his safety*". $\alpha = .82$). Security values are related to the subjective importance of safety and harmony in society and relationships. Items depict a person in terms of what he/she considers important in life and respondents are asked to indicate to what extent they perceive this person similar to themselves on a six-point Likert scale from 1 (*not like me at all*) to 6 (*very much like me*).

At the end of the questionnaire, participants stated their political orientation and filled in a standard socio-demographic section, assessing sex, age, and education. All items were presented in a randomized order within each scale and, except for security values, were answered on a seven-point Likert scale from 1 (*I do not agree*) to 7 (*I totally agree*).

Results

Manipulation check. As expected, participants rated the fictitious country as significantly more regulated in the "high presence of institutions" condition ($M = 5.73$, $SD = 1.14$) compared to those in the "low presence of institutions" condition ($M = 2.80$, $SD = 1.01$), $t(78) = -12.25$, $p < .001$, $d = 2.72$). This finding indicates that participants perceived the manipulation as intended.

The direct impact of institutions on trusting beliefs and intentions. As predicted by the political-institutional perspective, participants perceived the stranger as more trustworthy in the high compared to the low presence of institutions condition, $t(78) = -2.08$, $p = .041$, $d = -0.46$.

Moreover, participants were more strongly inclined to lend money to the stranger in the country with many institutions as opposed to few institutions, $t(78) = -3.29$, $p = .002$, $d = -0.74$. No significant differences were found in trusting beliefs toward the citizens of the country among the different conditions, $t(78) = -.58$, $p = .563$, $d = 0.13$ (Table 2.1).

The indirect impact of institutions on trusting intentions through institutional trust and trusting beliefs. We conducted a mediation analysis using the SPSS macro Process model 6 (Hayes, 2013) with 5000 bootstrapped samples. As expected, the results of the serial multiple mediation analysis showed a significant effect of the low presence versus high presence of institutions on institutional trust ($b = .86$, $p = .002$), which in turn impacts the trusting beliefs toward the stranger ($b = .48$, $p < .001$) and, ultimately, the money that the participants intended to lend to the stranger ($b = 1.32$). The full serial mediation model was significant, 95% CI [0.50; 2.82], $R^2 = .38$.

To test whether the indirect effect could also be generalized to a broader perception of local society, we ran another serial mediation shifting the second mediator from the dyadic to the collective level to test for the indirect effect of institutions on trusting intentions through institutional trust and trusting beliefs of the citizens of the country. Consistent with the above-mentioned findings, institutions elicit institutional trust ($b = .86$, $p = .002$), which in turn affects the trusting beliefs of the citizens ($b = .45$, $p < .001$) and trusting intentions ($b = .95$, $p < .001$). The full serial mediation model was significant, 95% CI [0.33; 2.22], $R^2 = .21$).

The results show that serial mediation via institutional trust and trusting beliefs on trusting intentions remains significant if personal characteristics, such as trust propensity, endorsement of security values, and political orientation, are included as covariates in the analysis: trust perceptions of a stranger ($b = 1.01$; 95% CI [0.35; 2.23], $R^2 = .40$) and the citizens

in general (b =.70; 95% CI [0.19; 1.80], R^2 = .25). Thus, for both the dyadic and collective level, the influence of individual-level variables related to interpersonal and institutional trust has been excluded as competing explanations of the findings.

Discussion

In line with the political-institutional perspective (Herreros, 2008), the results of Study 2.1 show that strong versus weak institutions in a country increase participants' trusting beliefs and intentions (i.e., the willingness to lend money to a stranger). However, trusting beliefs concerning citizens in general were not directly affected by institutions. Nonetheless, the results suggest that the impact of institutions on trusting intentions is mediated by perceiving these institutions as trustworthy, which in turn affects both interpersonal trust toward the stranger and citizens in general. This effect is independent of the individual trust propensity, security values, and political attitudes. It is also noteworthy that trusting beliefs and intentions increased, even if the institutions in the current scenario had no power to actually influence the stranger's decision to honor or betray trust.

Study 2.2

In Study 2.2, we proceed to test our model by investigating possible explanations for why trustworthy institutions increase trust in strangers. Study 2.2 is a correlational study where we replicate and extend findings on the relationship between institutional trust and interpersonal trust by testing for the mediating role of the feeling of security. Moreover, unlike previous studies, we analyze it within a large set of different state institutions, and we included several control variables.

Method

Participants. 181 Italian participants (75.7% female), with an average age of 28.06 (*SD* = 9.74, range 18-69), completed the online questionnaire. Most had bachelor's degrees (40.3%). One participant was excluded from the analyses because she reported having a nationality different from Italian. The participants' regions of origin were northern (43.1%), central (14.9%) and southern (42%). Overall, the participants perceived themselves as slightly left-wing on a 10-point scale (*M* = 4.06, *SD* = 2.31).

Materials and Procedure. Participants were recruited via social media postings by asking them to take part in a study on the sociopolitical situation in Italy. The study included measures of trust in different national institutions, interpersonal trust, feeling of security enhanced by public institutions, security, propensity to trust, and a brief socio-demographic section. The items within each scale were randomized.

Institutional Trust. We assessed trust in five different institutions related to social order as reason-based trust (Hofmann et al., 2014, eight items for each institution; police: α = .81; legal system: α = .84; government: α = .81; media: α = .82; religious institutions: α = .87). In addition to the seven items proposed in the original scale, we presented an additional item to increase the scale validity, as was done in Agroskin, Jonas and Traut-Mattausch (2015) (i.e., "*I generally trust the police in my country*").

Trusting Beliefs. Similar to Study 2.1, trusting beliefs toward Italian citizens were measured through an adaptation of Yamagishi and Yamagishi's General Trust Scale (1994) (six items, α = .90). Participants were asked to answer the items by referring to Italian citizens e.g., "*I am trustful toward Italian citizens*".

Feeling of security. The feeling of security conveyed by institutions was assessed using three items that aimed to measure the feeling of security that individuals experience in relation to

institutional performance and representatives (three items: "*I feel protected by public institutions*", "*I am comforted by thinking that I can count on public institutions if anything happens to me*", "*I feel I can rely on public institutions to assert my own rights*", α = .90). Items were answered on a seven-point Likert scale from 1 (*I do not agree*) to 7 (*I totally agree*).

***Control variables*.** Measures of trust propensity (three items, α = .65), security values (five items, α = .74), and political orientation were identical to those used in Study 2.1.

At the end of the questionnaire, participants answered sociodemographic questions on sex, age, region of origin and education.

Results

The results (Table 2.3) show the expected significant associations between all variables of our model (aggregated and distinct trust in the five institutions, feeling of security and trusting beliefs toward citizens). Additionally, the individual differences used as controls confirmed the hypothesized association with both interpersonal trust and institutional trust. The correlation analyses also showed associations between trust propensity and interpersonal trust (r = .39), the endorsement of security values and institutional trust (r = .27) and right-wing political orientation and trust toward the police (r = .27), and religious institutions (r = .36), respectively. We also found a strong correlation found between institutional trust and feeling of security (r = .51), suggesting a possible overlap between the two constructs. To rule out this possibility, we run two confirmatory factor analyses (CFA) with a maximum likelihood estimation to compare the model fit of either one or two latent factors using lavaan version 0.5-23 (Rosseel, 2012) in R version 3.4.2 (R Core Team, 2016). Results are presented in Table 2.4, and give an initial evidence of a better fit of the two factor model, compared to the one factor.

The direct impact of institutional trust on trusting beliefs. To test whether institutional trust is directly related to trusting beliefs, we regressed trusting beliefs toward Italian citizens on the aggregated institutional trust measure and found the hypothesized link ($F(1, 179) = 15.29$, $p < .001$, $R^2 = .08$).

The indirect impact of institutional trust on trusting beliefs through a feeling of security. We conducted mediation analyses with 5,000 bootstrapped samples (Process model 4). As expected, we found a significant indirect effect of institutional trust on trusting beliefs toward Italian citizens considering all five institutions related to social order: police ($b = .13$; 95% CI [0.05; 0.21], $R^2 = .12$), legal system ($b = .14$; 95% CI [0.06; 0.24], $R^2 = .11$), government ($b = .13$; 95% CI [0.06; 0.23], $R^2 = .18$), religious institutions ($b = .04$; 95% CI [0.01; 0.09], $R^2 = .02$), and the media ($b = .08$; 95% CI [0.04; 0.16], $R^2 = .07$). Table 2.5 shows the mediation considering the measure of institutional trust obtained from averaging the mean scores of trust toward all five institutions. Overall, the relationship between institutional trust and trusting beliefs toward fellow citizens is mediated by the feeling of security that institutions generate ($b = .18$; 95% CI [0.05; 0.32], $R^2 = .13$), even controlling for trust propensity, security values, and political orientation ($b = .13$; 95% CI [0.04; 0.25], $R^2 = .25$).

Discussion

The findings of Study 2.2 support the results of Study 2.1, previous studies, and our key hypothesis. Trusting institutions are related to interpersonal trust, and this relationship is mediated by the feeling that institutions can protect individuals from the exploitative behavior of strangers. Study 2.2 shows that this indirect effect is consistent over five main public institutions related to social order. Moreover, this indirect effect appears to be independent from individual dispositions such as the propensity to trust, security values or political ideology. Thus, it seems

that when considering the indirect effect through a feeling of security, these individual-level variables are of marginal interest in the relationship.

Study 2.3

In Study 2.3, we aim to replicate the results of Study 2.2 experimentally with behavioral data. We tested our main prediction that institutional trust promotes interpersonal trust by increasing a feelings of security. Moreover, we tested an alternative explanation that this effect mainly depends on an increase of the expectations regarding the trustees' future reciprocity by including a measure of it and testing it as a competing mediator in the analyses. We again constructed a scenario in which institutions have no real means to influence the trustee and participants' expectations.

Method

Participants. A total of 94 participants (70.2% female) were recruited from an online panel at the University of Vienna (i.e., Sona System) and received 2 € as show-up fee in addition to a behavior-depending remuneration. Their average age was 25.45 (*SD* = 6.24), and most had a high school diploma (44.7%). Most were Austrian (59.5%); 22.3% were German and the remaining 18.1% were German-speakers from different countries. Again, participants described themselves as moderately left-wing (*M* = 4.12, *SD* = 1.57).

Materials and Procedure. Participants were invited via email to take part in "an international study on decision-making". First, they read that the study involved a decision game with real money at stake. We led the participants to believe that the present study involved real participants from eleven different countries. They were told that all personal information about the trustee would remain unknown during the game. This cover story was introduced to allow us

to manipulate institutional trust, exposing the respondents to two scenarios with different information about the police in the trustee's home country.

After the manipulation, the participants rated the perceived trustworthiness of the partner (trusting beliefs) and played the trust game (trusting behavior). They then completed a questionnaire in which we assessed the feeling of security enhanced by the police depicted in the scenario (three items, $\alpha = .96$), trust propensity, security values, risk attitudes, and political orientation. To avoid sequence effects, the scales were presented in two randomized sequences and the items within each scale were randomized.

***Manipulation*.** Trust in institutions was manipulated by providing participants with information about the police in the trustee's home country (referred to as Country X from now on). Participants were randomly assigned to one of two experimental conditions. They read a fictitious report of a survey on how institutions are perceived in the country that was conducted in 2014. Thus, in the *low institutional trust* condition, the police in Country X were depicted as poorly qualified and neither fulfilled their obligations and nor served the collective interest (e.g., definition by Devos et al., 2002), whereas in the *high institutional trust* condition, the police were described as extremely skilled, committed and responsible (see Supplemental Materials). At the end of the questionnaire, we introduced two manipulation checks to evaluate the extent to which the scenario triggered high or low trust in the police. First, we asked participants how likely they would be trusting the police in Country X on a seven-point Likert scale from 1 (*not at all*) to 7 (*completely*). Then, they were then asked to guess the trustee's country of origin out of a list of 10 countries. The countries were chosen from those with the highest and the lowest degrees of trust in institutions based on the OECD's report (2014) and included Switzerland, Luxembourg, Norway, Sweden and Finland as countries with the highest institutional trust, and

Portugal, Slovenia, Hungary, the Czech Republic and Greece as having the lowest rates of institutional trust.

***Trusting behavior*.** Trusting behavior was operationalized as the money invested in a trust game played with an unknown other (Berg et al., 1995). Participants were informed that their decision would have been randomly matched with that of another participant in the pool who will play a complementary role at a later stage of data collection. In reality, all participants played the sole role of trustor since we were only interested in trusting behavior. The participants were told that their outcome would depend on the amount the trustee would decide to send them back. Thus, participants received a show-up fee (€2) plus the exact amount they decided to give the trustee within the first phase of the trust game (a range of €0-1.50). After that, the comprehension of the game was verified through two questions.

***Expectations of reciprocity*.** Before giving any evaluation regarding trusting beliefs and behavior, participants were asked to express the percentage (from 0 to 100) of the money they expected the trustee send back to them after receiving the money from the participant (if any).

***Trusting beliefs*.** We measured trusting beliefs toward the trustee with the adapted General Trust Scale (Yamagishi & Yamagishi, 1994; six items, $\alpha = .88$).

***Feeling of security*.** The feeling of security enhanced by the police depicted in the scenario was assessed with items identical to those in Study 2.2 (three items, $\alpha = .90$).

***Control variables*.** Risk attitudes were measured through Weber, Blais & Betz's (2002) financial subscale of the Risk-Behavior Scale (10 items; e.g., "*Spending money impulsively without thinking about the consequences*", $\alpha = .68$). It is composed of several statements describing risky behaviors, and the participants are asked to rate the likelihood of engaging in each of them on a seven-point Likert scale from 1 (*extremely unlikely*) to 7 (*extremely likely*). A

measure of risk propensity was included as a covariate since, unlike Study 2.1 and 2.2, interpersonal trust was measured through an actual monetary investment decision and behavior in the trust game is associated with it (Evans & Krueger, 2011). Measures of trust propensity (three items, $\alpha = .75$), security values (five items, $\alpha = .72$), and political orientation were identical to those used in Study 2.1 and 2.2.

Results

Manipulation Checks. The manipulation of institutional trust was successful. Participants exposed to the scenario of high institutional trust perceived the police of Country X as more trustworthy ($M = 5.15$; $SD = 1.07$) compared to the other condition ($M = 2.43$; $SD = 1.44$), $t(83.05) = -10.32$, $p < .001$, $d = 2.14$ (see Table 2.6 for the percentage of answers associated with each country according to the experimental condition). Moreover, a Chi-square test was performed to test whether, consistently with the experimental condition, participants associated the description of the country to a real high trust versus low trust country as classified in the official rankings. As expected, those in the high institutional trust condition associated the country with the description of a high trust country as significantly higher than in the other condition, $\chi^2(1, N = 94) = 68.12$, $p < .001$.

The direct impact of institutional trust on trust beliefs and behaviors. To test whether institutional trust has a direct impact on trusting beliefs and trusting behavior, we used an independent samples *t* test comparing the trustworthiness perception of the trustee and the amount of money invested in the trust game between the two experimental conditions (see Table 2.7). On average, participants transferred 70.6% ($SD = 26.6\%$) of their initial endowment to the trustee, and no differences emerged for either trusting beliefs ($t(92) = -1$, $p = .317$, $R^2 = .01$) nor trusting behavior ($t(92) = -1$, $p = .321$, $R^2 = .01$).

Testing two competing psychological explanations on trusting beliefs. One intended contribution was to test whether the indirect effect of institutional trust on interpersonal trust could be simply traced back to an increase in the expectations of reciprocity rather than an enhancement of a feeling of security. To examine this possibility, we conducted a parallel mediation analysis (Process model 4) with 5,000 bootstrapped samples to test whether institutional trust indirectly influences trusting beliefs through a feeling of security and expectations of reciprocity. The results show that the feeling of security had a significant indirect effect on trusting beliefs toward the trustee, b = .39, 95% CI [0.09; 0.82], R^2 = .40, while expectations of reciprocity did not, b = .08, 95% CI [-0.01; 0.24], R^2 = .11.

The indirect effect of institutional trust on trusting behavior through feeling of security and trusting beliefs. Similar to Study 2.2, to test whether institutional trust would lead to greater trusting beliefs and ultimately to trusting behavior, we ran a serial mediation model (Process model 6) on a bootstrap sample of 5,000 participants. Moreover, in line with evidence obtained in the survey, we evaluated whether data provided support for the same serial link from institutional to interpersonal trust (beliefs and behavior) through an enhanced feeling of security. As expected, the results show a significant effect of institutional trust on the money that the participants invested in the trust game (b = .21, 95% CI [.07; .55], R^2 = .11) through the feeling of security that, in turn, impacts trusting beliefs toward the partner in the trust game. The full serial mediation model remained significant after controlling for trust propensity, security values, risk attitudes, and political orientation (b = .19, 95% CI [.03; .55], R^2 = .12). Tolerance was greater than .10 (.60), and the VIF was less than 4 (1.66), suggesting that multicollinearity was not an issue.

Discussion

The results of Study 2.3 replicate Study 2.2 with experimental data. Although we did not observe a direct effect of institutional trust on interpersonal trust, the former causally increased the feeling of security, which in turn predicted interpersonal trust. Moreover, although institutions intrinsically provide rules and regulations, which allow to develop expectations of others' behavior, we showed that this was not sufficient to promote trusting beliefs. Study 2.3 also considered these effects on trusting behavior with real incentives, providing evidence for the external validity of the results. As expected, participants tended to give more money only when they achieved feelings of security from the institutions. This finding emerged despite the fact that the institution could not actually protect or defend the rights of the participants in a highly uncertain social situation as modeled in the present trust game.

Study 2.4

Study 2.2 and 2.3 provide converging evidence on the hypothesis that institutions, when trustworthy, increase a feeling of security, and subsequently promote trust with strangers. Even if we found evidence across three studies using different methods, our results were limited to non representative samples from a small set of countries (Austria, Germany, and Italy). In Study 2.4, we fill this gap by testing the hypothesis that a feeling of security mediates the relation between trustworthy institutions and interpersonal trust, across 16 countries and across a time lapse of 12 years. Moreover, to further test the generalizability of the findings regarding feeling of security, we measured it differently from previous studies, in order to be less directly tied to the specific institutions under investigation and to further reducing potential overlaps. Finally, as in the other studies, we included several control variables specifically related to institutional performance (e.g. GDP, rule of law, market competitiveness etc.).

Method

Participants. This study used data from the European Social Survey (ESS). In total, answers from 180,051 participants (50.65% female) belonging to 16 countries of the European area (Belgium, Switzerland, Germany, Denmark, Spain, Finland, France, United Kingdom, Hungary, Ireland, Netherlands, Norway, Poland, Portugal, Sweden, and Slovenia) have been included in the analysis. Participants' average age was 47.27 (*SD* = 18.04), and most completed upper secondary education (35.7%). When asked to place their political orientation on a bipolar 11-point scale from 0 (*leftwing*) to 10 (*rightwing*) they described themselves as moderate (*M* = 5.08, *SD* = 2.11).

The samples included in the ESS data are representative for each country's population, and data are gathered through face-to-face individual interviews. In order to provide greater temporal stability of the theoretical assumption, we decided to include only those countries participating to all waves of ESS (1-7) from 2002 to 2014 and all the respondents not presenting any missing answer in the variables described below (initial and final sample sizes, together with the main descriptive statistics for each country, are reported in Table 2.9).

Variables and Measurements.

Institutional trust. Respondents indicated their degree of trust toward different public institutions (item: "*Using this card, please tell me on a score of 0-10 how much you personally trust each of the institutions I read out*"). Although ESS assesses trust in a broader set of public institutions established at international level (e.g., the United Nations), we created an average institutional trust index exclusively using responses for trust in 4 state institutions (i.e., "*country's parliament*", "*the legal system*", "*the police*", and "*the politicians*", α range = .78 - .87). Individual responses were given on a 11-points Likert scale, ranged from 0 (*no trust at all*)

to 10 (*complete trust*) and were aggregated within each country, using country means in the country-level analyses.

Interpersonal trust. Interpersonal trust toward strangers was assessed using the Generalized Trust Scale (three items; i.e. "*Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people?*", "*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?*", "*Would you say that most of the time people try to be helpful or that they are mostly looking out for themselves?*", α range = .63 - .77). Each item was answered on a 11-points Likert scale from 0 (*no trust at all*) to 10 (*complete trust*), phrased according to the specific item (e.g., 0 = *You can't be too careful*, 10 = *Most people can be trusted*). These items have been shown to provide a good cultural equivalence in past research (Hooghe, Reeskens, Stolle, & Trappers, 2009). Again, country-level analyses used individuals average scores, aggregated within each country.

Feeling of security. The single-item ("*How safe do you -or would you - feel walking alone in this area after dark?*") has been considered in this study as a proxy for assessing respondents' feeling of security. Answers have been reverse scored to be consistent with feeling of security mean scores obtained in Study 2.2 and 2.3, and they ranged from 1 (*very unsafe*) to 4 (*very safe*).

Control variables. Country-level proxies of institutional quality related to both political and economic institutions were selected for each of the 16 countries under investigation (i.e., government effectiveness, political rights, rule of law, economy competitiveness, GINI, GDP per capita). We selected available data for the time period between wave 1 and 7 of the ESS (2002-2014). Detailed descriptions of these indicators are provided in the Supplemental Materials section.

Results.

First, we corrected data for sampling errors, since Study 2.4 involved data collected from multiple countries. By applying the design weight variable (*dweight*) included in the ESS dataset throughout all the analyses, we adjusted the differences in the chance of selection of respondents for each country.

The indirect effect of institutional trust on interpersonal trust

To test our prediction that institutional trust promotes interpersonal trust by increasing a feeling of security, we performed multilevel mediation analyses with bootstrapping method (Tingley, Yamamoto, Hirose, Keele, & Imai, 2014) to account for the hierarchical structure of the ESS data, where respondents (level-1) are nested within countries (level-2). The mediation functions took as an input two multilevel regression models. The first multilevel regression had institutional trust as independent variable and feeling of security as dependent measure with countries as random intercept. The independent variables of the second multilevel regression were institutional trust and feeling of security, while the dependent variable was interpersonal trust, again with country as random intercept, and feeling of security as random slope.

In line with the proposed model, the results show that the feeling of security had a significant indirect effect in interpersonal trust, $b = .01$, 95% CI [0.01; 0.01], controlling for survey wave and common sociodemographic variables associated to interpersonal trust in survey research (i.e., gender, age, and education; e.g., Uslaner, 2002). This relation was partially mediated since the direct effect of institutional trust on interpersonal trust remained significant when controlling for the mediator — direct effect $b = 0.34$, $p < .001$, 95% CI [0.33; 0.34]; total effect $b = 0.35$, $p < .001$, 95% CI [0.34; 0.35]. The results show that including institutional quality indicators as covariates in the multilevel mediational analysis does not affect the

significance of the model, $b = 0.01$; 95% CI [0.01; 0.01]. The direct effect of institutional trust on interpersonal trust remained consistent when controlling for the mediator — direct effect = 0.34, $p < .001$, 95% CI [0.33; 0.34]; total effect = 0.35, $p < .001$, 95% CI [0.34; 0.35].

Discussion

The results of Study 2.4 replicate the evidence obtained in Study 2.2 and 2.3 with multinational ESS data with representative samples. Taking together responses obtained from participants of 16 different countries, across a time span of 12 years, we found that individuals tended to experience more feeling of security when perceiving public institutions as trustworthy, thus resulting in higher levels of interpersonal trust toward strangers. Remarkably, these effects have been observed even considering a more general feeling of security, not directly tied to the specific institutions as in Study 2.2 and 2.3. Moreover, by including country-level objective indicators of institutional quality (both political and economic), we find support for the hypothesis that the indirect effect of the feeling of security is more related to individuals' perception of the public institutions, rather than their actual efficiency.

General Discussion

Trusting strangers is a fundamental pillar of human societies. Decades of research have focused on several processes that may promote trust with strangers, but very little attention has been focused on one recurrent feature that characterize modern human interactions: the presence of institutions. Past prominent research provided initial evidence that institutions are somehow associated with trust, fairness and cooperation (Hruschka & Henrich, 2013). In this Chapter, we provided a first attempt to systematize the relation between institutions and trust by proposing that institutions, when trusted, foster a feeling of security and then promote interpersonal trust with strangers. We tested this model across four studies by using different research methods,

different operationalization of our constructs, across 16 countries, and controlling for several individual and country-level factors. Study 2.1 showed that the presence of institutions affects institutional trust, interpersonal trust beliefs and in turn, trusting intentions. Study 2.2 and 2.3 examined the psychological process by showing that the association between trustworthy institutions and interpersonal trust is mediated by the feeling of security. Trustworthy institutions serve as a cue that individuals are protected, which in turn indirectly allows them to accept vulnerability and to trust others. We replicated the same pattern in Study 2.4, by using a large sample from 16 countries, and accounting for several cross-cultural variables.

The present findings appear robust and generalizable across research methodologies and provide novel experimental evidence (Study 2.1 and Study 2.3) on the relationship between institutional and interpersonal trust. Our results revealed consistent indirect effects through the mediation of the feeling of security on trusting beliefs, both within a hypothetical scenario (Study 2.3) and with real perceptions of the present socio-political situation (Study 2.2 and Study 2.4). Furthermore, the hypotheses were tested using samples mostly composed of students (Study 2.1 and Study 2.3), a non-homogeneous sample of adults (Study 2.2), and nationally representative samples from 16 countries (N = 180,051). Finally, in all present studies the effect of various individual differences is taken into account by including them as covariates in all analyses. Intrapersonal trust characteristics (trust propensity, risk attitudes) and an individual's general tendency to rely more on institutional figures (conservative attitudes, political orientation) had no effect on the relationship between institutions and interpersonal trust. This suggests that the impact of institutions on interpersonal trust is robust and independent from many individual characteristics.

Altogether, the present research provides several theoretical implications. First, our results inform previous debates on whether the presence of institutions undermines or promotes trust toward strangers (Robbins, 2011). In line with the political-institutional perspective prediction, our results confirmed that perceiving of institutions as trustworthy in the first place promotes (and not undermines) interpersonal trust (Nannestad et al., 2013; Freitag & Bühlmann, 2009). In addition, the results show that this is not a mere spillover effect, but it is influential because it generates a feeling of security, which in turn makes people feel more prone to take the risk and trust others. This feeling of security (even when generalized and untied to the specific institutions, see Study 2.4) refers to the specific psychological need to feel protected against others' exploitation (e.g., Gollwitzer & Rothmund, 2011) and constitutes a fundamental function of institutions in organizing human societies that goes beyond the mere perception of institutions as competent and reliable (Devos, Spini, Schwartz, 2002; Rothstein & Stolle, 2008b).

The theoretical insights that we advance here may have noteworthy practical implications. Institutions that wish to promote public confidence and interpersonal trust need to communicate to the public in reliable and trustworthy ways that they potentially can protect them from the exploitation of others. Initiatives that show that wrongdoers are caught and prosecuted can likely increase the feeling of security. In contrast, media reports about non-retaliated criminal acts might undermine it. If public institutions cannot fulfill the need to feel secure, citizens may turn away from established institutions, start to individually protect themselves (e.g., by buying guns, employing security personnel, investing in lawyers and insurances), and to support (e.g., right wing political parties such as the AFD in Germany) and develop new parallel institutions (e.g., alternative media) that are aimed at fulfilling this need. In extreme cases, individuals even might turn to criminal organizations like the mafia in order to gain security

(Gambetta, 1993; Varese, 2001). Therefore, policy makers should pay careful attention to implementing actions, such as transparent communication, legitimate law enforcement and anti-corruption policies, which should contribute to the creation of a trusting climate (Sun & Wang, 2012).

This research has, however, also some limitations that need to be acknowledged. First, we did not find a direct relation between institutional and interpersonal trust. A possible reason could be that across our studies the institution was not directly involved in the (actual or imagined) interactions. In other words, individuals the institutions in our studies were not directly regulating the interaction with a stranger and could not influence outcomes (e.g., by punishing exploitative actions) in the current situations by any means. Second, some of the studies may be considered low-powered. Future studies should replicate these effects with more appropriate sample sizes. However, we found these results to be consistent across three studies and, importantly, we replicate the results in a large-scale dataset. Moreover, results of a post hoc power analysis (G*Power; Faul, Erdfelder, Buchner, & Lang, 2009) conducted on Study 2.1 (that has the lowest sample sizes, $N = 80$) revealed a statistical power of .64 for the main effect of the presence of institutions on trusting beliefs and .95 for trusting intentions, given the current sample size and effects. Third, not all the three components of institutional trust – authorities' competence, benevolence and integrity (McKnight et al., 1998) – have the same weight in determining the way institutions are perceived (e.g., in political candidates' evaluations, Laustsen & Bor, 2017). Thus, they may also not be effective in the same way in conveying the message that institutions can protect citizens. Moreover, in the present study, institutional trust was assessed based on a deliberate evaluation of institutions (reason-based trust), but this can also be found in relation to automatic and unintentional reactions to stimuli (implicit trust,

Castelfranchi & Falcone, 2010). Future research could test whether implicit trust cues, such as institutional symbols, have the same or different effects on interpersonal trust and cooperative climates in a society (Gangl, Hofmann, & Kirchler, 2015). Additionally, a future investigation could explore the functioning of institutional trust if the other is perceived to be part of an in- versus outgroup or a majority versus minority member. Although interpersonal trust has been assessed in terms of beliefs, intentions and behavior, all these measures refer to one-shot interactions in the present research. Exchanges with strangers within a society often do not exceed a single interaction, but future research could also investigate boundary conditions for this effect by testing the competing effect of institutional trust on interpersonal trust in frequent interactions, where previous interaction history comes into play.

CHAPTER 3

From Corrupt Institutions to Distrustful Citizens

From Corrupt Institutions to Distrustful Citizens: Short Summary

In this Chapter, we experimentally investigated whether both observing and interacting in a dishonest transaction with an institution influence interpersonal trust with strangers and subsequent cooperation in an economic-game setting. To do so, we revisited the sequential dyadic die-rolling paradigm and then we assessed trust perception and subsequent cooperation with an unrelated stranger in a trust game (Study 3.1, $N = 540$), in a prisoner's dilemma game (Study 3.2, $N = 503$), and in a dictator game (Study 3.3, $N = 382$). In two online studies (Study 3.1 and 2), we used a between-subjects experimental design in which we manipulated the dishonesty of a target that would then be acting as a third party institution in an economic game. Study 3.3 replicated the experimental procedure allowing actual online interaction among participants. Results of all the three studies consistently suggest that being exposed to corrupt institutions decreases trust perception of a stranger in an unrelated situation and, in turn, cooperation.

Introduction

Corruption is among the most pervasive and urgent problems of modern societies. It disrupts state economies, institutional wealth, and societal functioning at large (Hellman, Kaufmann, & Schankerman, 2000; Keefer & Knack, 1995). To get an impression of the extent of this phenomenon, the total amount of bribes worldwide is estimated to be approximately $1 trillion (Kaufmann, 2005), leading to severe other costs, such as the economic fall of entire countries (e.g., Park, 2012), environment degradation (Cole, 2007), and even sudden human deaths (Ambraseys & Bilham, 2011). Given its urgency, this phenomenon has attracted considerable research interest across many disciplines, such as economics, political science, sociology, and psychology, and it has been conceptualized in several different ways (see Köbis, Van Prooijen, Righetti, & Van Lange, 2016 for a review).

Among these discrepancies, there is some consensus in recognizing how corruption is interrelated with trust. First of all, trust among the interacting parties is necessary for the corrupt transaction to be in place (Uslaner, 2005). Also, corruption per se has been defined as an "abuse of *entrusted* power for private gains" (Graycar & Smith, 2011), or a dishonest behavior that breaches the trust toward a public official (Rose-Ackerman, 2001). Not surprisingly, indeed, some research has shown that the perception of corruption undermines political trust (Chang & Chu, 2006) and confidence toward the institutional representatives (Pharr, 2000). This is line with the idea that trusting an institution implies not only perceiving it as competent, but also benevolent and aligned with individuals' moral standards (Devos, Spini, & Schwartz, 2002).

When it comes to the relation between corruption and interpersonal trust among strangers in a given society, the picture become less clear. On the one hand, some have proposed that individuals in distrustful societies may develop a more tolerant attitude toward corruption, driven

by negative expectations regarding others' exploitative intentions (Moreno, 2002; Xin & Ruden, 2004). According to this perspective, especially high trusting individuals would honor and engage in bribery agreements (Jiang, Lindermans, & Bicchieri, 2015; Lambsdorf, 2002). On the other hand, others have argued that interpersonal trust levels may actually be affected by the perception that public institutions and authorities are corrupt (Banerjee, 2016; Rothstein & Eek, 2009). This is especially the case since it directly conveys a message stating that criminals are not effectively prosecuted and that the application of the law follows impartial rules (Rose-Ackerman, 2001). Some other have assumed mutual causality instead, with corruption and trust mutually nurturing and influencing each other (Morris & Klesner, 2010).

The current Chapter aims to provide a twofold contribution to this debate and, more broadly, to trust literature. Drawing on the political-institutional perspective (Herreros, 2008) and on previous findings on institutional trust (Chapter 2), we propose that corruption affects dramatically trust toward strangers. To test this idea, across three studies we test the direct effect of corruption, operationalized as perceived dishonesty, on interpersonal trust. Moreover, we further extend these claims by exploring whether these detrimental effects of corruption on interpersonal trust would spillover and, in turn, affect cooperation. Indeed, trust has been considered as one of the most influential factors that may influence cooperation in situations when a conflict between individual and collective interest and substantial risk of exploitation occur (i.e., social dilemmas, Balliet & Van Lange, 2013a). Given that the implementation of sanctioning institutions is one of the most powerful strategy to promote cooperation in absence of reputational information (e.g., Fehr and Gächter, 2000), their degree of corruption may undermine this effectiveness.

Yet, how can individuals learn about corruption of institutions if these transactions are kept covert by nature? Indeed, research on corruption has assessed it through survey measures of country-level perceptions of corruption provided by general public or experts' assessments (e.g. see Corruption Perception Index) from its very early stages (e.g., Mauro, 1995), since its perception is sufficient to elicit detrimental effects for countries' economies (Melgar, Rossi, & Smith, 2010) and, more specifically, on trust. People gather reliable information about corruption from two main different sources, namely second-hand learning (e.g., political scandals in mass media) and first-hand exposure (personal experience with corrupt authorities) (Čábelková & Hanousek, 2004). While the first kind of exposure is very frequent in daily life and has been associated to sudden declines in trust toward political representatives (Bowler & Karp, 2004; Halmburger, Rothmund, Schulte, & Baumert, 2012), the latter occurs significantly less often, but it elicits the most severe consequences on trust toward unrelated fellow citizens (Rothstein & Uslaner, 2005). However, the effects of these two different sources have never been tested together in a comparable setting (i.e., within the same paradigm).

Overview of the Current Chapter

The current Chapter aims to provide a twofold contribution to this debate by proposing a first empirical effort to understand the direct effect of institutions on interpersonal trust. Drawing on the political-institutional perspective (Herreros, 2008) and on previous findings on institutional trust (Chapter 2), we tested two hypotheses about corruption, interpersonal trust, and cooperation. First, people who observe or interact with an institution engaging in corrupt behavior will display less trust toward a stranger in an unrelated situation in which this institution is in place to provide sanctions. Second, this influence of corruption on interpersonal trust should, in turn, undermine subsequent cooperation with the same unknown partner in an

economic game. We tested these hypotheses across three studies. In Study 3.1, participants were exposed to a corrupt institution by observing a fictitious behavior of a player (lately acting as the institution) and, then, we assessed interpersonal trust and cooperation toward an unknown partner in a trust game. In Study 3.2, participants were exposed to the same manipulation as in Study 3.1, but we measured trust and cooperation in a prisoner's dilemma game. In addition, in Study 3.2 participants could receive a cooperative message from the unknown partner. Our goal was to understand whether our results were robust across different contexts. In Study 3.3, we allowed participants to directly experience an interaction with a corrupt institution, who had all the incentives to act dishonestly. Then, as in previous studies, we measured trust toward stranger and behavior in an economic game (i.e., a dictator game). Importantly, since perceiving a certain behavior (e.g., asking for bribes) as corrupt depends on both personal and societal views (Melgar, Rossi, & Smith, 2010), across all the three studies we explicitly measured the extent to which participants perceived dishonest the behavior of the institution in the die-rolling task. Moreover, we employed three different cooperative games, in order to test the generalizability across three contexts that present different degrees of conflict of interest. As in Chapter 2, summary tables containing all path coefficients and standard errors of all studies are presented in the Supplemental Materials section.

Study 3.1

Method

Participants and procedure. Participants were 540 American citizens (47% women: M_{age} = 35.44, *SD* = 11.10), recruited from Amazon Mechanical Turk (MTurk). Sample size was determined based on an a-priori power analysis (G*Power; Faul, Erdfelder, Buchner, & Lang, 2009), that revealed a required sample size of 528 to achieve statistical power of .80 to detect an

effect size of $d = 0.30$. They all completed the online study for $1 and could win up to 1.50$ based on their decision. Additionally, five participants won a $10 prize. Samples recruited through the MTurk platform are heterogeneous in terms of socio-economic back ground, as well as ethnic diversity, and they are comparable to those obtained from lab studies (Casler, Bickel, & Hacket, 2013; Paolacci & Chandler, 2014). The study had 3 (Institution: honest, dishonest, and control) between-subject experimental conditions.

Participants agreed with informed consent and were told to be interacting online with others. Then, the experiment was articulated in two parts. In the first part, participants fictitiously interacted with two other players in a sequential die-rolling game. The aim of the game was to manipulate the perception of honesty or dishonesty of one of the other players (Player B) who would have acted the role of institution in the second part. To ensure that participants perceived Player B as either honest or dishonest, we administered a manipulation check measure of perceived dishonesty. In the second part, participants interacted with another person in a trust game (TG), with a sanctioning institution. Participants were told that they would interact in the TG with a new participant called Player 2 who did not participate in the die-rolling task. After making their decisions in the TG, participants knew that a third-party observer, the institution, could have punished one of the interactive partners. Participants learnt during the die-rolling game that the institution (the previous Player B) was honest, dishonest, or a new random participant who did not participate in the first part (control condition). In this last control condition, participants were exposed to the same corrupt behavior as in the dishonest condition in order to disentangle the effects of corruption of the institution from some more general priming effects due to exposure to dishonest behavior from an unrelated participant. After the trust game, we assessed our main dependent variable, interpersonal trust toward the stranger.

Finally, we administered a measure of trust propensity to control for individual differences in trust. In each part of the experiment, to make sure participants got all the instructions, we administered several comprehension questions.

Die-rolling game. The die-rolling game is a paradigm used in past research to investigate the emergence of corruption in cooperative settings (Wiesel & Shalvi, 2015). We revisited the paradigm to manipulate perceived honesty and dishonesty toward a third party sanctioning institution. In this adapted version of the game, there were three roles: Player A, Player B, and the Observer. Participants were always made to believe to be randomly assigned the role of Observer. The role of the observer required to read carefully the instructions of the game and to observe the outcomes of Player A and Player B. Then, to incentivize the attention of the participants, we said that all the observers that answered correctly all the attention questions, would have had the possibility to win a prize of $10 dollars in a lottery (5 prizes in total). To this purpose, the observer would have got questions about the role of Player A and B, the instructions of the game, and about the outcomes of the 10 rounds.

By providing fictitious feedback of other players' behavior, this paradigm allows to manipulate perceived dishonesty of a target. Before the beginning of the instructions, participants were asked to throw a computerized die in order to increase the belief that the game and that the partners (Player A and B) were actually interacting. Actually Player A and B's reports were preprogrammed feedback according our experimental manipulations. The procedure of the game required to the fictitious players to throw a six-sided die and report its outcome, earning money solely when the reported outcomes of both Player A and B were the same. Participants were informed that each value of the die corresponded to the possibility to earn the same amount of monetary units (MU), each worth of $0.10 to be earned at the end of the game. The higher the

values of the die roll, the better outcomes Player A and B could get. The game consisted in ten rounds. Participants were informed that Player A was the first to throw a dice and report the outcome, then Player B observed Player A's report, rolled a dice and reported the outcome. Since actual outcome of each roll was entirely private, Player B might be tempted to lie about having scored a double in order to maximize the gain.

***Dishonesty manipulation*.** Player B was the second person to report the outcome. Therefore, Player B's report was crucial for the outcome of both players in the die-rolling game. We asked participants several comprehension questions to make them even more aware of the role of Player B. Then, our aim was to manipulate perceived honesty of Player B in the die-rolling game. To do so, each participant learned that (a) Player B reported the same outcome of Player A in 1 out of 10 rounds (*honest institution condition*) or that (b) Player B was consistently mimicking the same outcome of Player A (*dishonest institution condition*). The feedback provided in the honest institution condition was decided based on to the expected number of doubles that a dyad would report assuming honesty in 10 rounds (1.66).

Perception of dishonesty. We asked participants to what extent they perceived Player B as honest in reporting his/her score on a 7-point Likert scale (1 = *completely dishonest*, 7 = *completely honest*). Higher scores mean high perceived honesty of Player B.

***Trust game with a sanctioning institution*.** In the second part, participants then were made to believe being interacting with an unknown person in the trust game (Berg, Dickhaut, & McCabe, 1995), different from those encountered in the die-rolling game. The investments made by participants in this game represented our measure of cooperation. Participants were told that they could act as Player 1, Player 2 or Player 3. Actually, all participants were always assigned to the role of *Player 1*. Player 1 first decided to send any amount (range: 0 to 5) of an initial

endowment of five MU to Player 2. Player 2 was always introduced as a new participant that did not interact in the previous die-rolling game. The amount (if any) sent to the Player 2 was tripled, while any amount kept for oneself remained the same. Then, Player 2 had the possibility to return back some of the tripled amount to the investor (Player 1).

Player 3 was a fictitious player, acting as a third-party sanctioning institution who was also endowed with five MU. Participants were informed that Player 3 had the opportunity to use some, all or none of the own MU to reduce Player 1 and/or Player 2's earnings if he or she feels appropriate to do so. Any MU invested by Player 3 from his/her initial endowment to reduce Player 1 and/or Player 2's earnings will be tripled and deducted from their accounts (Fiedler & Haruvy, 2017). Importantly, participants we informed that Player 3 was the same participant who played the role of Player B in the die-rolling game, so that participants could have learnt that he/she behaved honestly or dishonestly in a previous unrelated situation. We also had a condition in which Player 3 (the institution) was a new participant that did not interact in the die-rolling game and participants were exposed to the dishonest behavior of another unrelated player (*control condition*).

Interpersonal trust. Our dependent measure of interpersonal trust was an adaptation of the general trust scale, a six-item, 7-points Likert scale from 1 (*strongly disagree*) to 7 (*strongly agree*), (Yamagishi & Yamagishi, 1994, e.g., "*I believe that Player 2 is basically honest*", $\alpha = .96$). Higher scores on this scale mean that participants trusted their partner.

Trust propensity. We used the three items, 7-points, Likert scale developed by Van Lange and colleagues (2014) to control for individual propensity to trust strangers (e.g., "*I dare to put my fate in the hands of most other people*", $\alpha = .72$). Higher scores mean high propensity to trust others in general.

Results

Manipulation check. We conducted an independent sample *t*-test to test whether participants perceived Player B (the institution) according to our experimental conditions. Participants perceived Player B as more dishonest when they observed always matched outcomes in the die rolling game ($M = 2.40$, $SD = 1.91$) compared to when they observed a double in only out of ten rounds in the die-rolling game ($M = 6.45$, $SD = 1.02$), $t(538) = 26.43$, $p < .001$, $d = 2.41$. Therefore, our manipulation check showed that we were successful in our manipulation.

Interpersonal Trust. We conducted a one-way ANOVA with the three experimental conditions (honest institution, dishonest institution, and control) predicting interpersonal trust. This analysis revealed a main effect of perceived dishonesty, $F(2, 537) = 4.67$, $p = .01$, $\eta^2_p = .017$. Participants perceived their partner in the trust game as less trustworthy when they perceived the institution as dishonest ($M = 4.50$, $SD = 1.36$), compared to when the institution was honest ($M = 4.94$, $SD = 1.42$), or when they did not have prior information about the institution ($M = 4.66$, $SD = 1.38$) (see Figure 3.1). We created a hypothesis-relevant orthogonal contrast of our experimental condition: Contrast 1 (*dishonest vs honest-and-control* Contrast). Planned comparisons revealed a significant Contrast 1, $F(1, 537) = 5.63$, $p = .018$, $d = 0.22$, indicating less trust towards a partner when being ruled by a dishonest institution, compared to an honest institution and an institution without prior information about (see figure 3.2). This is initial evidence that corrupt institutions undermine trust with strangers.

Cooperation. Unlike the findings for interpersonal trust, there was no evidence that exposure to a dishonest institution (Contrast 1) directly affected participants cooperation with the stranger in the trust game $F(1, 537) = .669$, $p = 0.41$. Notably, though, we also tested whether perceiving dishonest institutions (Contrast 1) affected interpersonal trust and, in turn,

cooperation using the bootstrapping method for mediation, controlling for individuals' trust propensity (Preacher & Hayes, 2008). The results show evidence of an indirect effect significant indirect effects of perceived dishonesty, $b = 0.11$, 95% CI [0.04, 0.21]. This result suggests that the negative effect of dishonest institutions have also cascading negative effect on cooperation through interpersonal trust.

Study 3.2

We created a few modifications to the study design to further test the hypothesis that dishonest institutions undermine trust among strangers. First, we used a different economic game to measure cooperation (i.e., prisoner's dilemma) in order to generalize our findings on another type of cooperative exchange. Second, to further test the robustness of our findings we manipulate the possibility for the partner in the cooperative exchange to send a message (communication: present vs absent). Communication has been proposed as a crucial factor promoting trust and cooperation (Balliet, 2010; Bicchieri, Lev-On, & Chavez, 2010). Given that messages signaling cooperative intentions directly affect trust (Parks, Henager, & Scamarhorn, 1996), if communication erases the effect of dishonest institutions in undermining trust, we would expect an interaction between the honest/dishonest and the communication conditions.

Method

Participants and procedure.

Participants were 503 American citizens (49% women, $M_{age} = 34.88$ years, $SD = 10.37$), recruited from MTurk. All of them completed the study for $1 and, similarly to Study 3.1, participants could have access to a final a lottery to win a $10 prize (five in total) as observer during the first part, and had a 0.01% to win a $2 prize depending on their decisions in the second part. The study consisted of a 2 × 2 between-subjects design. The participants were

randomly assigned to either a *Dishonest Institution condition* (i.e., they learnt in a previous task that their third-party sanctioning institution lied) or a *Honest Institution condition* (i.e., they learnt in a previous task that their third-party institution presumably reported true die-rolling outcomes). Moreover, participants were randomly assigned to a condition where their partner (Player 2) in a decision-making task could send a message to them before their decision (*Communication condition*) or a condition where there was any possibility of communication (*No-communication condition*).

The procedure was similar to Study 3.1. First, participants were informed to be interacting with other participants currently online. Then, they observed how two players behaved in a die-rolling game and learnt that one of the players (Player B) was consistently behaving dishonestly or honestly. Third, they interacted in a prisoner's dilemma (PD) with a new participant who did not participate in the die-rolling paradigm. Fourth, they were informed that Player B was going to be a third party observer (i.e., the institution) who could punish them in the PD. Additionally to Study 3.1, participants were randomly assigned to an experimental condition where they could either (a) receive a cooperative message from this partner in the PD or (b) do not receive any message. After participants decided how much to give their partner, we administered our dependent measure of interpersonal trust ($\alpha = .97$), and our control measure of trust propensity ($\alpha = .73$).

Communication. Prior to the decision to send LT in the PD, participants were randomly assigned to either a condition where they could receive a message from their partner (message: "*I am going to be fair"*) or in a condition where they did not receive any message from their partner (no message).

Prisoner's dilemma with a sanctioning institution. Participants played a continuous prisoner's dilemma (PD) task (Van Lange & Kuhlman, 1994). In the PD, participants and their partner were endowed 100 tickets (LT) and were asked to decide how many LT they wanted to give to their partner (0-100). Each LT represented a 0.01% chance to win a 2-dollar bonus at the end of the game. In the PD, each LT given to the other partner is doubled, and vice versa. This has all the characteristics of the PD because the best outcome possible from one partner (300 LT) represents the worst outcome for the other partner (100 LT), and consists in the situation where one of the interactive partners keeps the entire amount of the initial endowment and benefits from the partner who has given all 100 LT. However, the best cooperative option would be that each person decides to give their entire 100 LT to their partner (thus having 200 LT each at the end of the game), compared to the situation where each person decides to keep their 100 LT for themselves (and then remaining with 200 LT each). As in Study 3.1, participants were informed that choices in this game will be observed by a third party Player 3 (who acted as Player B in the previous die-rolling game), who was also endowed with 200 LT and could invest some of his/her own endowment to reduce Player 1 or 2's final earning if he/she find appropriate to do so.

Results

Manipulation checks. We tested whether our manipulation was successful to predict perceived dishonesty of Player B. Participants perceived Player B as more dishonest when they observed 10/10 of matched outcomes in the die rolling game (M = 2.68, SD = 1.98) compared to when they observed 1/10 matches in the die rolling game (M = 6.07, SD = 1.46), $t(501) = 21.92$, $p < .001$, $d = 1.96$.

Interpersonal Trust. We conducted a 2 (Institution: honest vs dishonest) × 2 (Communication: present vs absent) ANOVA predicting interpersonal trust. This analysis revealed a main effect of perceived dishonesty, $F(1, 502) = 7.04$; $p = .008$, $d = 0.23$. Participants trusted less their partner in the PD when the institution was perceived as dishonest ($M = 4.91$, $SD = 1.42$), than when the institution was perceived as honest ($M = 5.22$, $SD = 1.25$). Also, participants trusted more their partner when there was communication ($M = 5.21$, $SD = 1.28$) than when communication was absent ($M = 4.92$, $SD = 1.39$), $F(1, 502) = 6.08$, $p = .01$. Importantly, there was not a significant interaction between perceived dishonesty and communication, $F(1,502) = 1.39$, $p = 0.24$. Altogether, these results suggest that dishonest institutions undermine trust toward others independently from the presence of a form of communication.

Cooperation. Turning to cooperation, we replicated the earlier findings by showing that exposure to perceived dishonesty did not affect cooperation with an unrelated stranger in a subsequent situation, $F(1, 251) = .188$, $p = 0.67$, even when participants received a cooperative message before making their choice $F(1, 250) = .11$, $p = 0.74$. Notably, this result was consistent across a different cooperative game (i.e., PD) than the one employed in Study 3.1.

As in Study 2, we also tested whether dishonest institutions affected interpersonal trust and in turn, cooperation in the PD using the bootstrapping method for mediation, controlling for trust propensity (Preacher & Hayes, 2008). The results show significant indirect effects of perceived dishonesty on cooperation, $b = 1.69$, 95% CI [0.45, 3.36]. Replicating results obtained in Study 3.1, the total effect of the experimental conditions on cooperation was not significant (total effect = −1.69, $p > 0.25$, 95% CI [−7.12, 3.74]), proposing again that dishonest institutions

have more a direct effect on trust than cooperation. Then, similarly to Study 3.1, the negative effect of dishonest institutions on trust, in turns spilled over also on cooperative behavior.

Study 3.3

The previous two studies did not consider the effects of real interaction with a dishonest institution and, as such, their results pertain to exposure to dishonest behavior. To generalize the obtained evidence to these real contexts, we conducted a third study that did not involve deception, in which participants actually engaged in an online interaction with others who may behave (presumably) honestly or dishonestly in the die-rolling game. The design and analysis plans for the current study were preregistered at https:// osf.io/sqp2m (embargo end date: June 30th, 2018).

Method

Participants and procedure. 382 Participants (45.5% women, M_{age} = 37.73 years, *SD* = 10.82) were recruited through MTurk and completed the study for $2.50. Besides this baseline payment, they could earn an extra bonus ($0.60 at maximum) and could participate in a lottery to win a $2 prize (ten in total). Sample size has been determined based on an a-priori power analysis (G*Power; Faul, Erdfelder, Buchner, & Lang, 2009). It revealed a required sample size of 190 (dyads) to achieve statistical power of .95 to detect an effect size of d = 0.24 at the standard .05 alpha error probability. We conducted the study through the Software Platform for Human Interaction Experiments (SoPHIE; Hendricks, 2012), that allows to implement real-time interactions among online participants connected together via MTurk (see Figure 3.3 for a preview of the session administration). The study adopted a correlational design, with participants expressing their trust and cooperation toward a stranger, after interacting with other real participants currently online in the die-rolling game.

Dishonesty-eliciting game. Once logged into the software platform, all participants were randomly paired in dyads to take part in an interactive study about decision-making and they were assigned to either the role of *Player A* or *Player B* (the first participant of the dyad logging in was always assigned to Player A). Then, all of them were informed about their role in the game and received detailed instructions for the die-rolling game (see Study 3.1 for the general procedure of the game). In order to make sure Player B participants to potentially engage in a dishonest behavior, we instructed them to either keep an actual die on hand while participating in the study or to open an external web page that allowed to roll a fair six sided die and get the result of the die roll.

Differently from Study 3.1 and 3.2, where corruption was manipulated by showing fictitious participants reporting either one or ten out of ten doubles scored in the above mentioned game, the current study did not manipulate corruption but potentially elicited it through the way outcomes were determined for Player B. Specifically, dishonesty was elicited by introducing non-aligned payoffs between the two players, providing strong incentives for Player B participants (who will subsequently act as the Institution in the following game) to misreport their result across the ten rounds of the game in order to gain personal profit. While Player A participants earned a fixed amount of $0.20, irrespectively from scoring a double in each round, Player B participants could get triple that amount ($0.60) *only* if their reported outcomes matched with those of Player A. At the end of every round, both players received real time feedback on the reported outcomes of the die roll.

Perception of dishonesty. At the end of the die-rolling game, we asked Player A participants to what extent they perceived Player B as honest in reporting his/her score on a 7-

point Likert scale from 1(*completely dishonest*) to 7 (*completely honest*). This constituted our independent variable.

***Dictator game with a sanctioning institution*.** As in Study 3.1 and 3.2, participants were then involved in a second decision-making task. They played a one-shot dictator game, in which we made them to believe that a random role assignment was taking place, involving the dyad and another new participant that did not interact in the previous die-rolling game. Actually, no other actual new participants had access to the study session, given that they had essentially no influence in the final outcomes of the dictator game, and thus their actual presence would not contribute to the acquisition of any further knowledge (Cook & Yamagishi, 2008). Moreover, the role assignment was not randomized: all Player A participants were always assigned to the role of Player 1 (the Allocator), and all Player B participants were assigned to the role of Player 3 (the Institution) and the new fictitious participant would have acted as Player 2 (the Receiver). Player 1 first had the possibility to send any amount (range: 0 to 100) of an initial endowment of 100 lottery tickets (LT) to Player 2, who did not receive any initial endowment. Following Study 3.1 and 3.2, they were informed that Player 3 will observe the interaction and could decide to invest any amount from their endowment to reduce Player 1 or 2's earnings. The investments made by Player 1 in this game represented our measure of cooperation. After participants decided how much to give their partner and how much invest to reduce others' final endowments, we assessed interpersonal trust ($\alpha = .97$) and trust propensity as a control ($\alpha = .76$).

Results

Interpersonal Trust. We conducted a simple linear regression with perceived dishonesty of Player B in reporting the scores at the die-rolling game as predictor of interpersonal trust toward the stranger in the dictator game. Perceived dishonesty significantly predicted

interpersonal trust scores, β = .39, $t(189) = 5.88$, $p < .001$. It also explained a significant proportion of variance in interpersonal trust, $R^2 = .16$, $F(1, 189) = 34.56$, $p < .001$. This means that when participants playing the role of Player A perceived their partner at the die-rolling game (who will subsequently play as institution) as dishonest in reporting their score, it resulted in a significant decrease of interpersonal trust toward an unrelated player in the following dictator game with third party sanctioning.

Cooperation. We first conducted the same simple linear regression with honesty perception as a predictor and cooperation toward the stranger as a dependent variable. Differently from the previous study, we found a significant effect on cooperation in the dictator game, β = .22, $t(189) = 3.05$, $p = .003$. However, in line with our reasoning concerning a main effect on interpersonal trust, the proportion of variance explained in cooperation is smaller than the one in interpersonal trust, $R^2 = .05$, $F(1, 189) = 9.32$, $p = .003$.

We then tested whether interacting with an Institution (perceived as honest or dishonest) in the die-rolling game would indirectly affect cooperation toward the stranger in a dictator game via affecting interpersonal trust. Using the bootstrapping method for mediation (Preacher & Hayes, 2008), we replicated the findings of the previous studies, showing that perceived dishonesty had a significant indirect effect on cooperation through interpersonal trust, $b = .63$, 95% CI [0.93, 1.30]. When controlling for trust propensity this indirect effect lost significance, $b = .31$, 95% CI [-0.19, 0.87].

General Discussion

Corruption is one of the most urgent and pervasive problems affecting modern societies (Mauro, 1995; Rose-Ackerman, 2006). Corrupt institutions affect public and economic health, and can also endanger economic and individuals well-being. Years of interdisciplinary research

ranging from economics, to political science, sociology, and psychology have examined the emergence and the conditions that make people engaging in corrupt behavior (Köbis, Van Prooijen, Righetti, & Van Lange, 2016). However, less research has been conducted in understanding the detrimental effect of corrupt institutions on interpersonal trust and cooperation. Although some studies offer a correlational intuition that being embedded in a specific institution may affect the psychology of individuals, no research has been conducted in investigating whether this can actually be observed in more controlled laboratory settings.

To address this key issue, we conducted three experiments where we observed how people perceived strangers as more or less trustworthy when their interactions were regulated by an external sanctioning institution, who could be either perceived as dishonest or not. Then, we also examined whether this change in trust had in turn a cascading negative effect on a broad range of economic cooperative behaviors such as behavioral trust, strict cooperation, and generosity. To do so, we revisited the sequential die-rolling paradigm (Weisel & Shalvi, 2015), where participants could learn whether the institution (a person who would have played the role of third party in a subsequent game) was corrupt or not either by being exposed or personally engaging in an interaction with him/her. After that, in all the studies, participants played an economic game with a stranger that was regulated by the same institution they previously encountered. If perceiving a corrupt institution have detrimental effect on trust perception and economic behavior, we predicted that interacting with a stranger with a corrupt institution in place will have a negative effect on trust interpersonal trust and, then, also on cooperative behavior.

Across three studies (N = 1,429), we found support for the hypothesis that corrupt institutions undermine interpersonal trust with stranger in subsequent mixed-motive situations.

Our result was robust across a vast range of economic games (i.e., trust game, prisoner's dilemma, and dictator game), different type of contexts (possibility to send a cooperative message vs no communication) and different methods (experimental manipulation of dishonesty, and real interactions with potentially dishonest institutions in a correlational design). This result was also robust when controlling for individual differences, such as trust propensity (in Study 3.1 to 3.3 for the effect on trust, and in Study 3.1 and 3.2 for the indirect effect on cooperation).

This finding has important theoretical and practical implications. From a theoretical point of view, this is the first empirical evidence of intuition of past research that hypothesized that institutions have a prominent role in affecting trust towards others (Rothstein & Stolle, 2008b). First, they provide an empirical evidence on the above mentioned relationship that goes in line and beyond the seminal work conducted with studies using scenarios and where institutions had not actual sanctioning power (Rothstein & Eek, 2009; Chapter 2), or with more recent research limiting to the effects of bribe-framing on trust perceptions and behavior (Banerjee, 2016). Moreover, our findings support past theory that emphasizes the importance of the institutions and groups in sustaining human trust and cooperation, key for the emergence of modern-large scale of human societies (Richerson et al., 2016). In line with this evidence, future research should devote more attention on the institutional background that characterize social uncertain interactions, in order to understand further conditions that make people more or less prone to trust others without relying on reputational information or interaction history (King-Casas et al., 2005).

This research has important practical implications as well. Promoting trust and cooperation is essential to solve important problems such as global warming, pollution, tax evasion and other societal collective challenges (Balliet & Van Lange, 2013a). If it is true that

institutions have cascading negative effects on trust and cooperation (as suggested by our findings), future interventions should be based on working following a top-down approach that starts from institutional representatives, rather than horizontally between the individuals (e.g., Lewicki & Wiethoff, 2000). If citizens of a country tend to distrust each other as a result of the corrupt institutions that are in place, the implementations of punishment or reputational systems may be not effective, crowding-out both interpersonal and institutional trust (Balliet & Van Lange, 2013b). Therefore, our findings encourage a significant shift on this perspective, promoting interventions that are no longer addressed to the individual but to the institution itself.

Nonetheless, we need to acknowledge some limitations of the study that may be addressed by future research. First, participants did not get any gain from the corrupt behavior of the institution, while in many real life situations, individuals often directly benefit from corrupt transaction. Participants' self-interests have been intentionally ruled out from the studies' designs to get a first clear evidence for the effects of corruption on interpersonal trust. Indeed, there is evidence that moral judgement is affected by a self-interest bias (Bocian & Wojciszke, 2014), by which counter-normative behaviors are perceived as significantly more acceptable when they benefit the perceiver's interests. Thus, future research should address this point by testing the boundary conditions of the relationship between corruption, trust, and cooperation in situation where participants benefit from the corrupt transaction. Second, online interactions may have weakened the interpersonal effects that we found in daily life and therefore strengthened even more the effect of institution. Future research will need to increase the ecological validity by adding cues that individuals find in actual trust interactions (e.g., facial expressions, Stirrat & Perrett, 2010). Moreover, there are aspects characterizing corrupt transactions that deserve further experimental investigation as well. Our studies mainly focused on perception of

dishonesty, that is a key moral violation embedded in corrupt practices (Rose-Ackerman, 2001), however future research may implement some other aspects of corruption such as the abuse of entrusted power from the institution, and the use of public resources for private gain (Graycar & Smith, 2011) in the design of the experimental paradigm.

To conclude, our studies showed that corrupt institutions have detrimental effects on trust and cooperation. This finding enlightens us on the vital functions that institutions have in shaping our psychology and sustaining social interactions, and on additional dramatic negative effects that they may have on our perception and behavior with strangers. This results warn us on switching the attention from individuals to societal factors, both when we study explanations on why we trust strangers but, importantly, when we devise interventions to solve modern, and old, societal problems.

CHAPTER 4

Concluding Remarks

Trust has been defined as a “social glue”. Individuals who trust others are more satisfied with their lives, healthier, and more “socially intelligent” (Barefoot, Maynard, Beckham, Brummett, Hooker, & Siegler, 1998; Yamagishi, 2001). Also from a collective perspective, societies that exhibit more interpersonal trust have stronger economic growth (Algan & Cahuc, 2010), and are more likely to cooperate to achieve collective outcomes in situation of social uncertainty and mixed motives (Balliet & Van Lange, 2014a). Thus, several decades of research focused on the puzzling question of what the antecedents of trust are and, accordingly, how trust can be promoted. A tradition of research examined trust dynamics with a person-centered approach, focusing on the trustor’s internal and stable trait dispositions (e.g., Mayer, Davis, & Schoorman, 1995; Rotter, 1967; Thielmann & Hilbig, 2014), or to specific situational characteristics (e.g., Posten, Ockenfels, & Mussweiler, 2014; Stirrat & Perrett, 2010; Yu, Saleem, & Gonzalez, 2014). Some other research, mostly taking its roots from political science and economics, mainly focused on “vertical” and structural factors shaping the background where trust takes place (Rothstein & Stolle, 2003).

Importantly, this so called institutional-centered approach suggests that institutions may play a crucial role in affecting trust with strangers and recognize a central role in shaping this kind of interactions (Rothstein & Stolle, 2008b; Freitag & Bühlmann, 2009). However, empirical evidence does not always converge on agreement about the nature of the relation between institutions and trust (Robbins, 2012). A political-institutional perspective predicts that institutions may serve as a springboard for trust to develop, while the crowding-out perspective predicts the opposite, emphasizing how the need to implement external sources of control may actually signal that others cannot be trusted (Bohnet & Baytelman, 2007; Malhotra & Murnighan, 2002). Convergent empirical support for either theories is lacking, and most of past research is

actually grounded in large-scale correlational evidence (e.g., Sønderskov & Dinesen, 2014). Therefore, much research is needed to understand *why* institutions have an effect on trust, or simply *whether* actually exist a relation between institutions and trust. The studies conducted in the present dissertation aimed to shed light on these relevant issues by: (a) systematically investigating the role of trustworthy institutions in promoting trust toward others, and (b) testing experimentally the effect of corrupt institutions on trust toward strangers in economic games settings. Below the main results of the empirical chapters of the dissertation are briefly summarized.

Chapter 2 examined whether, how, and why institutions have an effect on interpersonal trust. We proposed a model where we predicted that institutions have a positive effect on trust, especially when they are perceived as trustworthy. Furthermore, we explored a possible explanation for this effect, such as the possibility that institutions fulfill one of the basic human needs, namely the feeling of security (Mayseless & Popper, 2007). Across four studies, we found that perceiving institutions as trustworthy elicits a sense of protection that, in turn, affects interpersonal trust. The result was consistent across different methodologies (survey methods and incentivized experiments), with several types of institutions (e.g., police, court, media, etc.), and across 17 countries that differed in terms of political and economic background. Additionally, we found that this model was robust even when controlling for individual and cross-cultural variables related to trust and economic performance (i.e., government effectiveness, political rights, rule of law, economy competitiveness, GINI, GDP per capita). These results enlighten past research that provided conflicting predictions on the relation between institutions and trust (e.g., Robbins, 2012), tested a model that can be used by future research to generate new

hypotheses, and provide a first effort to conceptualize why institutions are so crucial in shaping human trust and cooperation.

In Chapter 3, we examined whether the actual implementation of a corrupt institution in a controlled social interaction is able to influence trust perception and economic behavior. Past research working on corruption focused on the circumstances contributing to make people engaging in corrupt transaction (Köbis et al., 2016). However, little research systematically examined the detrimental effects of corruption on psychological processes and behaviors such as trust and cooperation. Across 3 studies, using a revisited version of the sequential die-rolling paradigm (Weisel & Shalvi, 2015), we consistently found that the presence of a dishonest institution (experimentally implemented as third-party punisher) undermined trust and subsequent cooperative behavior in an economic game. The results were consistent across different situations and economic games (trust game, prisoner's dilemma, and dictator game). Importantly, we found converging evidence both in situations where the perception of dishonesty of the institution was manipulated, and in real interaction situations where individuals could experience a vast set of dishonest behaviors by their future institution (that was an actual player in the game). This research informs previous evidence on trust and cooperation by shedding light on the role of the social landscape (i.e., institutions) underlying human relations, and by providing support for theories that emphasize it in the evolution of human altruism, trust, and cooperation (Freitag & Bühlmann, 2009; Gächter & Schulz, 2016).

The present dissertation presents both theoretical and methodological strengths, that will be listed below. First, in Chapter 2, we built on existing literature (Rothstein & Stolle, 2008a; 2008b) and on previous intuitions that have never been empirically investigated (i.e., the indirect effect of feeling of security as psychological underlying mechanism, Mayseless & Popper, 2007)

to test a theoretical framework to understand the role of institutions in shaping interpersonal trust (both as belief and behavior). Indeed, this research provides new insights that can used by future scholars to develop new hypotheses on trust and cooperation. Second, in both Chapter 2 and 3 we tested our hypotheses by using a diverse set of methods (i.e., surveys, scenario experiments, and economic games), designs (experimental and correlational), and operationalization of the investigated constructs. Third, we tried to encourage the replicability of our findings by testing our assumptions with multiple designs and methods (see Chapter 2), by employing large samples that would provide adequate statistical power for our analyses (see Chapter 3), and pre-registering methods, materials, and analyses plan on Open Science Framework prior to the actual data collection (Open Science Collaboration, 2015).

Along with strengths, some theoretical and methodological limitations of the present dissertation deserve to be acknowledged as well. First of all, it is important to note that other lines of research suggest that the relation between both institutional and interpersonal trust, and corruption and interpersonal trust is actually of mutual (Brehm & Rahn, 1997; Morris & Klesner, 2010) or reversed causality (Knack, 2002). In other words, this latter perspective would predict that individuals who trust more others will also more willing to trust their institutions (Bjørnskov, 2006), or more tolerant toward corrupt practices as a result (Moreno, 2002). Although our findings seem to support the view of the relation between institutions and trust, future research may extend it, by shedding light on the boundary conditions that facilitate the crowding-out effects on trust found in previous experiments (e.g., Mulder, Van Dijk, De Cremer, & Wilke, 2006; Irwin, Mulder, & Simpson, 2014). Second, in some studies we did not find a direct relation between institutions and trusting behavior. Although this is consistent with previous few existing experimental evidence (Banerjee, 2016) and with most the studies presented in Chapter 2 (Study

2.3) and Chapter 3 (Study 3.1 and 3.2), we only found evidence of this spillover effect on cooperative behavior in Study 3.3. Notably, differently from the other above mentioned studies, Study 3.3 is the only one involving real interactions among participants and an economic decision-making task measuring cooperation in the least interdependent situation among the three games employed in Chapter 3 (i.e., a dictator game), where cooperation is more comparable to generosity than self-interested behavior exhibited in setting as the prisoner's dilemma game. These two variations do not allow us to fully understand whether this difference is due to a different methodology (e.g., no use of deception) or to the specific prosocial behavior investigated (generosity). Future research should address this issue to draw more reliable conclusions about the role of first-hand interaction and generosity. Moreover, the generalizability of findings of Chapter 3 needs further replicating efforts, given that corruption in our studies has been operationalized by means of dishonest behavior (Rose-Ackerman, 2001) and that corruption has some other characterizing aspects (Graycar & Smith, 2011).

To conclude, the present dissertation aimed to better conceptualize the role of institutions in promoting, and undermining, trust with strangers. Consistent with previous literature, we found that institutions have a significant role in shaping human perception, intentions, and subsequent behaviors in socially uncertain interactions. This is true both with trustworthy and corrupt institutions, with an opposite impact. Importantly, a sense of security seems to explain why institutions are so important in influencing human perception and behavior in those contexts. This relation proved to be robust across several methodological variations, countries, contexts, and by accounting for several individual differences.

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Supplemental Materials

Access to all materials - including scales, instructions to participants, and Open Sciene Framework pre-registration form - will be provided upon request.

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Chapter 2

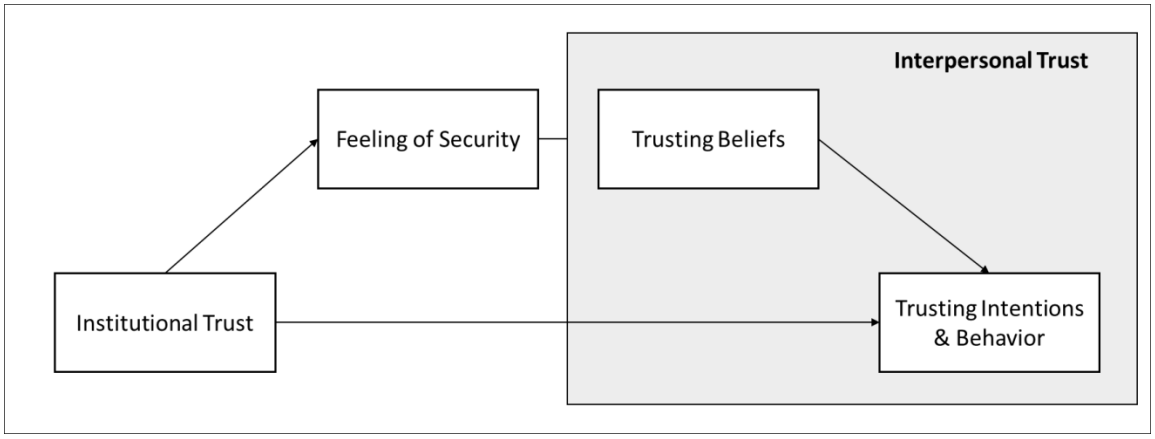

Figure 2.1. The model: institutions as a predictor of interpersonal trust (beliefs and behavior) via the mediation of institutional trust and sense of protection.

Study 2.1

Table 2.1
Means and Standard Deviations (Study 2.1)

	Low Presence of Institutions *M (SD)*	High Presence of Institutions *M (SD)*
Trusting beliefs (toward the stranger) *	3.74 (1.29)	4.39 (1.50)
Trusting beliefs (toward citizens)	4.45 (0.93)	4.59 (1.24)
Trusting intentions (money range 0 - 20) ***	7.17 (7.02)	12.73 (8.10)
Institutional trust ***	3.87 (1.27)	4.72 (1.05)

Note. *M* = mean, *SD* = standard deviation, *p < .05, **p < .01, ***p < .001

Manipulation of institutions (high/low presence) (Study 2.1)

Imagine you are traveling.

Your destination is a country called Garovia. Since you are visiting this country for the first time and you are going to live there for some months, you decide to check a tourist guide containing useful information for your journey in order to plan your stay.

So, you start to read the first section of the guide, and concerning some characteristics of the country linked to its administration you read the following:

"Garovia is known for its proud population. It is a country with many/few public institutions and in, this country, order represents an issue of primary/secondary importance. Consequently, public life in Garovia is regulated by many/few formal rules and regulations. For example, when you walk through the streets or public areas (as parks, squares or gardens), you will always/never see signs that show which behaviors are encouraged or forbidden. All existing rules are handled in a strict/flexible way. Generally, Garovia can be described as a country with many/few regulations."

Framed trust game (Study 2.1)

Once arrived at the station in the afternoon, you start to walk with no haste towards to your destination while still thinking about the information you have just read on the guide.

At one point, you are stopped by a stranger, who introduces himself with the unique Garovian accent. He asks you to lend him the equivalent of 20 euros in national currency, explaining that due to the haste of arriving on time to the station before the final run of the train, he has forgotten his wallet with the train ticket reservations and other useful tickets inside.

He tells you that in this moment any amount of money would help him and that he will give the money back to you the following day, setting up an appointment at the station.

Furthermore, he adds that in exchange for your availability, he intends to bring you a voucher of equivalent value, expendable in a supermarket chain present in the whole nation.

In this moment, you have the amount of money that that person is asking for, and the station is easy to reach from your residence.

You think for a while and…

Table 2.2

Mediation analysis from institutions to trusting beliefs (TRBEL) and intentions (TINT) (Standard errors in parentheses) (Study 2.1).

	Path coefficients				Indirect effects	
	To INST_TR	To TBEL_S	To TBEL_C	To TINT	Estimate	Symmetric 95% CI
From institutions (INST)	.86 (.26)	.24 (.31)	-.25 (.24)	4.50 (1.56)		
From institutional trust (INST_TR)		.48 (.13)	.45 (.10)	-1.18 (.70)		
From trusting beliefs_stranger (TRBEL_S)				3.2 (.56)		
From trusting beliefs_citizens (TRBEL_C)				2.44 (.85)		
INST→INST_TR→TRBEL_S→TINT					1.32 (.55)	.50; 2.82
INST→INST_TR→TRBEL_C→TINT					.95 (.44)	.33; 2.22

Study 2.2

Table 2.3
Correlations among scales of the survey (Study 2.2).

	M (SD)	1	2	3	4	5	6	7	8	9	10
1. Trust in institutions (aggregate)	3.32 (.79)										
2. Trust in police	3.56 (1.11)	.70**									
3. Trust in legal system	3.43 (1.19)	.71**	.42**								
4. Trust in government	2.67 (1.09)	.73**	.44**	.48**							
5. Trust in media	3.37 (1.06)	.68**	.30**	.38**	.40**						
6. Trust in religious institutions	3.59 (1.37)	.60**	.26**	.16*	.22**	.28**					
7. Feeling of security	2.65 (1.29)	.51**	.42**	.50**	.43**	.27**	.14				
8. Trusting beliefs	3.67 (1.15)	.30**	.24**	.23**	.23**	.20**	.15*	.33**			
9. Trust propensity	3.41 (1.32)	.12	.01	.13	.12	.06	.08	.22**	.39**		
10. Security values	3.99 (.90)	.27**	.28**	.01	.04	.30**	.27**	.01	.05	-.21**	
11. Political orientation	4.06 (2.31)	.13	.27**	-.16*	-.06	.17*	.21**	-.01	.04	-.18*	.36**

Note. *M* = mean, *SD* = standard deviation, *p < .05, **p < .01, ***p < .001

Table 2.4

Goodness of fit models for Single Factor and Two Factors (Institutional trust and Feeling of security) (Study 2.2).

Model	CFI	SRMR	BIC	AIC
Single Factor	0.76	0.109	5214.28	5213.71
Two Factors	0.928	0.06	4996.10	4995.51

Table 2.5

Mediation analysis from institutional trust to trusting beliefs (TRBEL) (Standard errors in parentheses) (Study 2.2).

	Path coefficients		Indirect effect	
	To FSEC	To TRBEL	Estimate	Symmetric 95% CI
From institutional trust (INST_TR)	.82 (.11)	.26 (.12)		
From feeling of security (FSEC)		.22 (.07)		
INST_TR→FSEC→TRBEL			.18 (.06)	.05; .32

Study 2.3

Manipulation of institutional trust (high/low) (Study 2.3)

IEA (Institute of Economic Affairs) has recently published the report of data collected in a 2014 Survey on institutional performance of Country X. Second player comes from a country in which…

Police represent 4% of the labor force of Country X.

According to the citizens' perception, police have a good/bad reputation.

Compared to international standards, police officers receive a highly appropriate/inappropriate training, which throughout the years results in the acquisition/lack of professional skills necessary to respond properly to citizens' needs.

According to the statistics, police seem to/ to not fulfill their obligations in accordance to the goals set by the Annual Plan for Crime Reduction.

The use of power in this position is always/not always handled responsibly.

At the question "Do you feel you can rely on police in your country?" 85% of respondent answered "absolutely yes/no", while just 5% answered "absolutely no/yes".

As trends of last decade show, there have/have not been many documented cases of police officers who do not follow State Police Code of Conduct. This year, the number of police officers removed from their job for infringement of Code rules has reached the minimum/maximum in ten years.

In general, according to citizens' perception, the police in their country seems to/does not seem to work well.

Moreover, it is a diffused perception among citizens that police officers put the societal interests/ only few people's interests first in the way they operate.

These trends are in line with the ones shown by CPI (an international perceived corruption index), which reports Country X among one of the 5 least/most corrupted countries considered in the survey.

At the question “Do you generally trust police in your country?” 85% of respondent answered “absolutely yes/no”, while just 5% answered “absolutely no/yes”.

Table 2.6

Guessed trustee's country according to experimental condition (low trust vs high trust) (Study 2.3).

	Switzerland	Luxembourg	Norway	Sweden	Finland	Portugal	Slovenia	Hungary	Czech Republic	Greece
Low trust	0	4.35%	2.17%	0	0	4.35%	6.52%	32.61%	21.74%	28.26%
High trust	22.92%	10.42%	18.75%	27.08%	12.5%	0	2.1%	2.1%	2.1%	2.1%

Table 2.7

Means and Standard Deviations (Study 2.3).

	Low Institutional Trust *M (SD)*	High Institutional Trust *M (SD)*
Trusting beliefs	4.76 (0.78)	4.93 (0.89)
Trusting behavior	3.39(1.39)	3.67(1.28)
Feeling of security ***	2.50 (1.42)	4.67(1.28)

Note. *M* = mean, *SD* = standard deviation, *p < .05, **p < .01, ***p < .001

Table 2.8

Mediation analysis from institutional trust to trusting beliefs (TBEL) and behavior (TRBEH) (Standard errors in parentheses) (Study 2.3).

	Path coefficients				Indirect effects	
	To FSEC	To EXP	To TRBEL	To TRBEH	Estimate	Symmetric 95% CI
From institutional trust (INST_TR)	2.17 (.28)	7.02 (4.32)	-.23 (.21)	.34 (.34)		
From feeling of security (FSEC)			.19 (.06)	-.07 (.10)		
From expectations of reciprocity (EXP)			.01 (.004)	.01 (.01)		
From trusting beliefs (TRBEL)				.52 (.17)		
INST_TR→FSEC→TRBEL→TRBEH					.21 (.11)	.07; .55
INST_TR→EXP→TRBEL→TRBEH					.08 (.06)	-.01; .24

Study 2.4

Table 2.9
Sample size (initial and final), female proportion and mean age for each sample of the 16 countries included from the ESS (Study 2.4)

Country	$N_{initial}$	N_{final}	% F	$M_{age}(SD)$
Belgium	12577	11560	49.96	45.81(*18.41*)
Switzerland	12335	10123	50.01	47.98(*17.83*)
Germany	20490	17897	48.19	48.08(*17.72*)
Denmark	10836	9334	47.38	48.01(*17.62*)
Spain	13543	10934	48.7	45.15(*17.67*)
Finland	14275	13424	50.46	47.64(*18.47*)
France	12981	12004	52.77	48.68(*18.08*)
United Kingdom	15667	12604	52.83	49.35(*18.26*)
Hungary	11518	8888	53.08	46.73(*17.74*)
Ireland	15490	12346	52.61	47.03(*17.62*)
The Netherlands	13505	12089	53.35	49.33(*17.29*)
Norway	11703	9937	45.67	45.92(*17.36*)
Poland	12430	9436	49.52	42.13(*17.84*)
Portugal	13718	10859	56.49	49.36(*18.92*)
Sweden	12839	10755	47.96	47.48(*18.25*)
Slovenia	9607	7861	51.46	45.27(*18*)
Total	213514	180051		

Note. The final sample sizes include only those participants not presenting any missing answers on the variables: institutional trust, interpersonal trust, feeling of security, gender, age, and education.

Control variables: Political and economic indicators (Study 2.4)

Political indicators.

Government effectiveness. The Worldwide Government Indicator project (WGI; Kaufmann, Kraay, & Mastruzzi, 2011) has reported aggregate indicators measuring several dimensions of governance, including government effectiveness (i.e., the ability of government in providing high quality public services and to implement effective policies) over 200 countries. In this study, we included government effectiveness average scores for the 16 countries of reference between 2002 and 2014. Values range from -2.5 (*weak*) to 2.5 (*strong*) government effectiveness.

Political rights. Freedom House's Political Rights Index (Freedom House, 2015) has been used to assess the degree to which each of the selected country enjoys a variety of political rights. Among them, the fairness and accountability of the electoral process, the good representation of all social groups in politics, and government accountability. Average scores from 2003 to 2014 have been used, ranging from 0 to 40, with higher scores indicating a higher level of political rights.

Rule of law. The index of rule of law provided by the Worldwide Government Indicator project (WGI; Kaufmann, Kraay, & Mastruzzi, 2011) has been used in this study to capture the extent by which agents perceive that each country has a "law and order tradition". It makes reference to confidence in the state's ability to protect legal entitlements, and to maintain social order through formal rules. We selected country average indexes, scored between 2002 and 2014, ranging from -2.5 (weak) to 2.5 (strong).

Economic indicators.

Economy competitiveness. Global Competitiveness Index (GCI; Schwab, 2014) released by World Economic Forum has been used to capture the level of competitiveness of each

country's economy, defined as the level of economical productivity and prosperity attainable by a country given its institutions. In this study, we included scores from the 2014-2015 edition, ranging from 1 to 7, with higher scores indicating greater competitiveness.

GINI. Gini coefficient was used as measure of income inequality. Country coefficients from years 2007. 2008, 2010, and 2011 were taken from World Bank's database (2011) and averaged, with values ranging from 0 (*perfect equality*) to 100 (*perfect inequality*).

GDP per capita. We used levels of gross domestic product (GDP) per capita, adjusted for purchasing power parity (PPP) to capture each country's economic wealth. The data are selected from the World Economic Outlook of the International Monetary Fund (2017). In the current study, GDP indexes were used by averaging those obtained from 2002 to 2014.

Chapter 3

Study 3.1

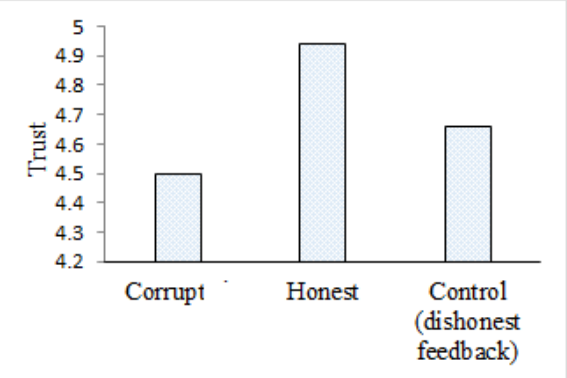

Figure 3.1. Mean scores of interpersonal trust reported in each experimental condition *(Study 3.1).*

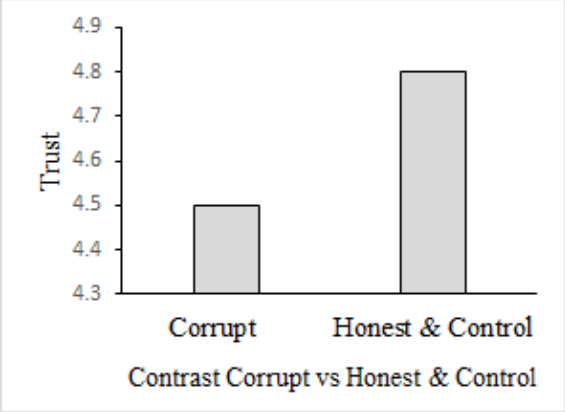

Figure 3.2. Mean scores of interpersonal trust reported in Contrast 1 (*dishonest vs honest and control* contrast) *(Study 3.1).*

Table 3.1

Mediation analysis from perceived dishonesty (Contrast 1) to interpersonal trust (INT_TR) and cooperation (COOP) (Standard errors in parentheses) (Study 3.1).

	Path coefficients		Indirect effect	
	To INT_TR	To COOP	Estimate	Symmetric 95% CI
From perceived dishonesty (DISH)	.32 (.11)	.03 (.15)		
From interpersonal trust (INT_TR)		.34 (.06)		
DISH→INT_TR→COOP			.11 (.04)	.04; .21

Study 3.2

Table 3.2

Mediation analysis from perceived dishonesty (Contrast 1) to interpersonal trust (INT_TR) and cooperation (COOP) (Standard errors in parentheses) (Study 3.2).

	Path coefficients		Indirect effect	
	To INT_TR	To COOP	Estimate	Symmetric 95% CI
From perceived dishonesty (DISH)	.29 (.12)	-3.38 (2.7)		
From interpersonal trust (INT_TR)		5.83		
DISH→INT_TR→COOP			1.69 (.74)	.45; 3.36

Study 3.3

Table 3.3
Mediation analysis from perceived dishonesty (Contrast 1) to interpersonal trust (INT_TR) and cooperation (COOP) (Standard errors in parentheses) (Study 3.3).

	Path coefficients		Indirect effect	
	To INT_TR	To COOP	Estimate	Symmetric 95% CI
From perceived dishonesty (DISH)	.22 (.04)	1.38 (.71)		
From interpersonal trust (INT_TR)		2.84 (1.26)		
DISH→INT_TR→COOP			.63 (.30)	.93; 1.30

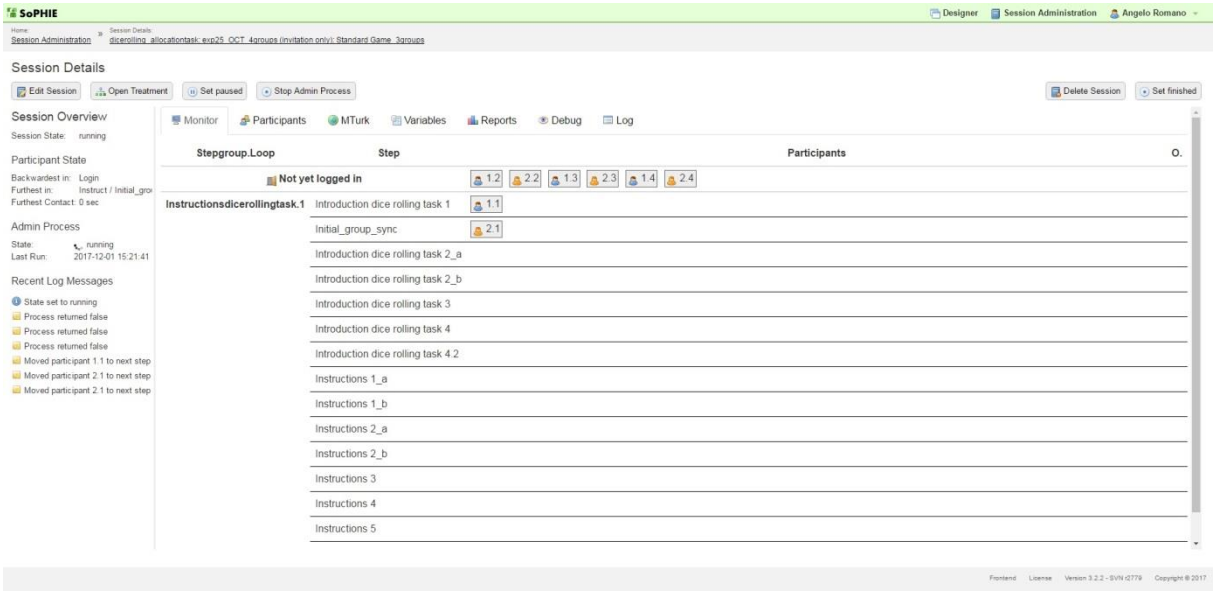

Figure 3.3. Preview of the session administration page of the screen *(Study 3.3)*. The current session allowed interaction of four dyads. Permission to use the images of the SoPHIE Platform has been granted by SoPHIE Labs, a division of Symbic GmbH, Osnabrück, Germany.

Acknowledgements

Going through a PhD requires (and benefits from) a considerable extent of trust. I'm truly grateful to all the people who supported and encouraged me, as a young scholar or as a friend, across these last three years.

The first thank you goes to my daily supervisor, Cristina Mosso. You allowed me to explore with freedom a huge variety of topics and methodologies. Moreover, you always responded enthusiastically and without hesitation to new research ideas, and encouraged me to overcome my need to control uncertainty. Thank you for your time, dedication, and valuable support.

I am one of the privileged students who benefitted from a scholarship, that also allowed me to arrange two research visits. Both experiences contributed in shaping both my research skills and my character. I hope one day the same possibilities will be guaranteed to all Italian PhD students. Katharina Gangl, you've been extremely supportive, pragmatic, and patient during my stay at University of Vienna and in the following months. Those months were among the most challenging of my PhD, but you supervised me with dedication and I will always remember it. Thank you. Paul van Lange, thank you for accepting me as a visiting scholar, even in spite of your incredibly busy agenda. During the months spent at the VU Amsterdam, your contagious enthusiasm and your ability to see the "big picture" in research has (and still is!) incredibly inspired (inspiring) me. Jan-Willem van Prooijen, I really enjoyed working with you. Thanks for your time, for the coffee meetings, and for your optimism. You were always responsive to my drafts and provided me very encouraging feedback, that improved my writing and paper structuring skills.

I would also like to thank my fellow colleagues at University of Turin for their support and friendship. Thank you Angelo, Anna, Arianna, Barbara, Danny, Marzia, and Silvia. You contributed to some of the happiest memories of this adventure (just to mention: thousands of coffees, birthday breakfasts, nerd jokes, eggs…). Also, I'm grateful to the PhD students of the department of Social and Organizational Psychology in Amsterdam for their friendly welcome, support, and valuable scientific advices.

One of the biggest thank you goes to Angelo. Being both your partner and colleague has sometimes been a double-edged sword for me. Nevertheless, you've always been so patient during my hard times. You encouraged me to keep my head up and to be trustful. You never stopped to believe in me and in the potential of my research. You helped me in numerous ways, giving me wise advices and being always optimistic about the future. I just can't find the words to express my gratitude, but you already know it.

Moreover, I would like to thank my second family in Turin: TerrHome. Thank you Alio, Arta, Angelo, and Giospi! My memories with you are probably the happiest. I couldn't imagine better company, and I'm realizing more and more I've been incredibly lucky to share these years with you. I'll never forget our amazing time together.

Infine, vorrei ringraziare la mia famiglia, tutta quanta. Seppur da lontano vi ho sempre sentiti vicinissimi. Grazie per avere creduto in me anche quando ho stentato io per prima, per avere rispettato le mie decisioni, per avermi supportata incondizionatamente e per continuare a farlo. Grazie mamma e papà, grazie Giorgia. Il vostro affetto non mi è mai mancato nemmeno per un istante.