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**Dimensionality, interconnectedness, and cross-national comparability:
Studies of the global trust in multinational representative samples**

A thesis submitted in fulfilment of the requirements for the degree of

Doctor of Philosophy

in

Psychology

at Massey University, Albany campus,

Aotearoa New Zealand.

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2020

Statement of Authorship

I am the primary author of the three empirical studies that compose this thesis. I have developed the ideas, conducted and interpreted the analyses, and authored the final articles. These articles have been written for publication in peer-reviewed journals. Chapter 2 has been published in the *International Journal of Public Opinion Research*. Chapter 3 has been published in the *Asian Journal of Social Psychology*. Chapter 4 has been published in *Social Science & Medicine*.

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Abstract

Trust has been commonly portrayed as a desirable characteristic for both individuals and societies. However, debates around the conceptualisation of trust are still ongoing, as recent literature has challenged the conventional treatment of social and political trust as two unidimensional and separate constructs. It is believed that a simplistic conceptualisation and measurement of trust may overlook the multifaceted and interconnected nature of trust and potentially distort cross-national comparisons. This thesis investigates the dimensionality, interconnectedness, and cross-national comparability of trust using representative samples from a multinational online survey project. Study 1 demonstrated a conditional interconnection between social and political trust in the context of 11 democratic societies: different types of trust formed two clusters that centre around social and political trust, respectively, but they were interconnected through the specific links between trust in neutral (non-partisan) institutions on the one hand and trust in community on the other hand. Study 2 demonstrated a culturally and politically contingent view of the structure of trust through a confirmatory factor analysis of the Global Trust Inventory. In four East Asian societies, two different models of trust (China model and Democratic East Asian model) fit the data better than the model suitable for the 11 western democracies in Study 1 (Western model), probably due to differences in culture and political systems. Study 3 demonstrated that two sub-measures of the Global Trust Inventory, capturing two types of social trust, were metrically invariant across 18 culturally and politically heterogeneous societies and across a six-month time interval. Results of a cross-lagged panel analysis further suggested that there was a bidirectional link between trust in community and life satisfaction, but life satisfaction was longitudinally associated with trust in close relations, not vice versa. Overall, this thesis supports a multidimensional and conditionally interconnected view of trust and explores ways of dealing with measurement non-invariance in cross-national survey research.

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Chapter 1: Introduction

Conceptualisation of trust

Rationalistic view versus moralistic view

Trust is a shared research interest across several academic disciplines, including psychology, sociology, political science, economics, business, and neuroscience. However, it is often the case that trust means different things to different ears. This is probably because trust is such a multifaceted and multilevel concept. Here a brief introduction is given on how trust is conceptualised in social science, ranging from a rationalistic view on the one hand to a moralistic view on the other hand.

Hardin (2001, 2002) has a rationalistic view of trust. According to his account, trust is best understood as an “encapsulated interest” – that is, A can trust B on X because A reasonably believes B has incentives to act on A’s interest. In other words, one may trust another only if he/she is expecting to benefit from a specific interaction. Therefore, trust is in nature calculative based on the expectation of being reciprocated. Moreover, according to this view, trust should be task-specific. For example, one may trust a physicist to produce a reliable scientific report, but not necessarily trust the same physicist in fixing a broken door (although he/she might know very well the laws of physics behind it). Actually, according to this view, trust should be so specific that one should only trust a small number of people with very specific tasks.

Similarly, Yamagishi and Yamagishi (1994) define trust as the “expectation of goodwill and benign intent” (p. 131). They explicitly emphasise this expectation should be “based on the inference of the interaction partner’s personal traits and intentions”. This is different from assurance, which is based on the “knowledge of the incentive structure surrounding the relationship”. In other words, their conceptualisation of trust is similar to Hardin’s (1992), in that trust is considered primarily rational and based on instrumental

calculations, but is considered as “a cognitive bias in the evaluation of (potential) partners” (Yamagishi & Yamagishi, p. 139).

In contrast, Uslaner (2002, 2018) proposes a moralistic view of trust, where trust is seen as a general outlook on human nature. He argues this moralistic view is rooted in optimism and control, something one learns from childhood socialisation. According to this view, trust primarily depends on the characteristic of the trustor, rather than that of the trustee. A trustful person tends to trust, period. In other words, one can trust non-specific others on non-specific tasks. A trustful person also tends to continue trusting even if his/her recent trust has not been reciprocated.

There are also some researchers theorising trust in a way that integrates rationalistic and moralistic views. For example, in Mayer, Davis, and Schoorman’s (1995) model, both trustor’s and trustee’s characteristics are taken into account in a trust relationship. They define trust as “the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party” (Mayer et al., 1995, p. 712). On the one hand, the trustor has a disposition of the general willingness to trust others without any information about the trustee, namely the trustor’s propensity to trust. On the other hand, a trustee’s trustworthiness is also important in determining trust in a specific interaction. Mayer et al. (1995) summarise three major factors of trustworthiness based on previous literature: ability, benevolence, and integrity. In their view, each of these three factors can uniquely and independently contribute to trust. Mayer et al. (1995) do not emphasise the importance of any particular factor, which is different from Yamagishi and Yamagishi (1994), where the goodwill/benevolence of the trustee (but not ability or integrity) is considered the most important aspect of trustworthiness.

The moralistic view and rationalistic view differ in conceptualising the stability of trust. The moralistic perspective emphasises the stable component of trust, which is rooted in childhood socialisation (Uslaner, 2002), therefore it is largely stable across the lifetime or even heritable across generations (Uslaner, 2008b). The counterargument, from the rationalistic view, is that trust in others should not be stable. One should rationally adjust his/her trust based on the evaluation of different trustees on different tasks. For example, one might be more likely to trust a close friend as a house sitter than a distant friend. Even if one has to rely on a stranger to do the housesitting, an online sitter with detailed profile information and a perfect reputation score is typically more trusted than another one with no profile photo and has never sat a house before. Moreover, one might have different levels of trust in different situations. For example, when migrating to a new country, one might adapt to the trust level of the receiving country, rather than sticking to the original trust level stemming from his/her home country (Dinesen & Sønderskov, 2018).

The risk component in a trust relationship is also conceptualised differently. Some researchers believe risk is an essential component of trust (e.g., Deutsch, 1958). Giddens (1990) argues that there is “an ambivalence that lies at the core of all trust relations” (p. 89). Yamagishi and Yamagishi (1994) use the label “trust” only to describe transactions involving social uncertainty, while defining transactions involving little social uncertainty as “knowledge-based trust/particular trust” or “assurance”. By contrast, some writers of the rationalistic approach believe trust should be saved for specific relationships that involve a minimal level of risk. For example, Hardin (2001) believes trust should exist in an “encapsulated interest” within a small circle of people, hence it should not be generalised to “most people”, where the risk of being cheated might be too high.

Trust is conceptually different from cooperation, although they are at times used interchangeably. Trust is primarily considered as a *belief* about individuals and institutions,

however, cooperation (sometimes labelled as trusting behaviour, e.g., Fehr, 2003) is the actual *behaviour* of working with others. Different research methods have often been used for the study of trust versus cooperation. Trust is typically measured by directly asking respondents to make judgements in survey research (Bauer & Freitag, 2018), while cooperation is more frequently measured by examining how respondents act in experimental research, such as the prisoner's dilemma game (Flood, 1958) or trust game (Berg, Dickhaut, & McCabe, 1995). Empirically trust is positively associated with cooperation. For example, a recent meta-analysis showed that there was a positive association between trust and cooperation with a small to medium effect size ($r = .26$; Balliet & Van Lange, 2013). However, they are theoretically different, as cooperation can exist without trust when there are social and institutional constraints (e.g., networks of reputation and institutionalised punishment) that could alternatively regulate cooperation (e.g., Cook, Hardin, & Levi, 2005).

Social scientists give labels to different types of trust based on who the trustee is in a given trust relationship. If the trustee is a person or a group, a very general label of “social trust” or “interpersonal trust” is often used; if the trustee is an institution or a public official who represents the institution (e.g., the president of a country), another label of “political trust” or “institutional trust” would often be given. Unless otherwise specified, I use social trust and interpersonal trust interchangeably, and political trust and institutional trust interchangeably in this thesis.

To sum up, within the scope of this thesis, trust is considered as a relational concept that may consist of both moralistic and rationalistic aspects. I use the term trust to refer to the willingness to be vulnerable to being exploited and to observe mutual obligations in a specific relationship. Moreover, unlike some previous literature (e.g., Yamagishi & Yamagishi, 1994), I do not intend to exclude close relations (e.g., family and friends) from the trust discussion, because I believe all relationships involve a certain level of risk, including close

relations. The tendency to neglect the potential risk in close relations might lead to severe consequences, such as domestic violence or stolen inheritances. Also, the inclusion of trust in close relations might provide important understandings of the dynamics of various relationships for a modern human being.

Trust versus distrust

Although frequently portrayed as a desirable characteristic for individuals and societies, trust has potentially negative implications. Firstly, a trusting person might be more gullible in interpersonal interactions, particularly with unknown others, because of the risk component embedded in any given interactive relationship (Giddens, 1990; Yamagishi & Yamagishi, 1994; but see a different view in Hardin, 2001, 2002). Trusting someone may leave the trustee in a vulnerable and dependent position, which requires the benevolent action of the trustee to bail out the trustor. Yamagishi and Yamagishi (1994) address this risk/vulnerability component as “a cognitive bias”, in that “a trusting person is the one who overestimates the benignity of the partner’s intentions beyond the level warranted by the prudent assessment of the available information” (p. 136). If the trustee is trustworthy and willing to reciprocate, then trust is more likely to result in a mutually beneficial outcome; otherwise, trusting someone might lead to exploitation by the trustee.

Secondly, trust toward governmental institutions may not always be desirable in a democracy. According to political science literature, there is a built-in level of distrust in democracy, where distrust is believed to be a necessity, rather than a liability, for the democratic functioning (e.g., Duncan, 2018; Hardin, 1999; Warren, 1999, 2017, 2018). This is because excessive trust in politicians and political institutions might imply conformity to authority (Shockley & Shepherd, 2016), which is particularly risky for democratic system under the assumption that power corrupts. Therefore, it is difficult to specify the optimal level of trust/distrust in a democracy, considering the simultaneous and therefore paradoxical need

for both trust and distrust. As Gamson (1968) put it, “whereas insufficient trust presages the disintegration of civil society, excessive trust cultivates political apathy and encourages a loss of citizen vigilance and control of government, both of which undermine democracy” (cited in Mishler & Rose, 1997, p. 419).

Dimensionality and interconnectedness of trust

Dimensionality is one of the central topics in trust research (Bauer & Freitag, 2018). Research on both social and political trust starts from a unidimensional conceptualisation by focusing on either the general form of social trust (see a review in Nannestad, 2008) or trust in the incumbent (see a review in Levi and Stoker 2000). Then in subsequent research, the multidimensional nature of trust became increasingly recognised, with other types of trust being identified and integrated into the trust discussion (e.g., Bauer & Freitag, 2018; Breustedt, 2018; Freitag & Bauer, 2013; Rothstein & Stolle, 2008). This discussion around dimensionality is still ongoing particularly because: (1) more refined measures have been and will be created to capture a more comprehensive picture of trust relationships (e.g., Freitag & Bauer, 2013; Liu et al., 2018; Wollebæk et al., 2012), which is likely to yield even more dimensions; (2) a wider range of samples outside the WEIRD ones (Western, Educated, Industrialised, Rich, and Democratic; see Henrich, Heine, & Norenzayan, 2010) has been and will be increasingly included in cross-national comparative examinations of trust, which may not necessarily be in line with the existing Western-dominant view on the dimensionality of trust.

The following section reviews the existing literature on dimensionality and interconnectedness of trust.

Social/interpersonal trust

Unidimensional social trust

Generalised trust refers to trust toward non-specific others (Nannestad, 2008). It is believed that generalised trust is one of the key components of social capital, which has a set of beneficial impacts at both individual level and societal level (e.g., Knack & Keefer, 1997; Fukuyama, 1995b; Putnam, 1993, 2000; Uslander, 2002). Generalised trust is particularly important in large-scale modern societies, because an average person is increasingly involved in social interactions with strangers. As Yamagishi and Yamagishi (1994) put it, “(generalised trust) is a belief in the benevolence of human nature in general and thus is not limited to particular object... it helps one to move out of the familiar relations” (p. 139).

Since its debut in General Social Survey, the standard question “generally speaking, would you say that most people can be trusted or that you can’t be too careful in dealing with people?” has been widely used in worldwide surveys (e.g., the World Values Survey and the European Social Survey). The use of this item in the English world is generally accredited to Rosenberg (1956). Some variations of this question are also used. For example, in Knack’s (2002) research, the wording was slightly modified as “most people are honest”. Also, in European Social Survey, generalised trust is measured by three items assessing whether most people can be trusted, would try to take advantage of you if they got the chance, and try to be helpful. What these measures have in common is that they use “most people” as the trustee to capture a generalised sense of trust. I would use the “most people” question to refer to these trust measures here.

The “most people” question has been frequently used as an individual-level indicator of generalised trust, particularly in the context of North America and Europe where this item was included in many large-scale survey projects. When testing the association between generalised trust and other variables, binary answers are often used at the individual level,

although at times the same question has also been used on a three-point, seven-point or 11-point scale (e.g., Clark & Eisenstein, 2013; Lundmark, Gilljam, & Dahlberg, 2015). This line of research has shown that generalised trust is associated with more civic and political participation (e.g., Rothstein & Uslaner, 2005; Sønderskov, 2010), more cooperative behaviours (e.g., Balliet & Van Lange, 2013), and better health status (e.g., Chan, Hamamura, Li, & Zhang, 2017).

The “most people” question has also been used as an aggregate-level indicator. When making cross-national comparisons, the proportion of people responding “most people can be trusted” is aggregated to produce country-level trust scores. In this line of research, Northern European countries like Norway, Sweden, and Finland typically have the highest level of generalised trust, followed by developed countries like Australia, Canada, the United States, Germany; developing countries like Turkey, Rwanda, Peru, Ghana have the lowest level of generalised trust (Bjørnskov, 2007; Delhey & Newton, 2005; Delhey, Newton, & Welzel, 2011).

Aggregate-level generalised trust has been linked with various desirable outcomes for social and political functioning, particularly in the context of democratic societies. For example, Uslaner and Brown (2005) found that generalised trust was positively associated with communal/civic participation at the state level in the US. Knack and Keefer (1997) found that generalised trust was positively associated with governmental performance at the state level in the US. Uslaner (2002) found that generalised trust was negatively associated with corruption.

Given its beneficial effects, many researchers have been interested in identifying the origin of generalised trust. Delhey and Newton (2005) tested a comprehensive set of country-level theories, ranging from social, economic, political, historical and cultural perspectives, based on samples from 60 countries in the second and third waves of the World Values

Survey. They identified Protestantism and low ethnic fractionalisation as two exogenous factors believed to lead to high generalised trust. They speculated this might be because: (1) the Protestant ethic is particularly good at cultivating norms of equality and trustworthiness compared to other more hierarchical religions; and (2) it is easier to trust one another in an ethnically homogeneous country. They also found that good government and national wealth were strongly associated with generalised trust, characterised by two of the strongest trust correlates at the country-level: rule of law ($r = .68$) and GDP per capita ($r = .66$). These two factors might serve as mediators between Protestantism and ethnic fractionalisation on the one hand, and high generalised trust on the other hand. In particular, they did not find country-level evidence in support of social capital theorists' claim (Putnam, 1993, 2000), as voluntary associations could not predict trust after controlling for Protestantism and ethnic fractionalisation. They concluded that generalised trust is better considered "an integral part of a tight syndrome of social, political, and economic conditions" (p. 311).

However, the validity of the "most people" item has received some challenges. Some researchers have doubts about whether the one-item question is measuring trust or trustworthiness. They examined this issue by associating the answer to this measure to behavioural responses in the trust game, originally proposed by Berg, Dickhaut, and McCabe (1995). By using 189 student respondents from the US, Glaeser, Laibson, Scheinkman, and Soutter (2000) found that it was associated with trustworthy behaviours (i.e., fulfilling other people's trust in them) rather than trusting behaviours. However, a recent study, using much broader samples from 35 countries, suggested that the "most people" question was positively associated with trustful behaviours, but not trustworthiness in the trust game (Johnson & Mislin, 2012). The mixed results probably indicate the "most people" question is too vague to distinguish trust and perceived trustworthiness in a consistent manner (Yamagishi, Akutsu, Cho, Inoue, Li, & Matsumoto, 2015).

Besides, Sturgis and Smith (2010) found that, even within the same national context of Britain, respondents had different targets in mind when answering the “most people” question and this would, in turn, affect how trustful they are. Specifically, they asked respondents to answer the “most people” question first, and then report who they were thinking of as “most people”. They found those who were thinking of someone they know personally would report higher trust (i.e., higher likelihood to say most people can be trusted), compared to those who were thinking about non-specific others.

The vagueness of this “most people” question is even more problematic in cross-cultural/cross-national research. Delhey et al. (2011) raised the question of “radius of trust”, suggesting that people from different societies tend to have different targets in mind when answering whether “most people” can be trusted. Specifically, ingroup trust (including trust in your family, trust in your neighbourhood, and trust in people you know personally) and outgroup trust (including trust in people you meet for the first time, trust in people of another religion, and trust in people of another nationality) were used as independent variables to predict answers to the “most people” question separately in every single country, and the radius of trust was calculated by subtracting the regression coefficient of outgroup trust from that of ingroup trust. They argue that the radius of trust could reflect how wide or narrow people from a society place their trust. They found the radius of trust to be narrower in Confucian societies compared to other cultures. In other words, the way people from some cultural zones understand the “most people” question differs dramatically from other cultural zones, which might cause systematic bias when using this question in and of itself to make cross-national comparisons (see also Torpe & Lolle, 2011).

The different tendencies in responding to the “most people” question may reflect cultural differences in establishing trust relationships. Yuki, Maddux, Brewer, and Takemura (2005) theorised that there are fundamental differences in making a trust evaluation toward

an unknown person between Japanese and US Americans. In two experiments, they found American respondents made their trust decision primarily based on group categories, while Japanese respondents decided their trust based on the possibility of sharing interpersonal links. Connecting this to Delhey et al.'s (2011) findings, it is speculated that culture may play an important role in building trust relationships. It is possible that for East Asian respondents, where relationalism is embedded in the indigenous context (Liu, 2015), they might tend to build their sense of “most people” primarily based on personalised networks with relatively stronger ties (e.g., *Guanxi* in Chinese, see Hwang, 1987). Therefore, when answering the “most people” question, they might be more likely to use known others with stronger interpersonal ties as the frame of reference. In comparison, Western respondents might construct the sense of “most people” primarily based on unknown others with relatively weaker interpersonal ties.

In his review on generalised trust, Nannestad (2008) defended the use of this “most people” measure as “it is not quite as unreliable and invalid a survey instrument as some claim on the basis of the question’s undisputable underspecification” (p. 419), particularly at the aggregate level. He referred to empirical evidence where the aggregate “most people” trust measure was associated with a set of desirable outcomes at the country level. I believe the “most people” question might create unnecessary ambiguity when it is used in and of itself to compare the level of trust in cross-national studies that involve significant differences in cultural heritage and political configurations. Instead, a multidimensional and specifically worded measurement of social trust might have the advantage of detecting the nuances of culturally or politically embedded trust relationships and therefore contribute to more informed cross-national comparisons.

Multidimensional social trust

The distinction between generalised trust and particularised trust is among the early attempts to explore the multidimensionality of social trust. Particularised trust refers to trust toward people with personal knowledge/intimacy. Generalised trust is considered “thin” trust – the kind of trust exists in weak ties in large-scale society (see Granovetter, 1973); in contrast, particularised trust is seen as “thick” trust – trust in strong-tie relationships with repeated interpersonal interaction.

Some theorists believe particularised trust is the more backward form of trust that encourages familism or nepotism in traditional societies (e.g., Banfield, 1958; Fukuyama, 1995b), while generalised trust is the more emancipative form of trust that facilitates cooperation in modern societies (Newton & Zmerli, 2011; Realo, Allik, & Greenfield, 2008; Welzel & Delhey, 2015). However, Newton, Stolle, and Zmerli (2018) argue that particularised trust, particularly trust in family, is “the most common and found in virtually all individuals in the surveys” (p. 10). Trust within an intimate circle is often seen as the start of trust, as from a developmental perspective, parents or caregivers are the first ones with whom a person most likely has to interact with and establish a trust relationship. Therefore, particularised trust toward intimate others is believed to be the necessary prerequisite of trust towards generalized others (Newton, Stolle, & Zmerli, 2018; Newton & Zmerli, 2011).

Research on the dimensionality of social trust has mainly relied on data from the World Values Survey, which has used a multiple-item battery of social trust since its fifth wave (Welzel, 2010). Specifically, respondents were asked to indicate their level of trust on several trustees on a four-point scale, ranging from not at all to complete. These trustees include your family, neighbourhood, people you know personally, people you meet for the first time, people of another religion, and people of another nationality. The first three items and the last three items were theorised to represent different components/factors of social

trust: particularised trust and generalised trust, respectively (Welzel, 2010), with some empirical evidence confirming the claim (e.g., Delhey et al., 2011; Newton et al., 2011; see this two-factor model of social trust in Figure 1.1).

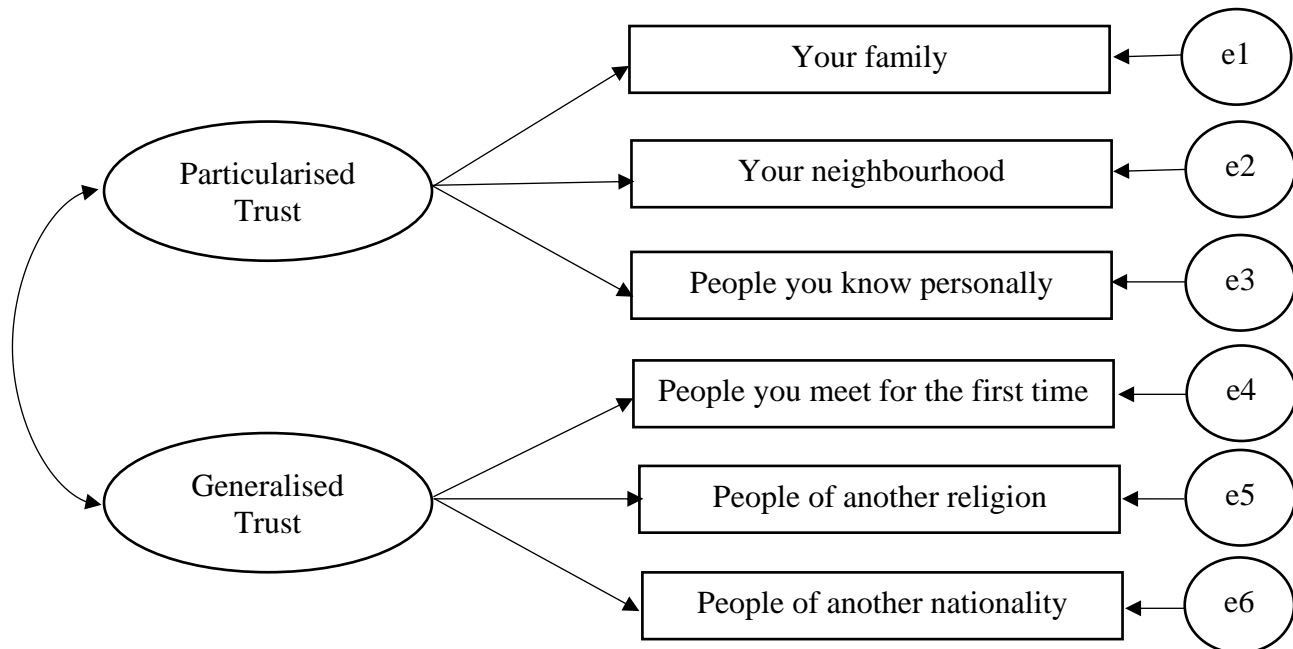


Figure 1.1. The two-factor model of social trust based on the World Values Survey trust items.

However, it is worth noticing that this measure is not perfectly matched with the theorisation. Welzel (2010) argued that the distinction between these two components/factors is their level of familiarity: the first three items refer to familiar others, so it was labelled “particularised trust”, while the last three indicate unfamiliar others, so it was labelled “generalised trust”. However, a closer examination suggests this is not necessarily the case for each item. For example, one is not necessarily familiar with everyone in the neighbourhood (see also Jing & Bond, 2015), and one is also not necessarily unfamiliar with people of another religion or nationality, as interethnic and international friendships and romantic relationships have become increasingly common.

Considerable efforts have been made to reconcile the mismatch. Delhey et al.'s (2011) relabelled the same two components based on the same World Values Survey data as ingroup trust and outgroup trust (see also Crepaz, Jazayeri, & Polk, 2017; Crepaz, Polk, Bakker, & Singh, 2014). However, these new labels have their shortfalls as well. Specifically, some items do not have a group component as implied of the labels. For example, trust in people you know personally and trust in people you meet for the first time does not contain any group component. This contradicts contemporary psychology of intergroup relations rooted in social identity theory, where ingroup/outgroup distinctions are central to the entire conceptualisation of identity (see Tajfel & Turner, 1979).

Freitag and Bauer (2013) have a different categorisation of social trust. They analysed data from the Swiss Survey with six items measuring social trust, similar but not identical to World Values Survey items (trust in most people was used in place of trust in people you know personally). They identified a three-factor model of social trust, including particularised trust, identity-based trust, and generalised trust. Amongst them, particularised trust (including trust in friends and neighbours) and generalised trust (including trust in people you meet for the first time and "most people") are roughly aligned with Delhey et al.'s (2011) model. The third trust factor, including trust in another religion and trust in another nationality, captures trust in people who share a common identity. This is in keeping with social identity theory (Tajfel & Turner, 1979).

According to Freitag and Bauer's (2013) theorisation, identity-based trust could apply to both ingroup members and outgroup members. However, what their measure covers is exclusively people with *different* identity (i.e., people of another religion or nationality). Therefore, a measure of trust within a *shared* group is still missing. Human beings tend to see themselves through groups (Ellemers, 2012). A shared group and the trust within it could serve as an inclusive force in building and maintaining social relations, therefore,

contributing to solving public problems constructively. On the one hand, it is wider than trust in an intimate circle as a group can accommodate various people of non-familiarity, ranging from as small as a local group consisting of people with the same hobby, to as big as a whole country. In this case, the group is more of a social identity, as theorised by Tajfel and Turner (1979). On the other hand, it is more specific than generalised trust, as a particular real-life group label is built on meaningful components that are shared by its members, be it geographical proximity, group identity, and/or collective memory. If social identity is salient, the boundaries of who is trusted may change.

Wollebaek, Lundåsen, and Trägårdh (2012) propose community trust, which is similar to Freitag and Bauer's (2013) conceptualisation of identity-based trust, but measures ingroup-based trust (i.e., community) that Freitag and Bauer's (2013) measure was unable to cover. This could fill in the missing component of ingroup-based trust. They argue "community trust is partially a product of personal experiences with the people with whom space is shared, and partially based on socially formed perceptions that shared, lived space as context" (Wollebaek et al., 2012, p. 322). As community trust is bounded in physical space and shared experience, it could be considered as rooted in a form of collective memory. Results showed that this community trust was a better predictor for local problem solving compared to particularised and generalised trust. However, Wollebaek et al.'s (2012) measure focuses exclusively on the shared geographical identity (i.e., trust in the neighbourhood). While neighbourhood-based identity might be important for small-scale civic society bounded in geography, it fails to cover other important identities that are frequently used to mobilise political participation in large-scale society, such as partisan, religion, race/ethnicity, sexuality, and nationality (e.g., Bernstein, 2005).

To sum up, there seems to be more convincing empirical evidence in favour of the multidimensional model of social trust over the unidimensional model. However, existing

measures have various shortfalls, particularly the absence of a comprehensive and cross-culturally valid measure of ingroup-based trust, which might hinder a better understanding of the mobilising role of trust in large-scale modern society.

Political/institutional trust

Political trust refers to trust toward political institutions or politicians. In parallel to social trust, there is a rationalistic view and a less rationalistic view on political trust. Many political theory proponents take a rationalistic view, arguing that political trust is based on the evaluation of the economic and political performance of institutions (Levi & Stoker, 2000). This is best exemplified by the early use of the term “popular evaluations of government” in Stokes’s (1962) work, where the government is the subject of cognitive-based assessment. This view is aligned with Easton’s (1965) concept of specific support. Therefore, according to this view, there should be different types/dimensions of political trust, corresponding to institutions with different political functions. Also, fluctuation in the level of trust should be expected depending on the current performance of a given institution. For example, trust in the president is expected to drop after a major political scandal, and trust in the police might fall after an illegitimate use of violence.

Institutionalised constraints embedded in the democratic system should be acknowledged in measures of political trust. There exists built-in distrust toward institutional power according to some democratic doctrines/regimes (e.g., Duncan, 2018; Hardin, 1999; Warren, 1999, 2017, 2018). Specifically, three main functions of the democratic government (i.e., legislation power, executive power, and the judiciary power) are to an extent separately and independently held by different branches of the government, and they check and balance one another. This is designed to prevent unchecked power from being concentrated in one or a group of political elites. Therefore, when evaluating their level of political trust, it is often

assumed that citizens from democratic societies have already taken these constraints into account.

Many empirical findings have linked political trust with performance, which is in support of the rationalistic view. Economic performance is one of the most important criteria for the evaluation of political trust, as economic prosperity seems to be one of the most universal goals across modern societies. Previous research showed that economic performance was positively associated with political trust consistently across different regions of the world, particularly subjective evaluation of the economy (Van der Meer, 2018). Economic inequality and poverty, on the other hand, was inversely associated with political trust (e.g., Twenge, Campbell, & Carter, 2014; Uslaner, 2011).

Political performance, such as corruption (e.g., Uslaner, 2017), has also been shown to relate to political trust. Empirical results suggested that the perception of corruption was a stronger predictor of political trust than economic inequality (Van der Meer & Hakhverdian, 2017). The evaluation of political performance also has a partisan component, where citizens tend to have higher political trust in a government that represents their own political ideology (e.g., Citrin, 1974). This polarization has been increasingly salient in some major democracies, which creates a new crisis on political trust (Hetherington, & Rudolph, 2015; Hooghe & Dassonneville, 2018). For example, the trial in the US Senate for the impeachment of Donald Trump is divided by partisanship, where all Democrats voted for guilty, and 52 out of 53 Republicans voted against it. That means the judgement on whether or not the president is guilty and untrustworthy, which is supposedly based on the validity of charges, actually depends on partisanship to a staggering extent.

In contrast, some researchers argue that political trust is not entirely rational; instead, it is best seen as a heuristic judgment on the overall trustworthiness of the political regime. This is because the information required for a perfectly rational evaluation of each

institution's performance is too large to be comprehended (see Hardin 1999). Therefore, one might practically form heuristics, about a broad and relatively stable perception of the regime in general, which could facilitate their evaluation of political institutions. This is largely in line with Easton's (1965) notion of diffuse support, which is a generalised form of support for the overall system.

More importantly, according to this less rationalistic view, political trust is embedded in the personal/societal meaning system, and as such, should be relatively stable. At the individual level, this view emphasises the role of early socialisation, arguing a person's political trust would crystallise before reaching adulthood together with many other attitudes and values (Inglehart, 1997). At the societal level, political trust is theorised to be entrenched in cultural values (e.g., Fukuyama, 1995b; Putnam, 1993). For example, the indigenous cultural script of benevolent authority has been theorised to provide unique cultural capital that contributes to the high political trust in Chinese societies (Liu et al., 2015).

Mishler and Rose (2002) examined these two competing views of political trust in post-communist states, where citizens were socialised in a communist regime when they were young and switched to the democratic politics in their adulthood due to the collapse of the Soviet Union. They found both economic and political performance, but not socialisation embedded in the social structure of the previous regime, could predict political support, which is in line with the rationalistic view of political trust.

Instead of treating these two views as competing theories, some researchers have endeavoured to integrate these two views of political trust. Schoon and Cheng (2011) propose a lifetime learning model of political trust, where both early socialisation and later evaluation of political institutions are theorised equally as *experiences* that might shape one's political trust. They found that political trust was associated with various indicators of early

experiences (e.g., family status, cognitive ability, school motivation) and later experiences (e.g., educational attainment and occupational attainment) as well.

There are other ways to address the question of whether or not citizens conceive political trust as a holistic unidimensional concept. Drawing on Easton's (1965, 1975) distinction between diffuse and specific political support, Wu and Wilkes (2018a) aimed to identify the "critical trustor" by assessing participants' response patterns. If a citizen trusts all political institutions to the same extent without any variance, it is inferred that he/she is a diffuse/non-critical trustor; if a citizen gives different scores to different institutions, it is inferred that he/she is a specific/critical trustor. Results suggested the proportion of critical trustors in a society varied as a function of time and place: based on data from the fifth and the sixth wave of the World Values Survey, the highest proportion was found in full democracies, followed by flawed democracies, hybrid regimes, and was lowest in authoritarian regimes; based on the longitudinal data from the US General Social Survey, the proportion of critical trustors increased from 65% in the year 1973 to 85% in the year 2014.

The examination of dimensionality can also contribute to the understanding of these two different views. If the less rationalistic view is true, trust toward institutions should be grouped into a unidimensional structure that represents the overall sense of support toward the system. In comparison, if the rationalistic view is true, trust toward various institutions should be grouped into different dimensions depending on their functional similarities based on calculations of rational interests.

Unidimensional political trust

In the early research attempting to study political trust, a uni-dimension approach, similar to the early treatment of the generalised trust as a unidimensional concept, was widely used in surveys (e.g., the American National Election Studies, see Stokes, 1962). In this approach, political trust is measured by "how much of the time do you think you can trust the

government in Washington to do what is right”, “would you say the government is pretty much run by a few big interests looking out for themselves or that it is run for the benefit of all people”, “do you think that people in the government waste a lot of money we pay in tax”, and “do you think that people running the government are crooked”.

There are some criticisms against the use of these items to assess political trust. The major one is that these measures focus exclusively on the trust toward the incumbent or the representative side of the government, therefore, it might overlook other aspects of political trust that are important for a healthy democracy. For example, trust in law enforcement institutions seems crucial for understanding the racial disparities in the context of the US, but it is not covered by the NES measure of political trust, which exclusively focuses on trust in the incumbent representative government (i.e., “the government in Washington”). Another criticism is on measurement properties. For example, Poznyak, Meuleman, Abts, and Bishop (2014) found that, by using multigroup confirmatory factor analysis, this measure of political trust did not reach full measurement equivalence over the time course from 1964 to 2008, which claims “political trust has been declining” susceptible to uncounted measurement bias.

In attempts to develop a better measure of political trust, a battery of items has been used in many recent large-scale international survey projects. For example, in the most recent World Values Survey, respondents are asked how much confidence they have in a large number of organisations, including churches, armed forces, the press, television, labour union, etc. Among them, four to six items have frequently been used as indicators of political trust, including confidence in the police, courts, civil service, government, parliament, political parties (e.g., Breustedt, 2018; Newton et al, 2018; Delhey et al., 2011). Similarly, political trust was assessed in the Global Barometer Survey by asking how much trust citizens have in some institutions, including trust in the president, national government, parliament, local government, the courts, etc.

Using the term “confidence” or “trust” has the advantage of simplicity compared to the NES measure, which is particularly important when the research goal is to have a cross-nationally consistent measure of trust toward various trustees (i.e., institutions). Although trust and confidence have been used interchangeably at times (e.g., Metlay, 2013), I believe “trust” is more appropriate for the current investigation. This is because the use of confidence to assess political trust implies that social and political trust are two distinct concepts. Specifically, confidence is believed to mainly capture the ability component in Mayer et al.’s (1995) trust model (see Earle & Siegrist, 2006), which by default assumes that political trust can only be a rational evaluation of the performance and therefore it is disconnected with social trust. However, I believe the rationality of political trust and the interconnectedness of social and political trust should be a research question rather than a theoretical assumption. Moreover, using the same term for social and political trust is better at testing their interconnectedness, because it could rule out the possibility that the potential distinction between social and political trust is due to the choice of different terms.

Some researchers found a unidimensional model of political trust with a multiple-item battery of political trust. For example, Hooghe (2011) found a unidimensional model of political trust based on the British Election Study, with the conclusion that “(British) citizens apparently do not distinguish between the functioning of various political institutions” (p. 269; see similar findings in a broader context with democratic politics in Hooghe & Kern, 2015; Newton & Zmerli, 2011). Mishler and Rose (1994, 1997, 2001) also found a unidimensional model of political trust, but only in post-communist societies. They gave a different account for the unidimensional model of political trust, arguing that citizens from post-communist societies have insufficient experience of democracy so that they could not distinguish between trust in civic institutions and political institutions. Therefore, these

empirical findings of the unidimensional model in different parts of the world are largely in line with the less rationalistic view of political trust.

Multidimensional political trust

Rothstein and Stolle (2008) distinguished trust in partisan institutions from trust in neutral and order institutions, and trust in power-checking institutions (i.e., media) based on the World Values Survey samples from 56 countries. They theorise that partisan institutions are based on political partisanship, and therefore trust in these institutions could be biased due to different political ideologies/interests. For example, voters vary in their level of trust toward the president partly depending on whether or not the president in power represents their political partisanship (e.g., do you trust the President of the United States when he is Donald Trump?). This factor consisted of confidence in parliament, political parties, representative government, and civil service (with lower factorial loadings). In comparison, the neutral and order institutions are theorised to be less influenced by partisan bias. This factor consisted of confidence in the army, police, and legal institutions. The media factor consisted of confidence in the press and TV. They found that different components of political trust vary in their functions, in that trust in the neutral and order institutions was more important in building social trust compared to trust in partisan institutions.

Recently, Breustedt (2018) compared three models with different dimensionality using confirmatory factor analysis on data from 32 democratic countries in the sixth wave of the World Values Survey: (1) model a: a single-factor model of political trust consisting of all political trust items; (2) model b: a two-factor model where trust in political authorities is distinguished from trust in political institutions; (3) model c: a two-factor model where trust in representative political institutions is distinguished from trust in implementing political institutions. He found the model c fit most of the societies better than the other two models,

which suggests respondents from democratic societies tend to distinguish between their trust in functionally different political institutions (see Figure 1.2).

To sum up, empirical findings on the dimensionality of political trust are mixed. The choice of measures and samples might influence whether a unidimensional or a multidimensional model could be identified. Moreover, previous research primarily focuses on European or North American democratic societies, which leaves the dimensionality of political trust in other societies underexplored, particularly those with non-democratic politics.

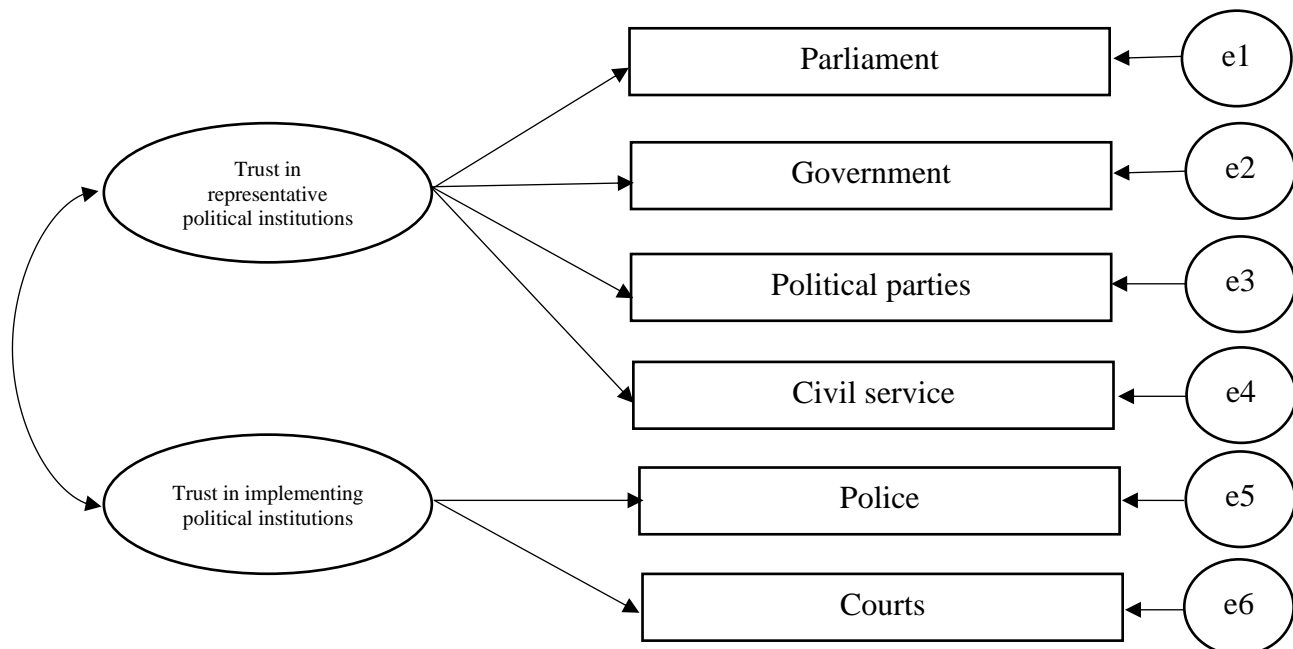


Figure 1.2. The two-factor model of political trust based on the World Values Survey trust items.

Trust as an interconnected concept

There exist different views on the interconnectedness of social trust and political trust. As reviewed in previous sections, social and political trust used to be studied as two entirely unrelated concepts in different disciplines. This is often based on the assumption that social

trust is moralistic, while political trust is exclusively rationalistic (Uslaner, 2002). However, the interconnected relationship between social and political trust has been increasingly recognised, as it has been theorised as “a centrepiece of healthy democracies” (Newton, Stolle, & Zmerli, 2018, p. 38; see also Almond & Verba, 1963; Putnam, 1993).

There is mixed empirical evidence regarding the interconnectedness of social and political trust. Some researchers found positive correlations at both the individual level (e.g., Brehm & Rahn, 1997; Freitag, 2003a, 2003b; Freitag & Bühlmann, 2009; Zmerli & Newton, 2008) and the national level (e.g., Freitag & Bühlmann, 2009; Newton, 2001; Rothstein & Stolle, 2008), while others found weak or no correlations (e.g., Uslaner, 2002, 2008a). Newton and Zmerli (2018) attributed the mixed results to the use of different survey methods (see also Zmerli, & Newton, 2008; Zmerli, Newton, & Montero, 2007). They specifically identified two improved aspects in methods that contribute to the identification of the positive correlation between social and political trust: (1) use of the three-item measure of generalised trust over the one-item measure; (2) the use of an 11-point scale (from 0-10) over a binary response.

There are several additional shortfalls of the measures of trust that have been widely used in this literature, which may hinder a more nuanced understanding of the interconnected nature of trust. Firstly, trust measures are often simplistic in terms of dimensionality. Social trust and political trust have often been treated as unidimensional concepts, the former focused exclusively on generalised trust, and the latter with trust in functionally different political institutions collapsed into a single factor. A more comprehensive measure of trust is needed that can distinguish different dimensions/types of social and political trust, so as to identify the specific (dis)connections of different trust relationships. For example, a specific type of political trust may be associated with a specific type of social trust, but at the same time is unrelated to other types.

Secondly, the use of the “most people” question as the indicator of trust toward non-familiar others might create potential bias. As mentioned previously, this is particularly problematic in cross-cultural studies that include countries and societies with a high degree of heterogeneity. Thirdly, the terms were inconsistent for assessing social trust versus political trust. Specifically, “trust” has been used in social trust measures, while “confidence” has been used in political trust measures. This is not ideal in examining interconnectedness because the choice of different terms not only implies different presumptions for social and political trust, but also creates an unaccounted new variable that might influence the interconnectedness.

Liu, Milojev, Gil de Zúñiga, and Zhang (2018) proposed a new conceptualisation and measurement of trust, the Global Trust Inventory (GTI), which is a useful tool to advance the understanding of the interconnected nature of trust. According to this view, trust is theorised as “a system of meaning that encompasses both the sub-components of and an overall grasp of the risks of opening oneself up to a range of dependencies on others” (p. 790). Different types of trust, including social and political trust, are integrated into a holistic system. The same term of “trust” is consistently used for social and political trust, based on the fact that risk is the shared component for all types of trust relationships, as either your friends or a president, either of whom can default on one’s positive expectations.

The Global Trust Inventory employed 20-some precisely worded items to measure different dimensions/types of trust. The use of multiple-item measures allows an empirical examination of psychometrical properties. Liu and colleagues (2018) focused on the structure of trust in 11 relatively homogenous societies in Europe, America, and Oceania. Results suggested a seven-factor model of trust, including trust in representative government, governing bodies, security institutions, financial institutions, knowledge producers, community, and close relations (see Figure 1.3). This model was found to have good cross-

national psychometric properties (i.e., almost scalar invariance) across these 11 democratic societies.

Among the seven types of trust, two are aligned with social trust, namely trust in close relations and trust in community. Across nations, respondents differentiated people within the intimate circle (i.e., close relations) from people with shared identity but not necessarily personally known (i.e., community). Moreover, Liu et al (2018) reported a universal pattern with a higher level of trust being given to close relations compared to trust in unfamiliar others and institutionalised power. This suggests that familial partiality may be based on evolutionary features that have been adaptive during the evolution of cooperation among human beings (see Richerson et al., 2016).

Three types of trust correspond to political trust, including trust in (representative) government, governing bodies, and security institutions. Trust in representative government is largely aligned with trust in partisan institutions in Rothstein and Stolle's (2008), however, trust in neutral and order institutions was further divided into bureaucratic institutions in charge of political implementation (i.e., trust in governing bodies, including tax system, judiciary, government surveillance, and election) on the one hand, and security/armed forces on the other hand (i.e., trust in security institutions, including military and the police). The identification of this additional trust factor is probably because of the use of more comprehensive trust items in the GTI compared to previous research, which has relied on fewer trust items from the World Values Survey. As Bauer and Freitag (2018) put it, "with more scales that are more refined, we are likely to find more dimensions" (p. 23).

The importance of measuring the propensity to trust is well recognised as it is theorised to capture the personal disposition of a baseline trust level regardless of the trustee (Mayer et al., 1995). Liu and his colleagues (2018) used an alternative person-centred approach to measure the propensity to trust. Latent Profile Analysis is used to generate

different profiles/types of trustors based on their responses on each factor of trust. Results suggested that respondents could be categorised into four profiles based on their response pattern on the seven factors: high trust profile, moderate trust profile, low institutional trust profile, and low trust profile. The high trust profile was associated with a set of outcomes that are desirable in modern democratic societies: including greater engagement in the civic community, greater engagement in political discussion and voting, and less prejudice against disadvantaged groups.

Overall, the Global Trust Inventory is a useful tool for a more nuanced examination of dimensionality and interconnectedness between different types of trust. While Liu et al (2018) focused on the measurement structure and invariance of the global trust inventory, the first study of this thesis further examined the interconnectedness of trust, with a particular focus on how social and political trust is interlinked.

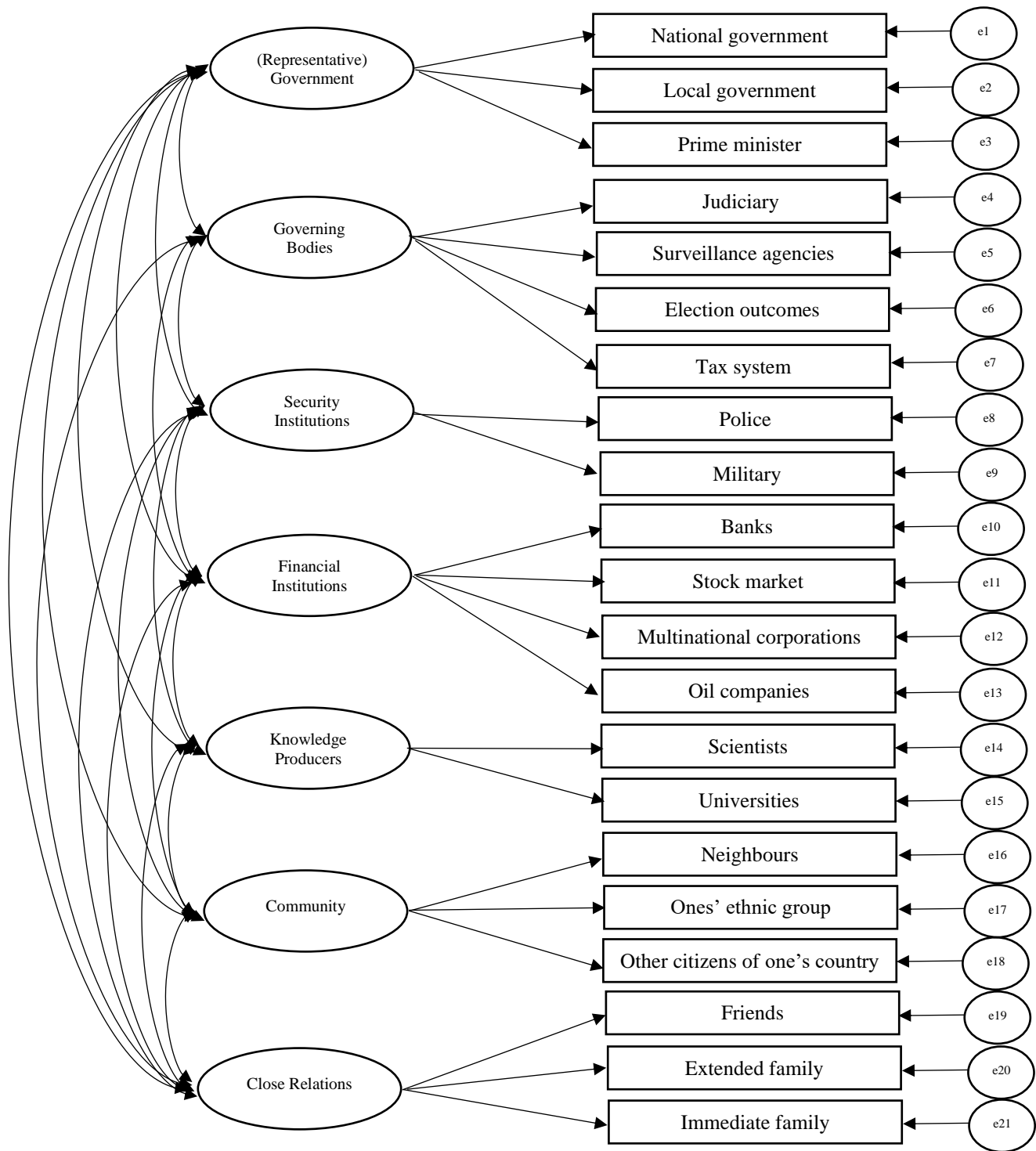


Figure 1.3. The seven-factor model of the GTI.

Cross-national comparability of trust

Cross-national research methods

Another major issue in the trust literature is its cross-national comparability (Bauer & Freitag, 2018). Cross-cultural psychologists are particularly interested in the issue of comparability, as many constructs are often conceptualised in a mono-cultural background first (disproportionally North American or European societies) and then tested in broader cross-cultural samples (Triandis, 2000). Therefore, the comparability issue is pivotal for a meaningful interpretation of cross-national/cross-cultural results. In particular, as the theorisation of trust primarily originates from Western countries and has either an explicit or implicit aim to explain cross-national differences in terms of economic prosperity or political functioning, the comparability issue is highly relevant to the current thesis on trust.

Survey measurement is not and probably may never be perfect, particularly in cross-national research. Measurement bias, either determined by random error or systematic error, could have a severely adverse impact on measurement reliability. Random error, as its name suggests, is random from one observation to another, therefore it cannot be controlled. For example, in survey research, respondents may choose a particular option by mistake rather than because they agree with the statement, which leads to a random error in the measurement. However, it could be largely reduced to an acceptable level by using a large number of observations (N) to average out the random error. For example, trust research often relies on data with large N from international survey projects, such as the World Values Survey, with thousands of respondents from each participating country.

In contrast, systematic error (also called statistical bias) requires a more careful psychometrical examination as it is caused by systematic reactions among respondents. For example, acquiescence bias, also called “yea-saying”, is one of the most common systematic errors, which refers to the tendency to agree with survey questions (Smith, 2004). Previous

research suggests acquiescence bias differs across racial groups (Bachman & O'Malley, 1984) and ethnic groups (Baron-Epel, Kaplan, Weinstein, & Green, 2010), which could lead to misinterpretation in cross-group comparisons if neglected. Specifically, cross-national comparisons of trust may be subject to the acquiescence bias. The empirical results that Country A had a higher mean score on a trust measure than Country B may just reflect that respondents from Country A are more likely to agree with the questions, instead of real differences on the level of trust, which is what the measure supposed to capture.

Measurement invariance has been widely used in cross-national/cross-cultural research to assess the reliability of comparisons across cultures (Ariely & Davidov, 2012; Boer, Hanke, & He, 2018; Davidov, Meuleman, Cieciuch, Schmidt, & Billiet, 2014; Vandenberg & Lance, 2000). There are different levels of measurement invariance, which respond to the different levels of comparability. The three major levels of invariance frequently used in the cross-national research are configural invariance, metric invariance, and scalar invariance (Boer et al., 2018; Milfont & Fischer, 2010; Steenkamp & Baumgartner, 1998; Vandenberg & Lance, 2000). Configural invariance indicates that the construct has the same factor structure across groups. In a structural equation modelling (SEM) with latent variables, this means indicator variables load on their preassigned latent variables in the same way across groups. Metric invariance indicates the same measurement units across groups. In an SEM, this means factor loadings are equal across groups, which is regarded as the weak form of invariance that allows interpretation of the relationship between variables across different groups. Scalar invariance indicates the intercepts are equal across groups. This is regarded as the strong form of invariance, which allows comparison of means between groups.

Measurement invariance can be assessed using different procedures. Multigroup confirmatory factor analysis (MGCFA) is the most frequently used method to test

measurement invariance (Boer, Hanke, & He, 2018). By estimating and comparing the increasingly constrained models, from configural invariance, metric invariance, to scalar invariance, multigroup confirmatory analysis allows a psychometrically rigorous assessment of the extent to which the measurement model is invariant across groups.

The judgement of measurement invariance is made based on the change of model fit of different models. There are at least two types of model fit indices: absolute fit indices and incremental fit indices (Hooper, Coughlan, & Mullen, 2008; Hu & Bentler, 1999). Absolute fit is a measure of how well the model matches the data without reference to any baseline models. The most commonly used absolute fit indices are Chi-square comparison, Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR). In contrast, incremental fit indices assess how well the model matches the data relative to a baseline model. Comparative Fit Index (CFI) and Tucker–Lewis Index (TLI) are frequently used in assessing the incremental model fit.

The Chi-square test has been frequently used to determine invariance, where a non-significant Chi-square value indicates the fit of the more constrained (i.e., invariant) model is not significantly worse than the baseline model. However, Chi-square statistics are susceptible to sample size influences, where even a minor difference could lead to significant differences in Chi-square values in large samples. Recently, comparison of change of incremental fit indices between models has become increasingly used as the main criterion for measurement invariance (Boer et al., 2018; Vandenberg & Lance, 2000). If the change of CFI is below .01, it is often inferred that the more constrained model is not significantly different from the baseline model (Vandenberg & Lance, 2000). Some researchers further suggest a more liberal criterion for large-scale international surveys, where $\Delta\text{CFI} = .02$ is used as the cut-off criteria for the acceptance of metric invariance model, and $\Delta\text{CFI} = .01$ for that of scalar invariance model (Boer et al., 2018; Rutkowski & Svetina, 2014).

Cross-national trust measurement

The debate in cross-national research on trust is to what extent a model of trust can hold invariant across different groups. The majority of previous research assesses the psychometric properties of social and political trust separately. The empirical results are mixed, depending on the choice of measure and the homogeneity of the samples included (Bauer & Freitag, 2018).

Regarding social trust, cross-national research has tested the measurement invariance of either a two-factor or a three-factor model. Delhey, Newton, and Welzel (2011) tested the two-factor model (including particularised and generalised trust, see Figure 1.1) by using multigroup CFA on data from 51 countries in the fifth wave of the World Values Survey. They found partial metric measurement invariance. However, Glanville and Story (2018) pointed out a couple of items had low factor loading, therefore, the two-factor model should be reconsidered. Specifically, they found that, based on confirmatory factor analysis of the combined data from the fifth and the sixth waves of the World Values Survey, “trust in family” had low loadings on particularised trust, and “trust in people you meet for the first time” had low loading on generalised trust. Similar concerns on this two-factor model were also raised by Jing and Bond (2015).

Freitag and Bauer (2013) tested the measurement invariance of social trust by using a six-item measure, including trust in friends, neighbours, “most people”, people you meet for the first time, people of another religion, people of another nationality based on the Volunteering in Swiss Municipalities 2010 Survey. They found a three-factor model (including particularised trust, generalised trust, and identity-based trust) fitted the data better than alternative models. They established scalar measurement invariance in three language regions within Switzerland. Then they tested a similar three-factor model based on the six-item battery of social trust from the fifth wave of the World Values Survey. This model is

slightly different from the one they found in Switzerland, in that it did not have the same trust items (“trust in friends” was replaced by “trust in people you know personally”). They found this three-factor model had a better model fit in each of seven European and North American countries, but they did not report measurement invariance tests.

Regarding political trust, the two-factor model (see Figure 1.2) seems to have better cross-national measurement properties within a limited range of countries. Breustedt (2018) examined the cross-national comparability of political trust by using data from 32 democratic countries in the sixth wave of the World Values Survey. Non-democratic countries were excluded. A six-item measure of political trust was used, including trust in parliament, government, political parties, civil service, police, and courts. He found that, when comparing different models in every single country, the two-dimensional model that distinguishes representative institutions from implementing institutions had, in general, better model fit than alternative models. He could not establish scalar measurement invariance with all items across all countries. He then identified potential sources for the noninvariance and the corresponding remedies, including the removal of ambiguous items (i.e., trust in civil service, which may have different connotations cross-nationally), and separate examination for countries with different political trajectories (i.e., three post-communist European countries). Even after these modifications, he could only find configural measurement invariance across 19 democratic countries. Full measurement invariance could be established only in three relatively homogeneous societies that share a communist past.

Similarly, Schaap and Scheepers (2014) examined the two-factor model (i.e., trust in political institutions versus trust in legal institutions) based on the data from 26 countries in the European Social Survey. A five-item measure of political trust was used, including trust in parliament, politicians, political parties, the police, the legal system. They established the

scalar invariance for this two-factor model in 19 out of 26 countries, after releasing some model constraints and accepting a relatively loose model fit (i.e., RMSEA = .082).

Overall, it seems that, when testing the measurement invariance of social and political trust separately using the relatively strict multigroup CFA approach, metric or scalar invariance can only be found in relatively homogeneous groups (e.g., different regions in the same country or a set of countries with relatively similar cultural values and political arrangements). Therefore, an even higher level of difficulty is realistically expected for establishing a strictly invariant model of the Global Trust Inventory that integrates both social and political trust.

Potential solutions for structural noninvariance

There is a tension between the strict psychometrical requirements of cross-national measurement invariance on the one hand and the scope of complexity a measure is theorised to capture in cross-nationally settings on the other hand. This complexity includes both the level of abstractness a concept has and the range of countries a study includes. As shown in the previous section, it is more difficult to get measurement invariance when a sophisticated measure of social or political trust is administered, particularly in more heterogeneous samples. Since metric and scalar measurement invariance of trust models has been rarely achieved in heterogeneous cross-national contexts (e.g., André, 2014; Breustedt, 2018; Freitag & Bauer, 2013; Reeskens & Hooghe, 2008; Schaap & Scheepers, 2014), a direct comparison based on the strict psychometrical constraints may not be attainable. Therefore, a practical analytical procedure is needed to enable practical cross-national comparisons between structurally different models of trust.

Decisions may need to be made based on the theoretical and practical priorities of a particular research project. If the primary aim is to capture the nuanced dynamics or unique phenomena embedded in a particular context, it may be desirable, according to Byrne and

Van de Vijver (2010), to test a measurement model in subgroups of relatively homogeneous countries. In particular, political arrangements and cultural values are two of the most important macro-level characteristics to cluster countries in trust research: the historical or current regime type (e.g., democratic versus post-communist countries) has shown to be an important factor that would determine the model structure of political trust (e.g., Mishler & Rose, 1994), while cultural values have often been theorised to influence the configuration of social trust (e.g., Banfield, 1958; Fukuyama, 1995b). This approach is used in the second study of this thesis, where four culturally similar East Asian societies were selected to examine the overall structural model of the Global Trust Inventory. Different models of trust are realistically expected in this subgroup compared to the subgroup that Liu et al. (2018) focused on, due to the considerable differences in terms of cultural values and political arrangements.

On the other hand, if the primary aim is to make a general comparison across a wide range of countries, which is often the task of large-scale international survey projects, a more practical comparison could be made by using subscales that have better cross-national measurement properties. This approach is used in the third study of this thesis, where two factors of the Global Trust Inventory were selected to examine their influence on life satisfaction. A cross-national comparison in a wide range of countries can be made because people from different societies are expected to have a relatively universal tendency to distinguish trust in close relations from trust in community. Therefore, acceptable psychometric properties are expected for these less cross-nationally variant subscales of the Global Trust Inventory.

Overview of the present research

Overview of studies

This thesis includes three articles that revolve around three important issues in trust research: dimensionality, interconnectedness and cross-national comparability. All three articles have been published in peer-reviewed journals. The first article examined the interconnectedness of different types of trust in 11 Western democratic societies by using a relatively novel network analysis. The second article investigated the structure of the Global Trust Inventory in four East Asian societies that are either culturally or politically different from the Western democracies reported in Liu et al. (2018). A practical way of comparing the level of trust, namely, a nonparametric comparison on proportions of trust profiles, can be used when full measurement invariance cannot be achieved. The third article explored the relationship between trust and life satisfaction across 18 countries, including both Western and East Asian societies. An alternative way of dealing with configural measurement noninvariance was used by selecting subscales of the Global Trust Inventory that have better psychometrical properties across a wide range of societies.

Sampling and participants – The Digital Influence project

This thesis analyses two waves of panel survey data from the Digital Influence project. The Digital Influence project is a cross-national survey that focuses on how the use of digital media affects political attitudes and behaviours. This project is led by Professor James H. Liu and Professor Homero Gil de Zúñiga. A group of participating scholars fluent in both English and their local language translated the survey using either a back-translation (Behling & Law, 2000) or a committee approach (Brislin, 1980). This survey was conducted through the online survey platform Qualtrics, administered by the MiLab at the University of Vienna. To have representative samples across the world, the lead researchers in this project partnered with the Nielsen Corporation, a US-based polling company. Nielsen used stratified

quota sampling techniques on several key demographics (e.g., age, gender, and region) to generate representative samples that are closely matched with official census data (for an overview of these data, see Gil de Zúñiga & Liu, 2017). However, caution should be taken regarding the online nature of this panel data, as some hard-to-reach groups (e.g., poor people without internet access) will not be fully represented.

Data for the Wave 1 survey was collected in September 2015 and the Wave 2 in March 2016. The overall cooperation rate was 77%. For the Wave 1 survey, respondents were recruited from 22 countries/societies across America, Asia, Europe, and Oceania, including Argentina, Brazil, Chile, China, Estonia, Germany, India, Indonesia, Italy, Japan, New Zealand, the Philippines, Poland, Russia, South Africa, South Korea, Spain, Taiwan, Turkey, UK, Ukraine, the United States. Among these, samples from South Africa and India were limited to urban respondents from a single city, so these samples are not included in the current analyses. The same respondents in 21 out of the original 22 countries in Wave 1 were recontacted for participation in the Wave 2 survey after a roughly 6-month interval (overall recontact rate is 42.5%), with Chile being the only country missing (see the detailed sampling information in Gil de Zúñiga & Liu, 2017).

Chapter 2: A network analysis of global trust across 11 democratic countries

ABSTRACT

There is a debate on whether social trust and political trust are interconnected or not. Using representative samples from 11 democratic countries, we conducted a network analysis of the seven types of trust derived from the Global Trust Inventory. Results showed that different types of trust grouped into two clusters that center around social and political trust, respectively, but there were also cross-cluster associations between trust in governing bodies and security institutions on the one hand, and trust in community on the other hand. Strength centrality suggested that trust in governing bodies was the most central type of trust across most countries. The link between trust in neutral (non-partisan) governmental institutions and trust in community potentially serves as the main channel connecting the flow of global trust in democratic societies.

Keywords: Trust, Network Analysis, Centrality, Cross-national

Trust is seen as a glue in modern societies that facilitates economic prosperity and political functioning (e.g., Fukuyama, 1995b; Newton, 2001; Putnam, 2000; see a more critical view of trust in Warren, 1999). In this literature, there exists a conventional division between social and political trust, as they are believed to have different foundations (e.g., Uslaner, 2002; 2018) and therefore should be treated as distinct concepts. However, more recently, the interconnected nature of trust has been increasingly acknowledged: Newton, Stolle, and Zmerli (2018) argue that social and political trust are “closely tied together in a mutually reinforcing manner that underpins social harmony, economic efficiency, and democratic government” (p. 2; see also Newton & Zmerli, 2011). Consistent with this idea, Liu and his colleagues (2018) propose a Global Trust Inventory (GTI), which captures “a system of meaning that encompasses both the sub-components of and an overall grasp of the risks of opening oneself up to a range of dependencies on others” (p. 790). Here we introduce network analysis as a relatively novel and useful tool to empirically examine the *interconnectedness* of multiple types of trust derived from the GTI.

The debates around the interconnectedness of trust types classically have centered on a binary distinction between social and political trust. Social capital theorists propose a bottom-up model, where social trust and the civic associations formed among citizens is the key to improved functioning for a democratic society (e.g., Putnam, 1993; 2000). Political theorists, by contrast, propose a top-down model, where trust in formal political institutions premises a high level of social trust (e.g., Levi & Stoker, 2000; Seifert, 2018; Sønderskov & Dinesen, 2016). Despite contradictory assumptions on causal direction, these views have in common the assumption that trust is interconnected. In other words, they accept the possibility that social and political trust can influence each other. By contrast, Uslaner (2002; 2018) argues that social and political trust have fundamental differences, where the former

has a moralistic nature based on individual optimism and a sense of control, but the latter has a rationalistic nature rooted in the performance of governmental institutions or officials.

This debate becomes more complicated when the social-political binary distinction is enlarged into a complex system, premised on more highly specified classifications of trust. Rothstein and Stolle (2008) distinguish trust in the representative government from trust in politically neutral “order institutions” that implement the law and deliver policies. Newton and Zmerli (2011) emphasise the importance of integrating particularised trust, trust within the small personally known circle of families and friends, into the trust discussion in addition to generalised trust. Drawing on this literature, Liu and his colleagues (2018) integrate a broad range of trust types into the Global Trust Inventory and used factor analysis to group them into seven sub-components/factors. These include trust in governing institutions (i.e., representative government, governing bodies, and security institutions), non-governmental institutions (e.g., financial institutions and knowledge producers), and social relations (e.g., community and close relations). It is believed these types of trust mirror important aspects of life in a democratic society. Given that measurement structure and invariance across cultures have been established in their original study, it is the logical next step to examine how these types of trust are interconnected with one another as a complex system.

Network analysis has unique advantages in modelling the interconnectedness of trust. A network is an abstract model consisting of the entities (called nodes) and connections between entities (called edges, see Schmittmann et al., 2013). Networks have long been used both metaphorically and empirically to study social structures (see Scott, 1988). Recently network analysis has been increasingly applied to draw insight into the interconnectedness of different psycho-social phenomena, including psychopathology (e.g., Borsboom & Cramer, 2013), personality (e.g., Costantini et al., 2015), and political attitudes (e.g., Boutyline & Vaisey, 2017; Brandt, Sibley, & Osborne, 2019). We believe a network analysis of global

trust could add unique insights in following ways: (1) network analysis can operationalise the idea of trust as a system of meaning with sub-components/factors interconnecting with one another; (2) network analysis can identify the factor(s) that have potentially the greatest overall influence through the provision of centrality measures (e.g., Epskamp, Borsboom, & Fried, 2018); (3) network analysis allows empirical examination on the generalizability of network structure and centrality measures across countries (Danaher et al., 2014).

We expect trust in representative government, trust in government bodies, and trust in security institutions to form a closely interconnected cluster of political trust (Hypothesis 1), as these political institutions are functionally distinct but closely collaborate in performing democratic duties (Rothstein & Stolle, 2008). We also expect trust in close relations and trust in community to form another cluster of social trust (Hypothesis 2), although trust with the intimate circle may either facilitate (e.g., Newton & Zmerli, 2011) or hinder trust in a broader circle of people (e.g., Fukuyama, 1995b; Yamagishi, 1994). We leave it as a research question whether or not and how these two clusters of social and political trust interconnect.

Method

Participants

The present study analysed data from the Digital Influence survey, an international online survey project that consists of representative samples from 22 countries. The data used in this study is part the survey, including 11 countries ($N = 11,917$, 53% female, $M_{age} = 43.76$, $SD_{age} = 15.711$). Specifically, respondents were from Argentina, Brazil, Chile, Estonia, Italy, Poland, Spain, Germany, New Zealand, United Kingdoms, and the United States. The average sample size per country was 1083.3, ranging from 964 in Chile to 1168 in Estonia. These countries were selected because measurement invariance has been established in a previous study where the same data was used (see Liu et al., 2018).

Measures

The 21-item Global Trust Inventory (GTI, Liu et al., 2018) was used to assess trust in different sectors of society. Participants were asked to rate their feelings of trust toward different people and organisations on a 7-point scale (1 = *do not trust at all*, 7 = *trust completely*). As a degree of measurement invariance was established for the 7-factor structure using the same data (see Liu et al., 2018), latent factor scores were used in the present study, including scores for representative government, governing bodies, security institutions, financial institutions, knowledge producers, community, and close relations.¹ There were very few missing values across all 21 trust items (ranging from 0.6% for trust in friends to 2.5% for trust in oil companies).

Analysis

Gaussian Graphical Models (GGM) were used to represent the network of trust based on the pooled data. Trust factors were treated as nodes and the regularised partial correlations were used as estimates of edge weights. Conventionally, regularisation is used to estimate a more parsimonious and interpretable network (Epskamp & Fried, 2018). In this study, the graphical LASSO (least absolute shrinkage and selection operator) in combination with the extended Bayesian information criterion was used to determine the optimal tuning parameter for the regularised network (see Epskamp et al., 2018).

The R-package *qgraph* (Epskamp, Cramer, Waldorp, Schmittmann, & Borsboom, 2012) was used to visualise the networks. The Fruchterman-Reingold algorithm (Fruchterman & Reingold, 1991) was used to compute the layout, where the length of edges is the absolute edge weights. A thicker edge indicates a stronger relationship between two

¹ The 7-factor structure: Representative Government (national government, local government, and president), Governing Bodies (judiciary, election outcomes, tax system, and government surveillance agencies), Security Institutions (police and military), Financial and Corporate Institutions (banks, stock market, multinational corporations, and oil companies), Knowledge Producers (scientists and universities), Community (neighbours, ethnic group, other citizens in one's country), and Close Relations (friends, immediate family, and extended family).

nodes. A solid edge indicates a positive relationship, while a dashed one indicates a negative relationship (see Figure 2.1).

Strength centrality was used as the main indicator to identify the central types(s) of trust, as previous research has shown strength centrality is more reliable than betweenness centrality and closeness centrality (Epskamp et al., 2018). Strength centrality is the sum of the weights of the significant connections (in absolute value) to the focal node. A higher strength centrality indicates the focal node directly influence or be influenced by other nodes to a larger extent. Betweenness centrality, closeness centrality, and network stability test were estimated and reported in the appendix.

A Fused Graphical Lasso (FGL; Danaher et al., 2014) was used to estimate the network of trust across 11 countries by using R-package *EstimateGroupNetwork* (Costantini & Epskamp, 2017). Compared to the conventional GGM, FGL improves network estimation by including an extra tuning parameter, which is determined by the k -fold cross-validation in our study, to regularise network similarities and differences in the joint estimation involving multiple groups (see the tutorial paper in Costantini et al., 2019).

A cross-sample variability network was estimated, which estimates the standard deviation of each edge across countries (see Rhemtulla et al., 2016). A thicker edge indicates a higher cross-country variation in the focal edge (see Figure 2.3).

Results

Overall network based on the pooled data

Mean scores and the correlational matrix of seven trust factors in the overall pooled sample are presented in Table 2.1. The overall network of global trust based on the pooled data is presented in Figure 2.1. There were strong links between trust in governing bodies and representative government, as well as between trust in governing bodies and security institutions. However, trust in representative government was negatively associated with trust

in security institutions. Except for this unexpected negative link, this pattern is largely consistent with Hypothesis 1, where trust in neutral and order (non-partisan) institutions are distinct from but still closely associated with trust in partisan government (Rothstein & Stolle, 2008). The negative link may suggest a tension between security institutions and representative government. It is worth noticing that trust in financial institutions was also associated with governing bodies and security institutions, which suggests that confidence in corporate power intertwines with political evaluation in these democratic societies.

Table 2.1. Mean scores and correlational matrix for the 7-factor model of Global Trust.

	1	2	3	4	5	6	7
1. Representative Government							
2. Governing Bodies	.740**						
3. Security Institutions	.517**	.681**					
4. Financial Institutions	.614**	.677**	.572**				
5. Knowledge Producers	.356**	.468**	.437**	.411**			
6. Community	.494**	.621**	.593**	.524**	.573**		
7. Close Relations	.213**	.274**	.322**	.209**	.370**	.502**	
M	2.75	3.26	3.97	2.85	4.57	4.05	5.48
SD	1.40	1.41	1.56	1.20	1.42	1.19	1.10

** $p < .01$

There was a strong and positive association between close relations and community, which is consistent with Hypothesis 2 and confirms that trust in intimate circles is positively associated with trust in broader circles. Trust in knowledge producers is also associated with trust in community but not political institutions, which may suggest that confidence in knowledge production is rooted in trust in the civic society rather than institutionalised power.

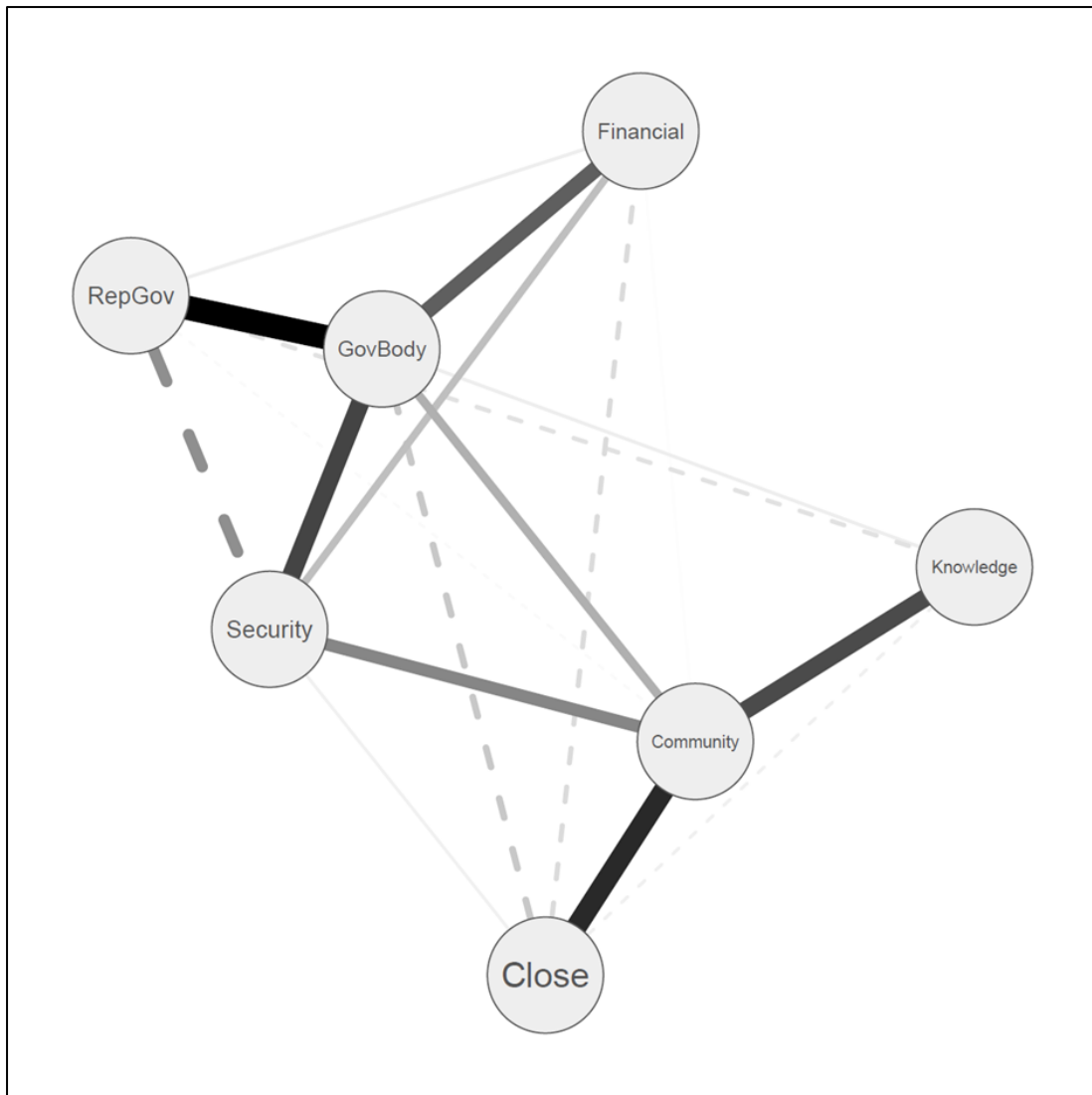


Figure 2.1. Overall network of global trust.

Perhaps most importantly, there were positive associations between trust in governing bodies and security institutions on the one hand, and trust in community on the other hand. This is in line with both social capital theorists and political theorists' claims about the interconnectedness of social and political trust. In contrast, other types of trust had weak cross-cluster associations. Particularly, trust in close relations had little direct associations with any types of political trust, and trust in representative government also had little association with any types of trust except governing bodies and security institutions. This suggests that these two are relatively independent from other types of trust.

Strength centrality (see Figure 2.2) suggested that governing bodies had the highest centrality, followed by community, and security institutions. Knowledge producers had the lowest. These results further confirm the central roles of trust in neutral and order institutions (but not representative government) and trust in community (but not close relations) in the overall level of global trust.

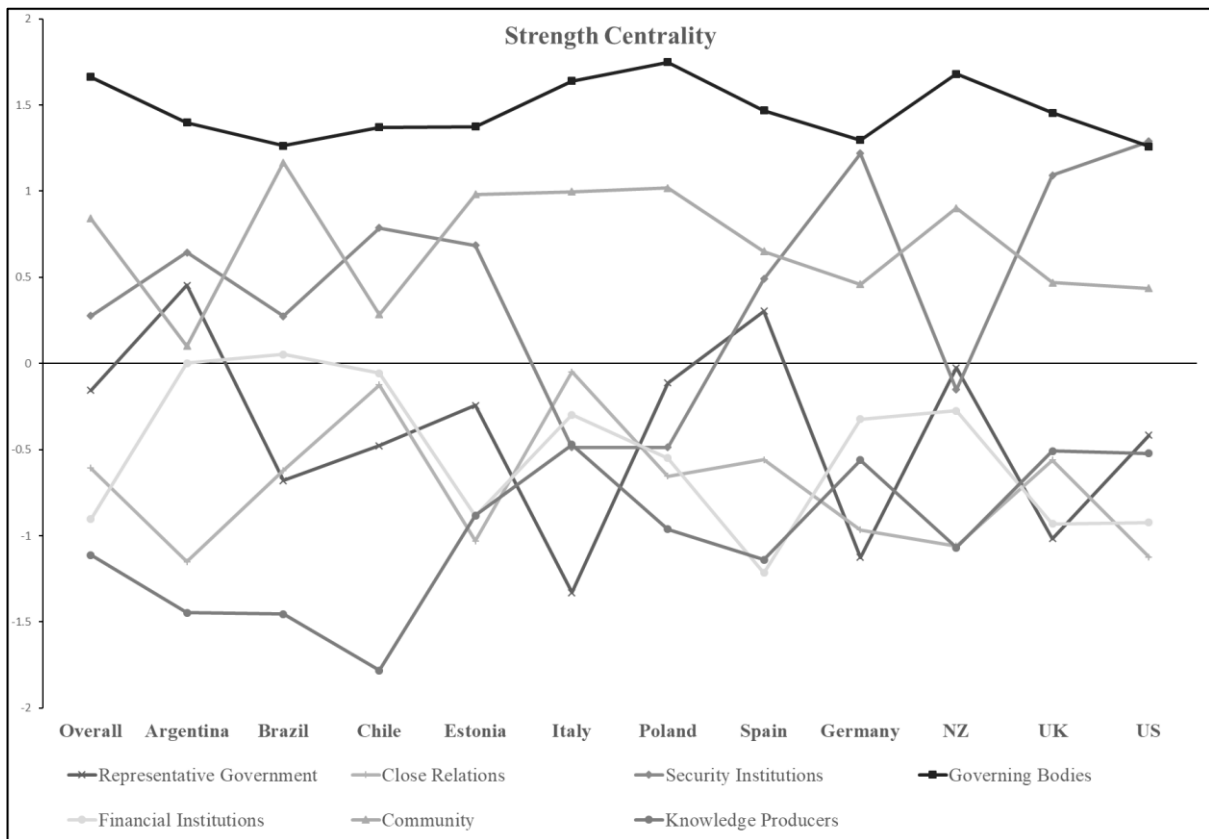


Figure 2.2. Standardised strength centrality of the overall network and the FGL networks across 11 countries.

Jointly estimated networks of global trust

The jointly estimated networks of global trust across 11 countries are presented in the supplementary materials. Strength centrality is presented in Figure 2.2. Trust in governing bodies had the highest strength centrality in all countries except the US, where trust in security had a slightly higher strength centrality. Trust in community and trust in security

institutions also had relatively high strength centrality in most countries. By contrast, trust in knowledge producers, close relations, representative government, and financial institutions had relatively low strength centrality in most countries.

The variability network is presented in Figure 2.3. This shows that the edges between political trust were in general highly variable across countries, with the edge between security institutions and financial institutions being the most variable. The edges between social trust were moderately variable across countries. The edges between social and political trust, in general, had low to moderate variability, except the edge between security institutions and community was highly variable.

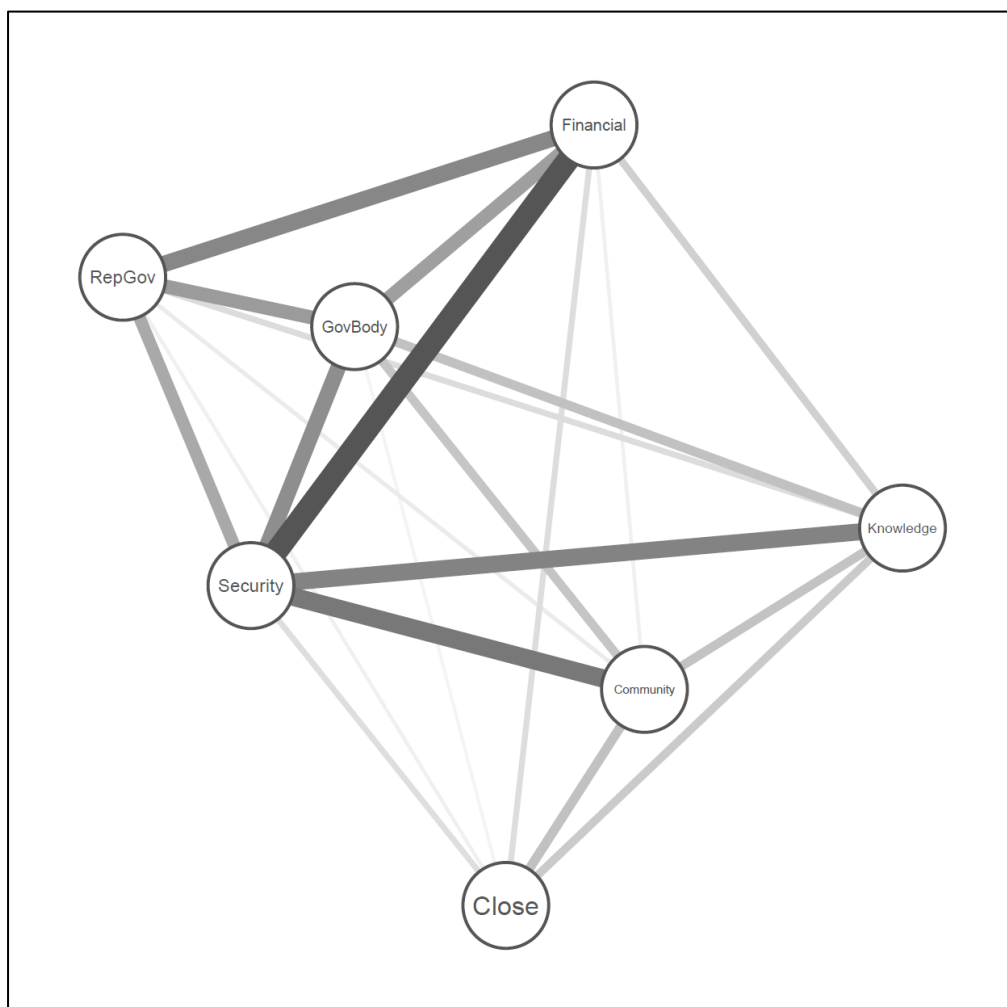


Figure 2.3. The network of variability across countries.

Discussion

We conducted a network analysis of global trust based on representative samples from 11 democratic countries. The overall network and jointly estimated networks allowed an empirical examination of the interconnectedness of multiple types of trust in a complex system across countries. They do not speak to causal relations between the different types of trust. Results showed that seven types of trust were grouped into two clusters that centered around social and political trust, respectively. Largely in accord with Hypothesis 1, there was a strong and positive association between trust in representative government and trust in governing bodies, as well as trust in governing bodies and trust in security institutions. There was an unanticipated negative link between trust in representative government and trust in security institutions. In accord with Hypothesis 2, there was a moderate and positive link between trust in community and trust in close relations. Perhaps most importantly, we found positive links between trust in governing bodies and security institutions on the one hand, and trust in community on the other hand.

The present study may contribute to institutional trust theories by providing a more nuanced answer to the debate on the interconnectedness of social and political trust. Our empirical findings suggest that social and political trust do form two clusters of trust that are interconnected through particular associations (i.e., trust in neutral and order institutions and trust in community). Connecting with previous findings, where trust in the state institutions, in a general sense, is longitudinally associated with generalised trust (Sønderskov, 2016), this result could provide specific insight into the most likely flow of this top-down trust-building process, which is from trust in neutral and order institutions (instead of representative government) to trust in community (instead of close relations). It makes sense that less politicised branches of government, charged with implementing the law or enacting social policy, might function as avenues for the extension of trust between bottom-up and top-down

structures of society. Specifically, if these state institutions are conceived as effectively and impartially carrying out their duties, they encourage the norm of reciprocity either by reducing the risk of being cheated, or by acting as important moral heuristics that could “spill over” to the trust in everyday society (see Freitag & Bühlmann, 2009; Rothstein & Stolle, 2008).

This study has a navigational function for future research. The existing literature mainly uses a social-political binary distinction to examine the growth or decline of trust. However, this may not be the most accurate way to map the fluctuation of trust levels, as recent research suggests breaking down the binary distinction into more nuanced and specific trust types (e.g., Newton & Zmerli, 2011; Rothstein & Stolle, 2008). Our results confirm the implications of this more detailed classification, as trust in representative government and neutral institutions had very different patterns in terms of their interconnectedness with other types of trust. Therefore, trust in neutral institutions should be considered as the focal point in future research on trust when the research goal is to test how political trust influences social trust or vice versa.

Trust in community also had relatively high centrality and was widely associated with varying types of trust, which is in line with social capital theorists’ claim that trust in a wider circle is more pivotal to large-scale modern societies than trust within a close-knit circle (e.g., Fukuyama, 1995b; Putnam, 1993). Trust in close relations, in comparison, had relatively low strength centrality and limited connectivity with all types of political trust. This may seem to contradict Newton and Zmerli’s (2011) findings that particularised trust (a concept similar to trust in close relations) is associated with political trust. Given that strength centrality is an aggregated measure of *direct* impacts, we speculate that trust in close relations might be associated with other types of trust *indirectly* via trust in community. In other

words, trust in community might act as a bridge between trust in close relations and trust in institutional powers of society.

Trust researchers used to exclusively focus on comparing the level of trust either across countries or across time. However, recent advances suggest this may not be the only thing that matters for the functioning of democracy. For example, Delhey et al. (2011) proposed radius of trust, which assesses how wide is one's trust circle, as an additional and probably better feature of trust to predict civic attitudes and behaviours. Moreover, Wu and Wikes (2018) focused on critical trust, which refers to the ability to critically evaluate political trust toward functionally different institutions. Augmenting these efforts, we believe the interconnectedness of trust might be another important feature that is worth adding to the trust discussion.

This study has limitations. Firstly, this analysis was based on cross-sectional data, therefore, it cannot be used to infer causality. The relatively consistent findings across 11 countries could give us some confidence in the central roles of trust in governing bodies in democratic societies. However, experiments or longitudinal studies are needed to ascertain causal links. Secondly, a network of seven types of trust is not an exhaustive representation of all possible important relationship to a person in modern society. We believe the Global Trust Inventory covers some major social relations and forces, but we are open to further refinement of including or excluding certain trust types. Finally, we focused on the dynamics of trust in countries that share democratic political arrangements as well as a similar Christian heritage. These findings are not necessarily applicable to societies with different cultural and political characteristics, as macro-level power structures might shape the structure and dynamics of trust (Zhang et al., 2019).

Chapter 3: Structure of trust as a reflection of culture and institutional power

structure: Evidence from four East Asian societies

ABSTRACT

Using the Global Trust Inventory, an integrated measure of trust towards 21 relationships and institutions, the structure of trust was explored in four East Asian societies (Mainland China, Japan, South Korea, and Taiwan). The Western model, in which trust is distributed among seven factors representing different branches of society, did not generalise to these East Asian societies, perhaps due to differences in culture and institutional power structures. Instead, two unique structures of trust were identified. Mainland China had a top-down structure of trust (the China model), in which trust is hierarchically separated between the central government and subordinate implementing bodies. The other three democratic East Asian societies shared a hybrid structure of trust (the Democratic East Asian model) that has a degree of similarity to both the China model and the Western model. Having established two similar, but still distinct models, a cross-cultural comparison was made on the proportions of trust profiles generated by latent profile analysis. Mainland China had the largest proportion of people with a high propensity to trust, followed by Japan and South Korea, and Taiwan was the least trusting. The implications of the structure of trust and this alternative approach to conducting cross-cultural comparisons are discussed.

Keywords: Trust; Measurement Invariance; Culture; Power structure; East Asia; China

Trust has long been theorised as among the most powerful of “synthetic forces” in society (Simmel, 1950). It is theorised to facilitate prosperity through establishing and maintaining mutually beneficial social relations (Coleman, 1988; Fukuyama, 1995b; Newton, 2001; Putnam, 2001). Previous research explored the meaning and structure of trust mainly in Western societies, however, these findings frequently do not generalise to some non-Western societies with different cultural values and political arrangements (e.g., Breustedt, 2018; Delhey, Newton, & Welzel, 2011; Mishler & Rose, 1997). This problem is critical because an equivalent structure of trust is often seen as the prerequisite to make meaningful cross-cultural comparisons (Vandenberg & Lance, 2002). Using a 21-item Global Trust Inventory (GTI), the present study aimed to explore the structure of trust in four East Asian societies as a reflection of differences in culture and institutional power structures, and then compare the levels of trust across these societies. Specifically, we explored the structure of trust in three East Asian societies (Japan, South Korea, and Taiwan) that are culturally distinct from Western societies, and one East Asian society (Mainland China) culturally similar to these three (under the cultural influence of Confucianism, see Inglehart & Baker, 2000), but politically distinct (with power concentrated in central government, in contrast to the more pluralistic distribution of power typical of Western and democratic systems, see Liu & Liu, 2003).

Trust as a global construct

Trust is often studied separately from two lines of research: social/interpersonal and political/institutional trust. Research on social trust focus on the trust between individuals, with the trustee ranging from specific people we know personally (i.e., particularised trust, e.g., Newton & Zmerli, 2011) to “most people” we don’t have specific information about (i.e., generalised trust, e.g., Bjørnskov, 2007; Delhey & Newton, 2005). In comparison, research on political trust focuses on the trust between citizens and political elites or

institutions, often by assessing trust or confidence in various institutions (e.g., Breustedt, 2018; Mishler & Rose, 1997).

Liu and colleagues (2018) theorised trust as a system of meaning that encompasses both the sub-components of and an overall grasp of the risks of opening oneself up to a range of dependencies on others. This holistic conceptualization of trust is based on the fact that social and political forms of trust are mutually associated (Newton & Zmerli, 2011; Newton, Stolle, & Zmerli, 2018): they share the key component of risk management (see Liu et al., 2018). Across cultures, both institutions like government and personalized relationships like family can be relied on to a greater or lesser extent to fulfill their promises/duties- the fact that they might *not* do so (e.g. both governments and family members might default on a loan) opens the person trusting them to risk. Therefore, the conceptualization and measurement of trust as a global construct allows an exploration of how a person manages his/her dependencies on different relationships ranging from the interpersonal (e.g., families) to institutionalized relationships (e.g., national or local government).

In 11 societies from Latin America, Catholic Europe, and Western Democracies, Liu et al. (2018) found a 7-factor model of trust with almost scalar measurement invariance. Specifically, a pluralistic “separation of power” structure was found in these Western countries where trust is distributed among different governmental branches (representative government vs. governing bodies vs. security/law enforcement) as well as more personalized factors like close relationships (encompassing family, extended family, and friends). While these initial results were promising, the analytical strategy adopted by Liu et al. (2018) to establish scalar measurement invariance forced them to restrict their analysis to societies that are similar to each other in terms of culture and institutional power structures. This leaves open some difficult questions. Is the structure of trust invariant between East and West? If not, how is the structure of trust configured in East Asian societies where cultural values and

institutional power structures are different from those typical of Western societies?

Furthermore, how can a cross-cultural comparison be made if different structures of trust are found?

Cultural perspectives

Enduring East-West cultural differences could be an important factor that affects how the structure of trust is configured. East Asian societies are often grouped into a single Confucian culture zone (Inglehart & Baker, 2000), which celebrates relational hierarchy as a virtue (Hwang, 2011; Liu, 2015). On the one hand, the hierarchical aspect of Confucianism enculturates more compliance to the authority of central government (Liu, Li, & Yue, 2010; Liu, Yeh, Wu, Liu, & Yang, 2015); these cultural tendencies have been characterised in the cross-cultural literature as high in collectivism and power distance (Hofstede & Hofstede, 2001; Schwartz, 1992). On the other hand, the relational aspect of Confucianism encourages an interconnected/holistic view of different forms of social relations ranging from close relationships with one's own family to relationships with central government or the ruler (Liu et al., 2015).

Thus, from a cultural perspective, we expected that all four East Asian societies might share a single structure of trust that is different from the Western model. Specifically, the system of trust in East Asia should be hierarchically organized in a top-down structure where a contrast between different levels of government (central vs. local) provides the basic organisational structure for trust in government and its implementing bodies. Moreover, different forms of trust are expected to be closely interconnected in East Asia so that fewer and more highly correlated factors would emerge.

Institutional perspectives

Institutional power structures could be another factor affecting the structure of trust in this region. According to institutional theory (see Mishler & Rose, 2001), institutional trust

should be responsive to the design and performance of institutions. Compared to cultural differences in values (Hofstede & Hofstede, 2001; Schwartz, 1992), which are supposed to be enduring, the distribution of institutional power and trust in their power holders can be more transient and depend on what political system is in place. Governmental power has been hierarchically separated in Mainland China since the PRC's government came into power in 1949. The central government makes top-down arrangements for all major affairs, and below that, there is a subordinate implementing system, which consists of political institutions at lower levels that follow the directives of the central government. The prominent feature of the central government is its authority to give orders, which is reinforced by the stringent control over the use of military forces and its ownership of major banks to also control the financial sector (although private-owned and local-owned banks have been emerging and gaining autonomy). On the other hand, local government is expected to be part of the subordinate implementing system (together with other non-central political institutions) as its main purpose is to maintain order and implement the rules set by the central government. By contrast, local government in Western-style democracies may have substantial autonomy of power from centralized authority and thus can actively take part in decision-making processes, or even contradict directives of the central government (e.g., the Federal system of the United States).

In contrast, even though they share a Confucian heritage, Japan, South Korea, and Taiwan have transitioned towards Western democracy with contested elections after World War II. These societies now endorse the separation of powers as a basic governing principle for society (e.g., judiciary independence, contested elections between viable parties), opening up a wider space for the input of civil society that is reflected in the system of checks and balances of power among different branches of society.

Thus, from an institutional perspective, different structures of trust are expected for Mainland China and the other three societies. Mainland China is predicted to have a unique structure of trust (the China model), where the trust towards institutions should be organized as a reflection of the hierarchical power structure emanating from the central government. Specifically, national government, the president, the military force, and banks are likely to form a single factor representing the central government. Meanwhile, local government together with other less powerful governmental institutions (e.g., judiciary, election system, surveillance, and police) should belong to a subordinate implementing bodies factor. However, the trust structure for the other three East Asian societies should look more like the Western model, because they share the same political arrangements.

Comparison based on latent profile analysis

Considering that qualitatively different structures across cultures may be realistically expected in domains like the structure of trust, a new quantitative analysis strategy to conduct cross-cultural comparison is proposed. The trend in cross-cultural psychology is to require more and more rigour in measurement in terms of invariance (Vandenberg & Lance, 2000). The traditional linear modelling approaches require a single invariant structure across groups to make mean score comparisons. But this is problematic in areas such as the structure of trust because we have good reason to expect different structures of trust as a reflection of differences in culture and actual power structures in society. Latent profile analysis (LPA; see Jung & Wickrama, 2008) is a mixture-modelling approach which estimates latent categorical variables in a sample by grouping people based on similar patterns of responses on indicators. That is, LPA identifies categorically distinct profiles of respondents based on the similarity of their responses to a set of indicator variables. Instead of relying on a single invariant model across groups, LPA could offer a nominal representation of *trust profiles* as a typology with similar but not exact meaning across cultures. This allows for pragmatic cross-cultural

comparison of trust profiles, although with lower-level precision (i.e. by using a nonparametric Chi-Square test comparing proportions of nominal categories like high, medium, or low trusting people). By using this LPA-based comparison, we aimed to test whether or not Mainland China would have a higher level of trust than other East Asian societies as previous research on generalised trust has suggested (e.g., Bjørnskov, 2007; Delhey & Newton, 2005; but see qualifying work using the radius of trust by Delhey, Newton & Welzel, 2011).

Overview of the present study

In summary, cultural and institutional perspectives suggest competing models of trust in East Asia. If cross-cultural psychology is correct such that enduring differences in cultural values characterise East Asian versus Western societies, then the four East Asian societies should share a single top-down structure of trust with fewer and more highly correlated factors, which is different from the seven-factor “separation of powers” structure of trust in Western societies. Alternatively, if institutional power structures matter, then the “top-down” centralized structure of trust should only apply to Mainland China while the other three democratic East Asian societies should have a “separation of powers” structure similar to Western societies.

Considering the intertwining influences of culture and political arrangement and the range of trust relationships included in the Global Trust Inventory, some degree of exploratory testing was allowed in the data analysis. For example, a hybrid model might emerge in the three democratic East Asian societies, which is likely to share some degree of similarity with both the China model and the Western model.

Method

Participants and sampling procedure

The present study analyzed data from a large international Digital Influence survey (for details of the sampling frame and methods, see Gil de Zúñiga & Liu, 2017). This survey was administrated online by the polling firm Nielsen. Stratified quota sampling techniques were used to create representative samples on age, gender, and region in each country. All items were translated for each country by a group of participating scholars, employing either back-translation (Behling & Law, 2000) or a committee approach (Brislin, 1980).

Data from four East Asian societies were used in the present study ($n = 3930$; 46% female), including Mainland China ($n = 1004$; 44.4% female), Japan ($n = 975$; 42.2% female), S. Korea ($n = 943$; 46.7% female), and Taiwan ($n = 1008$; 49.2% female). The average age was $M = 40.08$, $SD = 12.735$ (Mainland China $M = 38.66$, $SD = 11.979$; Japan $M = 46.69$, $SD = 12.876$; S. Korea $M = 38.87$, $SD = 12.711$; Taiwan $M = 36.29$, $SD = 10.891$).

Measures

The 21-item Global Trust Inventory (GTI; Liu et al, 2018) was used to assess self-reported trust toward different institutions and relationships. Participants were asked to: “Please rate your feelings of trust towards the following people and organisations using the scale below.” All of the items were rated on a 1 (*Do not trust at all*) to 7 (*Trust completely*) scale. The 21 items in the GTI included: *National Government, Local Government, Prime Minister/ President, Judiciary (Courts), Election Outcomes, The Tax System, Government Surveillance Agencies, Police, Military, Banks, The Stock Market, Multinational Corporations, Oil Companies, Universities, Scientists, Neighbours, One’s Ethnic Group, Other Citizens in One’s Country, Friends, Immediate Family, and Extended Family.*

Results

To test the structure of trust that could fit each of four societies, we first conducted several Confirmatory Factor Analysis (CFA). Chi-square and CFI > .900 were used as main criteria for the acceptance of model, while other model fit indices (e.g., RMSEA, TLI, and sRMR) were also included as supplementary criteria.

Then measurement invariance was tested on the identified model(s) by using Multigroup CFA (see Vandenberg & Lance, 2000). Specifically, configural, metric, and scalar invariance was tested in turn. Configural invariance, in which the model structure is fixed across groups, is a weak factorial invariance necessary for subsequent tests. Metric invariance, in which the factor loadings are further fixed across groups, allows interpretations of observed covariance relationships between the factors and covariates. Scalar invariance, in which the intercepts are further fixed across groups, is necessary for making meaningful mean-level comparisons between groups.

To allow cross-cultural comparison, we used the Chi-square test of independence (see Beasley, 1995) to compare the proportion of trust profiles generated by LPA on trust factor structure(s).

Factor structure of the Global Trust Inventory

Firstly, to test the universality of the Western model, as identified by Liu and colleagues (2018), we conducted a CFA on the overall East Asian sample. Item level bivariate correlations for the overall sample are presented in Table 3.1. The Western model comprises 7 factors of trust: Government Institutions (National Government, Local Government, and President), Governing Bodies (Judiciary, Election Outcomes, Tax system, and Government Surveillance Agencies), Security Institutions (Police and Military), Financial and Corporate Institutions (Banks, Stock Market, Multinational Corporations, and Oil Companies), Knowledge Producers (Scientists and Universities), Community

(Neighbours, Ethnic Group, Other Citizens in one's country), and Close Relations (Friends, Immediate Family, and Extended Family).

Table 3.1. Bivariate correlations and descriptive statistics for the 21 GTI items in the overall sample.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1. NatGvt																					
2. PM	.809**																				
3. LocGvt	.793**	.616**																			
4. Judiciary	.627**	.576**	.668**																		
5. Election	.615**	.607**	.610**	.678**																	
6. GctSurv.	.643**	.614**	.649**	.846**	.696**																
7. Police	.570**	.538**	.607**	.704**	.625**	.674**															
8. StockMrkt.	.385**	.348**	.476**	.535**	.481**	.530**	.507**														
9. MultinatCorps	.500**	.485**	.529**	.611**	.516**	.601**	.567**	.543**													
10. OilComps	.540**	.507**	.588**	.696**	.625**	.695**	.605**	.583**	.657**												
11. TaxSystem	.635**	.592**	.643**	.705**	.678**	.711**	.636**	.528**	.617**	.749**											
12. Banks	.544**	.552**	.566**	.614**	.568**	.606**	.717**	.513**	.572**	.615**	.604**										
13. Scientists	.454**	.473**	.435**	.536**	.507**	.530**	.534**	.362**	.534**	.526**	.509**	.537**									
14. Universities	.536**	.512**	.542**	.641**	.580**	.634**	.594**	.439**	.606**	.620**	.632**	.578**	.738**								
15. Neighbors	.459**	.452**	.480**	.579**	.469**	.560**	.523**	.425**	.566**	.533**	.508**	.500**	.540**	.574**							
16. EthnicGroup	.542**	.562**	.505**	.596**	.621**	.592**	.559**	.352**	.498**	.575**	.555**	.532**	.595**	.615**	.562**						
17. OtherCitizens	.480**	.479**	.521**	.612**	.572**	.588**	.586**	.467**	.535**	.587**	.549**	.534**	.602**	.617**	.611**	.702**					
18. Military	.628**	.643**	.566**	.656**	.602**	.654**	.602**	.396**	.513**	.584**	.612**	.541**	.559**	.599**	.529**	.659**	.673**				
19. Friends	.246**	.202**	.283**	.302**	.264**	.272**	.327**	.170**	.285**	.255**	.241**	.298**	.366**	.350**	.431**	.377**	.405**	.288**			
20. Imm.Family	.183**	.200**	.194**	.239**	.234**	.222**	.291**	.097**	.193**	.181**	.170**	.278**	.343**	.307**	.361**	.356**	.355**	.285**	.509**		
21. Ext.Family	.289**	.267**	.322**	.358**	.308**	.337**	.374**	.226**	.319**	.313**	.294**	.338**	.376**	.410**	.504**	.400**	.423**	.340**	.459**	.657**	
M	3.01	3.24	2.91	3.26	3.31	3.17	3.54	2.60	3.17	3.08	2.97	3.65	3.99	3.67	3.57	3.97	3.79	3.70	4.68	5.36	4.39
SD	1.564	1.824	1.388	1.501	1.621	1.515	1.453	1.369	1.333	1.341	1.439	1.444	1.462	1.414	1.302	1.504	1.425	1.698	1.278	1.458	1.448

** . Correlation is significant at the 0.01 level (2-tailed).

Results showed that the Western model did not perform well in the four East Asian societies. Specifically, identification problems were presented with the latent variable covariance matrix being ill-identified, with linear dependency among more than two variables. We also tested the Western model on each of these four societies separately, and the same identification problems occurred in each society. This can be a problem when using CFA to test a model in different societies (e.g., Breustedt, 2018), and it requires further modification of the model. Thus the universality of the Western model was not supported.

Because the Western model was not replicated in East Asia, a China model was proposed and tested first in Mainland China then in all four societies. We expected the China model to be most dramatically different from the Western model because Mainland China differs the most from the West both culturally and institutionally. According to our views, the China model should have: (1) a central government factor that includes governmental institutions in the top level (National Government and President) as well as other powerful institutions that solidify the centralized power (Military and Banks); (2) an implementing bodies factor that includes institutions at local or lower levels (e.g., Local Government, Police, and Judiciary). Thus the following changes were made to the Western model to create a “China model”: Banks and Military were loaded onto the Government factor (together with President and National Government), and we renamed this factor as Central Government; Local Government and Police were loaded onto the Governing Bodies factor (together with Judiciary, Election, and Government Surveillance), and we renamed this factor as Implementing Bodies; following the suggestion of fit indices, the Tax system item was loaded onto the Financial and Corporate Institutions factor. These modifications thus suggested a six-factor China model (see Figure 3.1). This model fitted the data in Mainland China well, but the model fit indices for the other three societies as well as the overall sample were poor (see Table 3.2).

Table 3.2. Model Fit for the six-factor China model.

Sample (n)	χ^2 (df)	RMSEA [95% CI]	CFI	TLI	sRMR
Overall Sample (3930)	4767.135 (174)	.082 [.080, .084]	.894	.872	.049
Mainland China (1004)	1326.659 (174)	.081 [.077, .085]	.908	.889	.053
Japan (975)	1590.635 (174)	.091 [.087, .096]	.866	.839	.060
S. Korea (943)	1541.103 (174)	.091 [.087, .096]	.870	.843	.057
Taiwan (1008)	1290.531 (174)	.080 [.076, .084]	.883	.859	.059

Maximum Likelihood with Robust estimates of standard errors (MLR)

Besides the six-factor model, several alternative models were also tested in Mainland China. If citizens outside established democracy perceive institutions holistically due to the lack of experience to distinguish institutions with different functions, as Mishler and Rose (1994) suggested, then trust toward various institutions should load on fewer factors. The first alternative model specified a five-factor structure where Central Government and Implementing Bodies were merged into one single Government factor, with remaining factors kept the same. The results showed a worse model fit: $\chi^2(179) = 1582.016, p < .001$, RMSEA = .088 [.084, .092], CFI = .888, TLI = .868, sRMR = .058. Then, a four-factor model was specified where the Financial/Corporate factor was merged into the Government factor. The results showed a worse model fit: $\chi^2(183) = 1846.230, p < .001$, RMSEA = .095 [.091, .099], CFI = .867, TLI = .847, sRMR = .061. Finally, if trust toward different relationships and institutions can be reduced to personal disposition (i.e., propensity to trust), then all trust items should load on the same factor. Therefore, we tested a one-factor model where all the items loaded on a single factor. Again, poor model fit was observed: $\chi^2(189) = 2832.263, p < .001$, RMSEA = .118 [.114, .122], CFI = .788, TLI = .765, sRMR = .077.

Overall, a unique six-factor China model responsive to the specifics in Mainland China was identified. However, this China model did not generalise to other societies in this region, which suggests that the different power structures in these other three societies contributed to making a difference in the structure of trust.

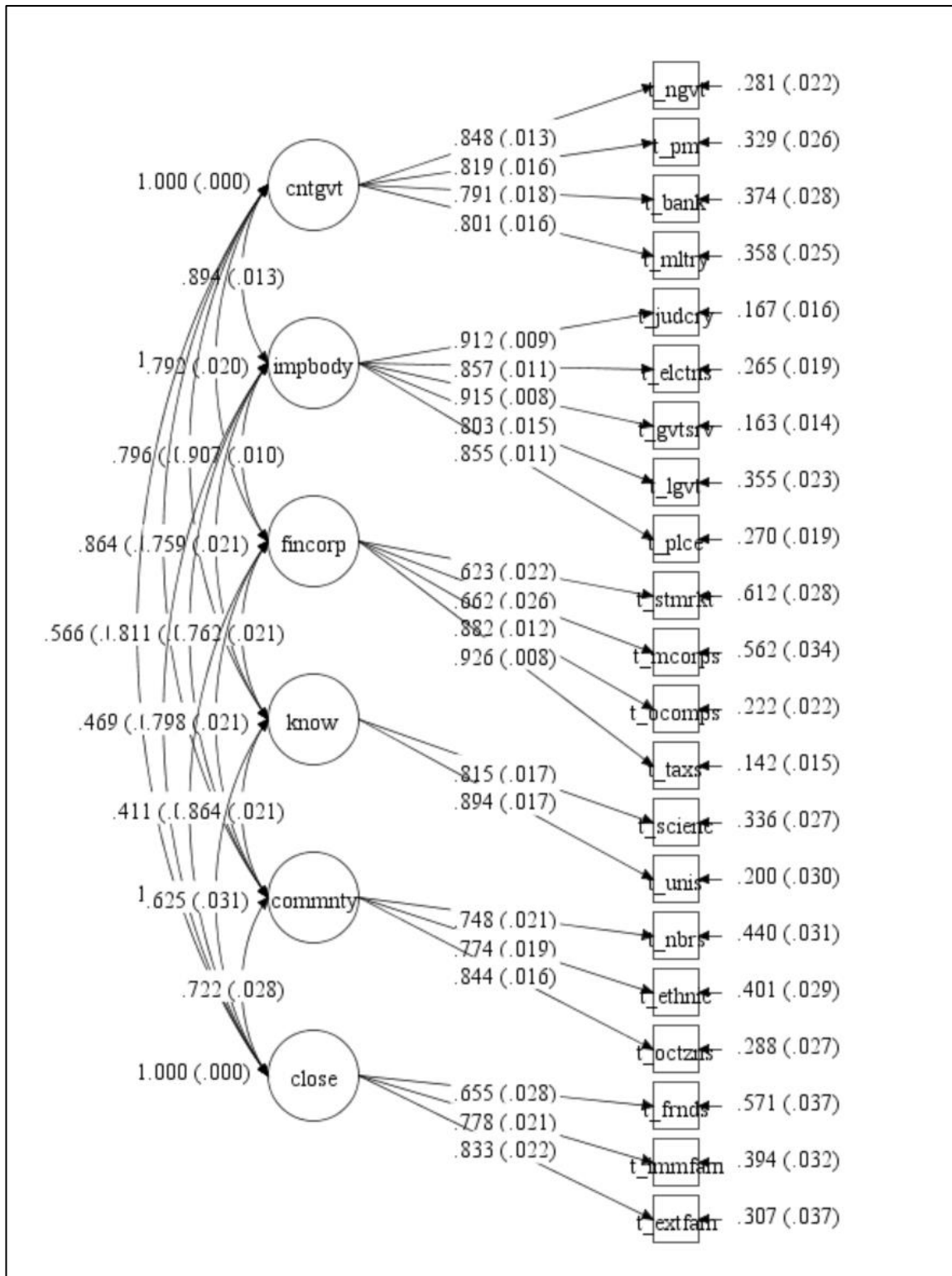


Figure 3.1. The six-factor China model (CNTGVT = Central Government, $\alpha = .887$; IMPBODY = Implementing Bodies, $\alpha = .937$; FINCORP = Financial Institutions and Corporations, $\alpha = .861$; KNOW = Knowledge Producers, $\alpha = .842$; COMMNTY = Community, $\alpha = .825$; CLOSE = Close Relations, $\alpha = .792$). Diagram presents standardized parameter estimates based on Mainland China sample ($n = 1004$).

Thus, as the China model did not have a good model fit in Japan, S. Korea, and Taiwan, a Democratic East Asia model was proposed and tested. According to our views, the Democratic East Asia model should be similar to the Western model where trust is separated among different governmental branches. Meanwhile, we also allowed some degree of exploratory testing considering the intertwining influences of culture and political arrangements. Thus, the following changes were made based on the China model to create a Democratic East Asian model: trust in National Government, Local Government, and the President were loaded onto the Government factor, trust in the Tax System loaded onto the Governing Bodies, trust in Banks loaded onto the Financial and Corporate Institutions (all as in the Western model); following the suggestion of fit indices, trust in Military was loaded onto the Community. These modifications resulted in a six-factor Democratic East Asia model (see Figure 3.2). This model had a good fit in Japan, S. Korea, and Taiwan, but a poor fit in Mainland China. Further tests showed that the Democratic East Asia model had good model fit in the overall sample, and an even better model fit for the overall sample without Mainland China (see Table 3.3 for model fit indices).

Table 3.3. Model Fit for the six-factor Democratic East Asia model.

Sample (n)	χ^2 (df)	RMSEA [90% CI]	CFI	TLI	sRMR
Overall Sample (3929)	3617.494 (174)	.071 [.069, .073]	.920	.904	.046
Overall without Mainland China (2925)	2490.958 (174)	.067 [.065, .070]	.923	.907	.045
Mainland China (1004)	1465.423 (174)	.086 [.082, .090]	.896	.875	.055
Japan (975)	1090.283 (174)	.073 [.069, .078]	.914	.896	.057
S. Korea (942)	1167.538 (174)	.078 [.074, .082]	.905	.886	.053
Taiwan (1008)	924.782 (174)	.065 [.061, .070]	.921	.905	.053

Maximum Likelihood with Robust estimates of standard errors (MLR)

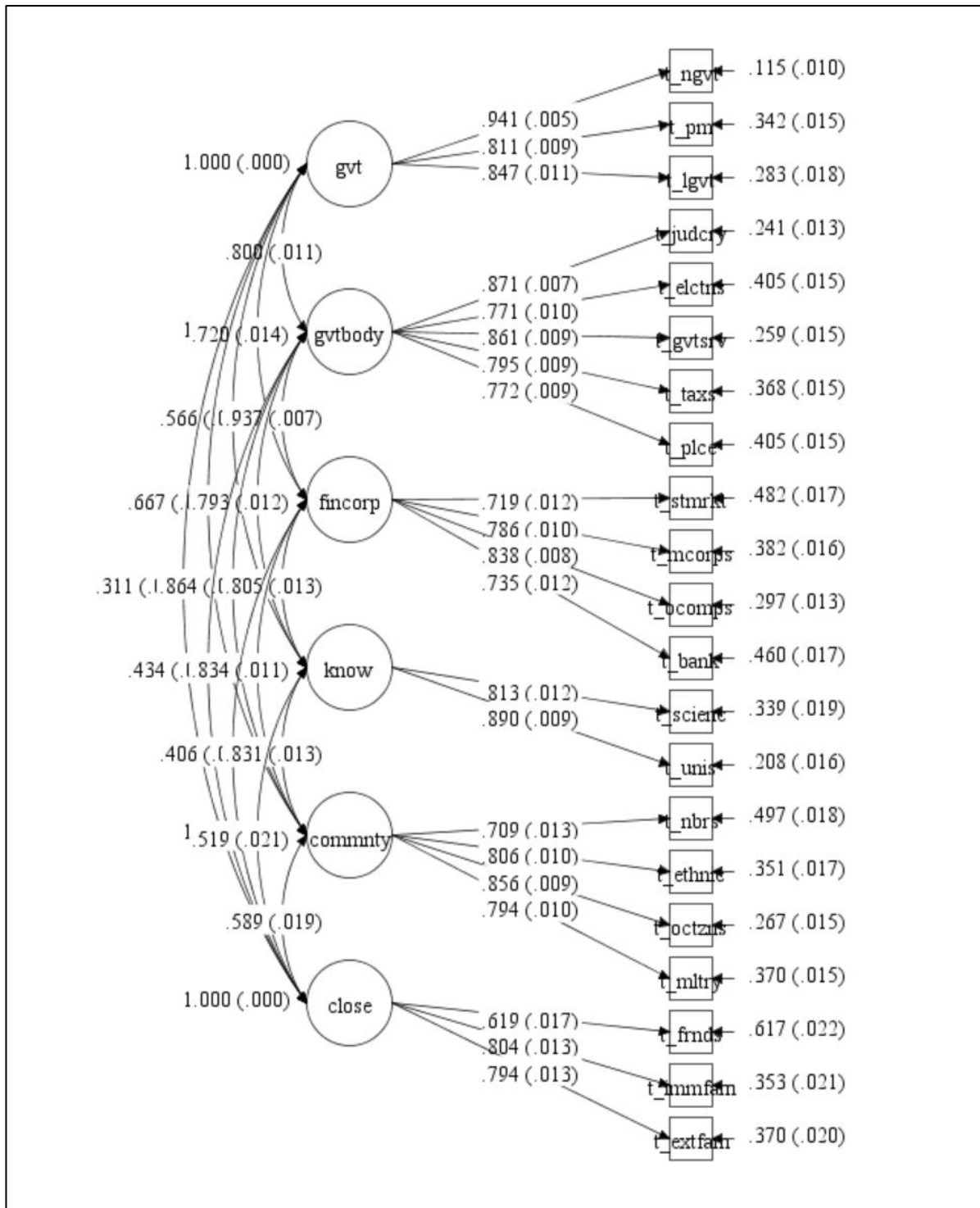


Figure 3.2. The six-factor East Asian model (GVT = Government, $\alpha = .886$; GVTBODY = Governing Bodies, $\alpha = .905$; FINCORP = Financial Institutions and Corporations, $\alpha = .852$; KNOW = Knowledge Producers, $\alpha = .840$; COMMNTY = Community, $\alpha = .864$; CLOSE = Close Relations, $\alpha = .779$). Diagram presents standardized parameter estimates based on pooled sample from Japan, S. Korea, and Taiwan sample ($n = 2926$).

Alternative models were tested in the overall East Asian sample without Mainland China. Results showed that the five-factor model (merging the Government and the Governing Bodies factor; $\chi^2(179) = 3691.385, p < .001, RMSEA = .082 [.080, .084], CFI = .883, TLI = .863, sRMR = .049$), the four-factor model (merging the Government, the Governing Bodies, and the Financial/Corporate factor; $\chi^2(183) = 3979.204, p < .001, RMSEA = .084 [.082, .086], CFI = .873, TLI = .855, sRMR = .050$), and the one-factor model ($\chi^2(189) = 6573.776, p < .001, RMSEA = .107 [.105, .110], CFI = .787, TLI = .764, sRMR = .072$) had worse model fit than the six-factor model.

Thus, a unique six-factor Democratic East Asia model was suitable in Japan, S. Korea, and Taiwan, but not Mainland China.

Overall, the results showed that the universality of the Western model cannot be supported in the four East Asian societies. Instead, two different models of trust emerged: the China model that fitted Mainland China better, and the Democratic East Asia model that fitted Japan, S. Korea, and Taiwan better.

Measurement invariance

Firstly, to make cross-cultural comparison across four societies based on traditional linear modelling approach, we need to force all societies into a single model. The configural invariance model suggested a poor model fit for either the Democratic East Asian model ($\chi^2(699) = 5281.494, p < .001, RMSEA = .082 [.080, .084], CFI = .893, TLI = .872, sRMR = .149$) or the China model ($\chi^2(699) = 6403.057, p < .001, RMSEA = .091 [.089, .093], CFI = .867, TLI = .840, sRMR = .161$), indicating that a single structure of trust cannot be accurately applied across these four societies.

Then, we tested the measurement invariance of the Democratic East Asian model in the three democratic societies. As can be seen in Table 3.4, there was a good model fit for both configural and metric invariance, but full scalar invariance was not achieved. A partial

scalar invariant model could be established after some intercepts were set free as suggested by modification indices: i.e. Judiciary and Oil Companies in Japan; Scientists and Banks in S. Korea; Stock Market, Ethnic Group, and Tax in Taiwan.

In summary, a partial scalar invariance model was supported in the three democratic East Asian societies, but not in the overall sample including Mainland China. As expected, different structures of trust emerged in Mainland China versus the other three democratic East Asian societies as the reflection of different political arrangements. This did not allow mean score comparisons across all four societies based on traditional linear models. In the following section, we develop a cross-cultural comparison on a nominal, or categorical basis using the proportions of trust profiles calculated using LPA.

Table 3.4. Measurement Invariance Tests based on the Democratic East Asia model in the three democratic East Asian societies - Model fit indices.

	χ^2 (df)	RMSEA [90% CI]	CFI	TLI	sRMR	Δ CFI
Configural	3268.960 (524)	.073 [.071, .076]	.910	.892	.062	
Metric	3423.572 (554)	.073 [.071, .075]	.906	.893	.065	-.004
Scalar	4425.489 (582)	.082 [.080, .085]	.874	.864	.067	-.032
Partial Scalar	3698.182 (575)	.075 [.072, .077]	.898	.888	.062	-.008

Maximum Likelihood with Robust estimates of standard errors (MLR)

Trust profiles

Two LPA were conducted separately by using the mean scores of the two models identified previously: the China model on the sample from Mainland China, and the Democratic East Asian model on the sample from the other three societies. To identify the optimal latent profile solution, we examined a range of solutions by using the Vong-Lo-Mendell-Rubin (VLMR) testing procedure as well as the Information Criteria (Akaike Information Criterion (AIC) and adjusted Bayesian Information Criterion (aBIC)). Lower values of the Information Criteria suggest a better fit. The VLMP statistics compares a k profile solution with $k-1$ profile solution, and a significant p -value suggests that k profile has

a better fit than *k-1* profile. In addition, Entropy was used as a supplementary criterion. Higher values indicate a clearer separation of profiles (ranging from 0 to 1, and Entropy > .80 is typically seen as a cut-off point). We also assessed the substantive contribution and interpretability of the profiles identified.

Regarding the China model, the Information Criteria and the VLMR statistics for solutions ranging from one to five profiles are presented in Table 3.5. Information Criteria and the VLMR test suggested the four-profile model is the best solution (Entropy = .875), and this solution was clearly interpretable. Thus, we identified the four-profile model as the optimal solution for Mainland China.

Table 3.5. Information Criteria and the VLMR statistics for the different latent profile solutions using the China model in Mainland China.

	AIC	aBIC	VLMR (<i>p</i>)	Entropy
1 profile	20082.728	20103.556		
2 profiles	17460.479	17493.457	2636.249 (<.001)	0.877
3 profiles	16497.379	16542.507	977.100 (.007)	0.862
4 profiles	16003.794	16061.072	507.585 (<.001)	0.875
5 profiles	15805.799	15875.226	211.995 (.229)	0.871

N = 1004; AIC – Akaike Information Criterion; aBIC – adjusted Bayesian Information Criterion; VLMR – Vong-Lo-Mendell-Rubin statistic (*p*-value).

The four identified Trust Profiles are presented in Figure 3.3. The largest profile (38.9%, *n* = 391) – named “Moderate-to-High Trust” – was characterised by moderate to high levels of trust across the six factors of trust, with slightly lower ratings on Implementing Bodies and Financial Institutions. The second largest profile (29.5%, *n* = 296) – named “Low-to-Moderate Trust” – was characterised by a moderate to high level of trust in Close Relations; moderate levels of trust in Central Government, Knowledge Producers, and Community; moderate to low levels of trust in Implementing Bodies and Financial Institutions. The third largest profile (21.6%, *n* = 217) – was named “High Trust”, characterised by very high levels of trust across all factors except moderate to high levels of

trust in Financial Institutions. The smallest profile (10.0%, $n = 100$) – named “Low Trust” – was characterised by very low levels of trust across all factors of trust except a moderate level of trust in Close Relations.

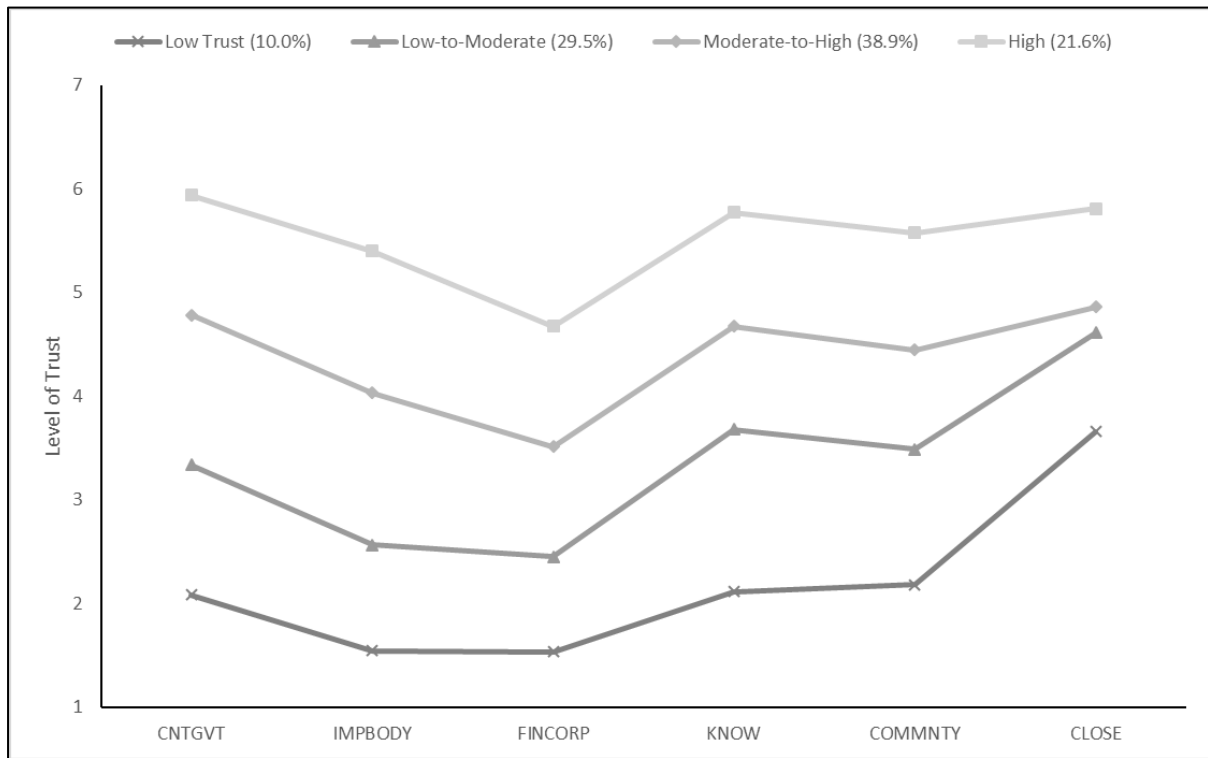


Figure 3.3. The identified Latent Trust Profiles and the mean-levels of trust across the six-factors based on the China model.

Regarding the Democratic East Asia data, the Information Criteria and the VLMR for solutions ranging from one to ten profiles are presented in Table 3.6. While the VLMR test would suggest that the nine-profile model was the best solution, the Information Criteria indicated that the decrease of model fit levelled off at the four-profile solution (Entropy = .874, higher than all solutions with more than four profiles). The nine-profile solution was also not parsimonious, with several latent profiles having more or less the same patterns with slightly higher or lower mean scores. The four-profile solution was also clearly interpretable

and comparable to the four-profile solution in the China model. Thus, we identified the four-profile model as the optimal and most parsimonious solution.

Table 3.6. Information Criteria and the VLMR statistics for the different latent profile solutions using the Democratic East Asian model in Japan, S. Korea, and Taiwan.

	AIC	aBIC	VLMR (<i>p</i>)	Entropy
1 profile	56675.962	56709.606		
2 profiles	49023.936	49077.206	7666.026 (<.001)	0.897
3 profiles	46695.887	46768.783	2342.049 (<.001)	0.863
4 profiles	45286.542	45379.063	1423.346 (<.001)	0.874
5 profiles	44894.251	45006.398	406.291 (<.001)	0.861
6 profiles	44530.717	44662.490	377.534 (<.001)	0.856
7 profiles	44187.031	44338.429	357.686 (<.001)	0.866
8 profiles	43906.436	44077.461	294.594 (<.001)	0.845
9 profiles	43745.103	43935.753	175.334 (.04)	0.846
10 profiles	43580.289	43790.565	178.813 (.19)	0.834

N = 2925; AIC – Akaike Information Criterion; aBIC – adjusted Bayesian Information Criterion; VLMR – Vong-Lo-Mendell-Rubin statistic (*p*-value).

The four identified Trust Profiles based on the Democratic East Asian data are presented in Figure 3.4. The largest profile (32.3%, *n* = 946) – named “Low-to-Moderate Trust” – was characterised by a moderate to a high level of trust in Close Relations; moderate levels of trust in Knowledge Producers and Community; moderate to low levels of trust in Government, Governing Bodies, and Financial Institutions. The second largest profile (31.9%, *n* = 933) – named “Moderate-to-High Trust” – was characterised by a moderate to high level of trust in Close Relations; moderate levels of trust in all other factors with Government and Financial Institutions being slightly lower. The third largest profile (24.0%, *n* = 702) – named “Low Trust” – was characterised by very low levels of trust across all factors of trust except a moderate level of trust in Close Relations. The smallest profile (11.8%, *n* = 344) – named “High Trust” – was characterised by very high levels of trust across all factors of trust except moderate to high levels of trust in Government and Financial Institutions.

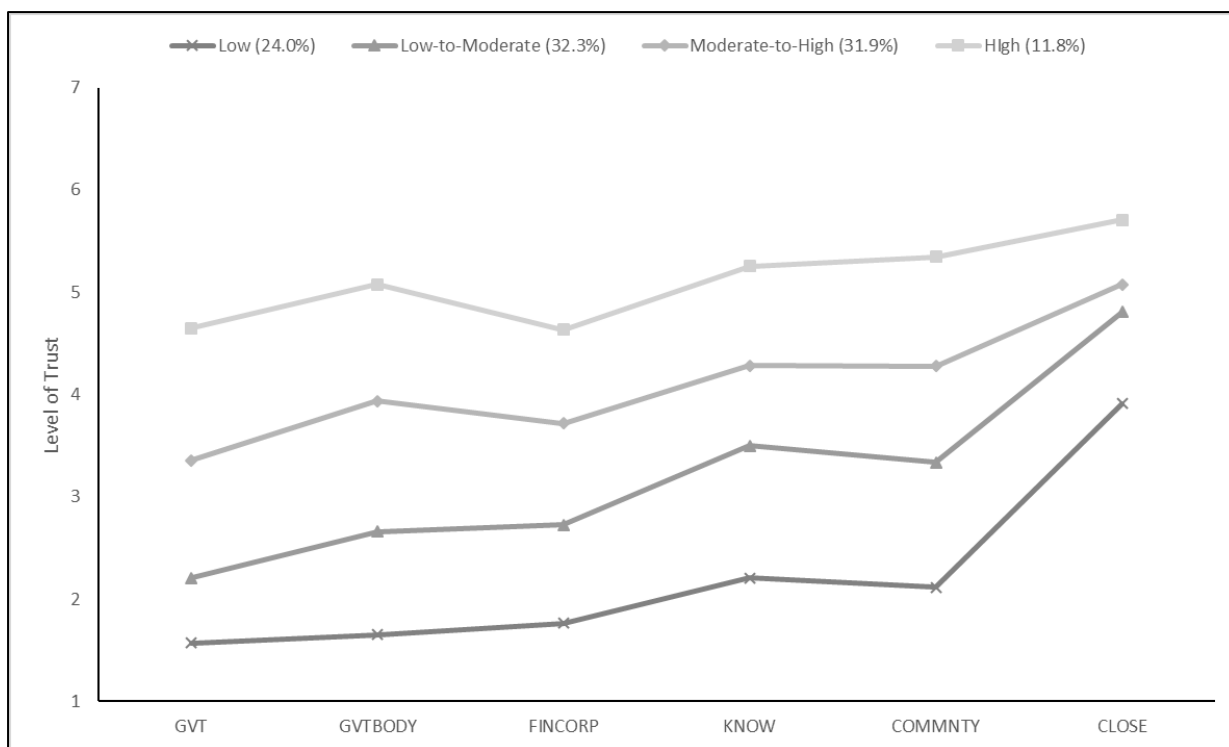


Figure 3.4. The identified Latent Trust Profiles and the mean-levels of trust across the six-factors based on the Democratic East Asia model.

In summary, the latent profile solutions in Mainland China and the other three East Asian societies had both similarities and uniqueness. Both solutions had four structurally similar profiles with relatively similar levels of trust for interpersonal/social and political/institutionalised forms of trust. By way of comparison, almost a third of the sample in the West had a relatively high level of interpersonal trust, and comparatively low levels of institutional trust (see the “Low Institutional Trust” profile, Liu et al., 2018). This seemed to corroborate the more interconnected/holistic view of different forms of social relations in Confucianist culture compared to the West (Liu et al., 2015).

The profile solution based on the China model was characterised by a high level of trust toward Central Government, which was higher than Implementing Bodies consistently across all profiles, and as high as Close Relations in High Trust profile and Moderate-to-High Trust profile. However, trust toward (representative) Government was lower than for

Governing Bodies and Close Relations consistently across profiles in the other three East Asian societies, which was similar to the findings in Western societies (see Liu et al., 2018). This seemed to reflect the unique impact of political arrangements in Mainland China, where the citizens typically have a high level of trust in Central Government but are dissatisfied with lower-level institutions (e.g., Li, 2004).

Cross-cultural comparisons based on trust profiles

Following Hanke and colleagues' (2015), we generated the prevalence of trust profiles for each of the three democratic East Asian societies based on the latent profile solution of the Democratic East Asian model, and compared these with the proportion of trust profiles generated by the latent profile solution of the China model. Although these two profile solutions had some unique features (i.e., factor structure and relative level of factor scores), we believed a practical cross-cultural comparison could be made because the nominal categories of high, moderate-to-high, low-to-moderate, and low trusting people can be interpreted meaningfully in both situations. They consistently reflect individual differences in the propensity to trust across a wide range of relationships. The Pearson Chi-square value ($\chi^2(9) = 314.43, p < .001$) suggested significant differences in the proportions of trust profiles across societies (see Figure 3.5).

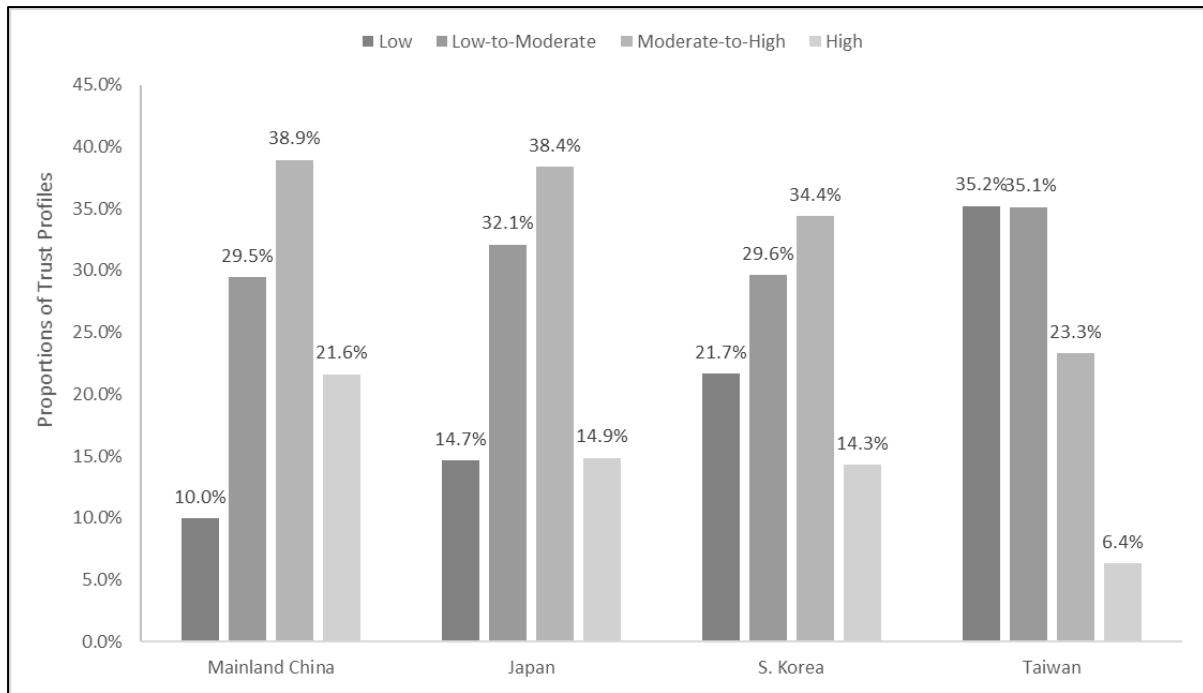


Figure 3.5. Distribution of Trust Profiles across societies.

Post Hoc analysis² showed that Mainland China had the highest proportion of the High Trust people (21.6%), followed by Japan and S. Korea (14.9% and 14.3%, respectively), and Taiwan the lowest by far (6.4%). Mainland China and Japan had the highest proportion of the Moderate-to-High Trust profile (38.9% and 38.4%, respectively), followed by S. Korea (34.4%), and Taiwan the lowest (23.3%). Mainland China and Japan had the lowest proportion of the Low Trust profile (10.0% and 14.7%, respectively), followed by S. Korea (21.7%), and Taiwan the highest (35.2%). Finally, there was no significant difference on the proportion of Low-to-Moderate Trust profile individuals (Mainland China = 29.5%, Japan = 32.1%, S. Korea = 29.6%, and Taiwan = 35.1%).

In summary, Mainland China, in general, had a high level of trust, with the highest proportion of High Trustors, and one of the highest proportion of Moderate-to-High Trustors;

² Post hoc test was conducted by comparing all possible pairwise proportion on a specific profile. Following MacDonald and Gardner's (2000) suggestions, p value was adjusted using Bonferroni correction to reduce the chance of Type I error. In this case, there are 24 pairwise comparisons to be tested, so the adjusted $\alpha = .05/24 = .003125$.

Japan and S. Korea had similar levels of trust, with moderately high proportions of High Trust and Moderate-to-High Trust profiles; Taiwan had the lowest level of trust among these four societies. Consistent with previous literature on generalised trust (e.g., Bjørnskov, 2007; Delhey & Newton, 2005), these findings showed that Mainland China enjoys a higher level of trust than other East Asian societies³.

Discussion

Overall, two different factor structures of trust were found in four East Asian societies. Mainland China had a top-down structure of trust (the China model), where trust towards governmental institutions is conceptually separated between the central government (including national government, president, the military, and banks) and subordinate implementing bodies (including local government, and police et al.). Japan, South Korea, and Taiwan shared another structure of trust (the Democratic East Asia model), which has a degree of similarity to both the Western model (a non-hierarchical separation between representative government and governing bodies) and the China model (a parsimonious six-factor structure). Consistent with Inglehart and Baker's (2000) argument that both modernization and culture have an impact on changes in values, the structure of trust appears to be influenced largely by current institutional power structures, while enduring cultural heritage also plays a role. On the one hand, both the China model and Democratic East Asia model are different from Western "separation of powers" model, which seems to confirm the findings from cross-cultural psychology regarding enduring cultural differences between East

³ Differences in gender proportions were observed between profiles. For the China model, Chi-square (3) = 10.271, $p = 0.016$: the proportion of females in the Low-to-Moderate profile (36.7%) was significantly lower than in the Moderate-to-High and High profile (45.9% and 51.3%, respectively). No significant differences were found between these and the Low profile (46.6%). For the Democratic East Asian model, Chi-square (3) = 14.225, $p = 0.003$: the proportion of females in the High profile (37.1%) was significantly lower than in other 3 profiles (44.5%, 49.2%, and 47.4% in the Low, Moderate-to-Low, and Moderate-to-High profile, respectively). These results for the three democratic East Asian societies were consistent with previous findings in Western societies (Liu et al., 2018), where the high trustors were less likely to be women, however, women in Mainland China seemed to be more trusting.

and West. On the other hand, the China model differed from the other three East Asian societies, which shows that the structure of trust changes with institutional changes reflecting actual power differences in society, as suggested by institutional theory.

The unique power structure in Mainland China could help us to understand why it has a high level of trust. Consistent with previous research using a standardized generalised trust item from the World Values Survey (e.g., Bjørnskov, 2007; Delhey & Newton, 2005), our findings showed that Mainland China has a very high proportion of high trustors. More importantly, there were substantially positive correlations among the 21 indicators of trust we measured (see Table 3.1), leading to strong positive correlations among all six trust factors. This suggests that trust is by no means limited to a narrow circle consisting of personally known others, but it can extend to a broader circle of people in the community. The impact of trust toward central government on social trust might be the key to understand trust and cooperation in China. An authoritative but competent central government may offer psychological security for reducing the perceived risks associated with trusting social exchange involving other institutions and actors in society, thus enhancing prospects for cooperation in society at large⁴.

The unique and crucial conceptual separation in Mainland China is between different levels of government (central government and subordinate implementing bodies). This might be important for maintaining high trust because incidents that sabotage trust toward central government in other societies could be insulated from blame by the intervening layer of (lower) trust towards local government and other implementing bodies in Mainland China (see Cai, 2008). Where there is no public disputation against the central government, there is also, at least on the surface, high trust in the central government and its ability to execute

⁴ Note that this paragraph has been slightly modified as suggested by one of thesis examiners, therefore it is different from the final published version in the Asian Journal of Social Psychology.

competently long-term plans that may benefit other organisations/relationships in society (see Mayer, Davis, & Schoorman, 1995; Liu et al., 2010 for a cultural angle on this). This might be a different form of cultural capital (Liu, 2015) than the bottom-up social capital theorised for democratic societies (Putnam, 2001).

In contrast, Taiwan, although it is culturally similar to Mainland China, was dominated by low trust and the low-to-moderate trust profiles. The big difference is that Taiwan has a contentious mass media, and is a fully democratic society wherein few institutions are authoritative. A decline in social capital (a closely related concept to trust, see Putnam, 2001) observed in the USA and other Western democracies may have hit Taiwan as part of the post-democracy blues. Constant disputation between the two dominant political parties (with different views of the proper relationship with the Mainland China, each with their supporting mass media apparatuses that frequently attack the other party when they are in power, see Huang, Liu, & Chang, 2004) reduces trust, as well as the fact that trust is often low in newly established democracies (see Mishler & Rose, 2002).

Although these four societies have different political arrangements, the enduring impacts of cultural values could also be reflected in the emergence of the parsimonious structure with fewer trust factors. Unlike the young democracies in Latin America, which could fit into the seven-factor Western model with security institutions as a separate factor (Liu et al., 2018), the young democracies in East Asia shared a six-factor structure of trust where police and military merged into other factors rather than standing together as a Security factor. This seems inconsistent with the argument that insufficient experience of democracy is the only reason for a holistic evaluation of institutions. Instead, we suspect the cultural heritage could also play a role: an interconnected/holistic view of different social relations in Confucianist culture is likely to contribute to fewer-factor structures in trust. How

this relational aspect of Confucianist would factor into the social integration and stability in young East Asian democracies as well as Mainland China is worth future exploration.

There is a tension in cross-cultural research between the increasingly stringent requirement for measurement invariance and the fact that universal measurement on some basic concepts seems difficult to achieve (e.g., in the domain of values, see Schwartz, 1992). Building on previous research that compares the level of trust within and beyond East Asian cultures (e.g., Huff & Kelley, 2003), the present study contributes to the literature by testing the psychometric equivalence of the global system of trust in representative samples and providing a novel approach for dealing with the lack of equivalence. For trust towards governmental institutions, where we have good reasons to expect differences in structures and meanings, a pragmatic cross-cultural comparison could be made by employing a nonparametric Chi-Square test of independence on proportions of high trustors amongst other various meaningful profiles. This approach provides an alternative to the more continuous dimensions of cross-cultural variability approach adopted by Schwartz (1992) or Leung and Bond (2004) when countries are too disparate to force into a single homogenous invariant model. This approach has promise because the requirement of measurement invariance and measurement precision requires a trade-off against the reality of substantive variability between cultures. Allowing more than one latent factor models while using nonparametric tests to make cross-cultural comparisons between substantively different societies (e.g., East versus West) might be an important step forward to understand similarity and difference in a world where globalization does not imply homogeneity (Inglehart & Baker, 2000).

There are some limitations in the present study that could be advanced in future research. Firstly, we assume that the trust profiles could reflect relatively universal individual differences in the propensity to trust, and thus it is meaningful to make cross-cultural comparisons even when factor structure differences exist. However, the actual association

between trust profiles and cooperative behaviours still needs to be tested to confirm the validity of this assertion. Secondly, we suspect cultural heritage could contribute to the emergence of the parsimonious structure of trust in East Asia, but the specific reason for the collapse of security institutions factor may be worth future scrutiny.

Chapter 4: Social trust and satisfaction with life: A cross-lagged panel analysis based on representative samples from 18 societies

ABSTRACT

This study examined the longitudinal associations between two types of social trust and satisfaction with life. Trust in community, an individual-level trust in a less intimate circle of people with shared physical and/or symbolic group membership, is proposed side by side with trust in close relations, which captures trust in one's intimate circle of people. Using two-wave representative samples from 18 societies with a six-month interval ($N = 8587$), we first conducted measurement invariance tests and then a cross-lagged panel analysis to examine the associations. Results showed that all latent variables were invariant across countries and across time. Trust in community had a positive longitudinal association with satisfaction with life, but not trust in close relations. The reverse associations were also found, where satisfaction with life was longitudinally associated with both types of social trust. The findings suggest the link between social trust and well-being is bidirectional in nature and trust in community plays an important role in well-being.

Keywords: Social Trust; Satisfaction with Life; Social Capital; Cross-lagged Panel Model

Social scientists have endeavoured to understand the association between trust and well-being (Kawachi, 2018). Following social capital theorisation (Coleman, 1988; Putnam, 2000), much previous research conceptualised trust as the cognitive component of social capital, testing its impact on health together with other structural components of social capital (e.g., social participation), so as to get a comprehensive understanding of the impact of social capital on well-being (Harpham, Grant, & Thomas, 2002). However, social capital is a compound construct, derived from social and political theories rooted in Western democracies, which often finds itself imperfectly configured for cross-national research that includes non-Western, less developed, and often less democratic societies (Agampodi, Agampodi, Glozier, & Siribaddana, 2015; De Silva, Huttly, Harpham, & Kenward, 2007). Hence, some researchers prefer a pragmatic and parsimonious proxy measure with similar functions to social capital that allows greater cross-national comparability. For this purpose, trust has been touted as an optimal proxy rather than as a component of social capital.

Social capital or social connectedness is generally believed to have a positive impact on physical health and subjective well-being (Helliwell & Putnam, 2004; Jetten, Haslam, & Alexander, 2011). But there are different kinds of social capital that may or may not have the same effect: bonding social capital refers to the value embedded in a socially similar network, whereas bridging social capital refers to the value of socially dissimilar network (Glanville & Story, 2018; Szreter & Woolcock, 2004). To capture the nuances involved in different kinds of social capital, instead of relying on a single-item measure of trust in non-specific others, researchers have also started exploring the impacts of trust by using multidimensional measures (Glanville & Story, 2018; Kim, 2018). Building on this line of research, this research uses a cross-culturally valid measure of trust to assess the association between trust and subjective well-being in representative samples from 18 countries/societies. Of particular

interest is the impact of trust in community, which is a relatively new component of trust, together with trust in close relations on well-being.

Another important issue worth exploring is the directionality of this link. Cross-sectional data, typically used in this research tradition, are unable to ascertain causality between constructs empirically, although the theoretical assumption is often made that trust is the antecedent of well-being. Recently, a growing number of single nation longitudinal analyses have been published that find not uni-directional causality, but rather reciprocal paths between trust and well-being (Giordano, Björk, & Lindström, 2012; Giordano & Lindström, 2016). This present study aims to advance this literature by evaluating this potentially cross-national and bi-directional link longitudinally over a six-month interval.

Trust and well-being

The standard question of generalised trust, “generally speaking, would you say that most people can be trusted or that you can’t be too careful in dealing with people”, has been frequently used in past several decades to test the potential beneficial effects of trust (Nannestad, 2008). This line of research suggests that trust is positively associated with well-being (Calvo, Zheng, Kumar, Olgiati, & Berkman, 2012; Hamamura, Li, & Chan, 2017; Mansyur, Amick, Harrist, & Franzini, 2008; Poortinga, 2006). However, the use of this item may involve insufficient clarification in cross-national settings, as recent research has suggested that the connotation of the standard question might vary considerably across different societies (Delhey, Newton, & Welzel, 2011; Sturgis & Smith, 2010; Van Hoorn, 2015).

Recently researchers have increasingly recognised trust as a multidimensional concept consisting of different components. Many researchers postulate a binary distinction between particularised and generalised trust, where the former refers to trust toward specific people that you know personally, and the latter refers to trust toward non-specific others (e.g.,

Newton & Zmerli, 2011; Yamagishi & Yamagishi, 1994). Since they are believed to be meaningfully corresponded to bonding and bridging social capital, some researchers have started advocating for integrating these two forms of social trust in public health research, so as to better understand paradoxes around social capital (e.g., Giordano, Björk, & Lindström, 2012).

Empirical findings seemed to suggest the bonding form of social trust is a better predictor of well-being at the individual level. For example, Glanville and Story (2018) tested the impacts of different components of social trust on self-rated health using World Values Survey data from 74 countries. They found that particularised trust (including both trust in family and non-familial close relationships) had a stronger association with self-rated health, compared to generalised trust (including trust in strangers and outgroups). In other research using immigrant samples across 51 countries, Kim (2018) also found that particularised trust (including trust in family, neighbourhood, and people you know personally) could predict self-rated health, but generalised trust (consisting of “people you meet for the first time”, “people of another religion”, and “people of another nationality”) was not a significant predictor.

While these findings have significantly contributed to our understanding of how trust might be associated with well-being, an important component of social trust might be missing. In addition to the binary categorisation of particularised versus generalised trust, Wollebaek, Lundåsen, and Trägårdh (2012) proposed a new component of community trust, a kind of trust located in place and shared experience. Wollebaek et al. (2012) operationalised community trust as physical communities with people inhabiting proximate geographical locations in their original study, but they proposed theoretically it also covers imagined communities like states (Anderson, 2006). In a similar vein, Freitag and Bauer (2013) proposed identity-based trust, which refers to trust in a person/group one does not necessarily

know in person but belongs to a certain group or category. They found this three-factor model (i.e., particularised, identity-based, and generalised trust) psychometrically invariant across regions and countries that are culturally similar to one another (i.e., all located in Europe and North America).

Drawing on this literature, Liu and his colleagues (2018) proposed the Global Trust Inventory, which is a holistic measure of trust consisting of both social and political components of trust. The GTI as a whole showed considerable variation between Western and East Asian societies (Liu, Milojev, Gil de Zúñiga, & Zhang, 2018; Zhang et al., 2019)⁵, but the two social trust factors (i.e., trust in close relations and community) were relatively consistent across cultures. Specifically, trust in close relations assesses trust in one's intimate circle (including immediate family, extended family, and friends), which is closely aligned to the concept of particularised trust. Trust in community, on the other hand, assesses trust in the indirect circle consisting of people who less frequently interact, but still share physical and/or symbolic group membership (i.e., neighbours, people with the same ethnicity or nationality). We believe this could be a better measure for trust in community across cultures, given that Wollebaek et al.'s (2012) measure focused exclusively on trust in neighbourhood but not symbolic groups, and Freitag and Bauer (2013) operationalised identity-based trust as trust in people of a different religion or nationality, rather than trust in people of a shared group or category.

This research empirically tested the impact of trust in community side by side with trust in close relations on well-being at the individual level. Trust in known others is well theorised to contribute to well-being as bonding social capital (see Glanville & Story, 2018).

⁵ Additional analyses of measurement invariance suggested that the configural model of a three-factor model of political trust (including representative government, governing bodies, and security institutions) cannot be established due to the latent variable covariance matrix (ψ) was not positive definite in China/ Russia/ Ukraine. Therefore, political trust factors were excluded from following analyses due to the lack of measurement invariance.

In comparison, the link between trust in community and well-being has received comparatively little attention in previous cross-national research. Theoretically trust in community is likely to serve as an inclusive force in building and maintaining bridging social capital within relatively broad networks of people. Those people, ranging from neighbours to fellow citizens, are not completely familiar with one another, but share common network/group membership in some ways due to the geographical or symbolic proximity. The social capital embedded in these social groups could serve as a social cure that elevates individuals' well-being through a feeling of shared identity (Jetten et al., 2011; Khan, Garnett, Hult Khazaie, Liu, & Gil de Zúñiga, 2019). Further, we expect a higher level of trust in community thus makes it easier to mobilise the resources embedded in these relatively thin social networks to achieve individual and collective goals. Wollebaek et al. (2012) focused on its collective benefit, showing that only community trust, but not particularised or generalised trust, could facilitate local problem-solving. Here we expect that trust in community can also benefit individuals by supporting their well-being.

The bidirectional link between trust and well-being

The directionality of the link between trust and well-being has recently gained some attention. Drawing on Uslaner's (2002) claim that optimism and control is the foundation of trust, it is possible that those who have better subjective well-being would more likely be optimistic about life and a greater sense of control, which in turn increase their trust toward others. Using multiple-wave data from the British Household Panel Survey, Giordano and Lindström (2016) confirmed this reversed causal relationship between health and generalised trust. However, they focused on the temporal relationship in a single national context, which has limits in terms of generalisability – especially considering the ambiguity revolving around the use of single-item generalised trust item in cross-national settings. Also, they were

using time-lagged logistic regression analyses to test the reversed directionality only, without simultaneously considering the potential bidirectional link.

Cross-lagged panel analysis (Newsom, 2015) is a useful tool to simultaneously test potential bidirectional associations (e.g., Watson & Milfont, 2017). In cross-lagged panel analysis, the same constructs are measured at multiple time points. The autoregressive effect and the cross-lagged effect are assessed in the same model. While the autoregressive effect depicts the stability of the constructs across time, the cross-lagged effect assesses temporal associations on their residual variance after controlling for the autoregressive effect.

Although the cross-lagged panel model is unable to support strong causal claims, many believe it can be used to draw insights on the potential directionality between constructs over time (Newsom, 2015).

Measurement invariance in cross-national studies

In cross-national research, people from heterogeneous social and cultural backgrounds may have very different understandings of the same survey item. For example, as noted by Jing and Bond (2015), people might have very different experiences with their neighbours depending on whether they are from a rural or urban background, and trust towards their neighbours might, therefore, vary accordingly. This problem is particularly important when involving longitudinal models as the measures' properties might vary even if the same wordings are used at different measurement points (Newsom, 2015). To deal with this challenge, measurement equivalence tests have been increasingly used in cross-national research, as a prerequisite for meaningful interpretation of cross-national numerical data (Davidov, Meuleman, Cieciuch, Schmidt, & Billiet, 2014). Among different levels of measurement invariance, metric invariance (i.e., weak invariance) allows the comparison of associations between constructs across cultures/groups (e.g., path coefficients, correlations), while the more stringent test of scalar invariance (i.e., strong invariance) further allows for

the accurate comparison of mean scores across cultures/between groups (Boer, Hanke, & He, 2018; Vandenberg & Lance, 2000). We expect that these two types of social trust and satisfaction with life would show at least metric invariance across 18 countries/societies and 2 waves with a six-month interval, so as to make a meaningful interpretation of cross-national results.

Method

Participants and sampling procedure

The data analysed here is a part of Digital Influence project, where representative samples from 22 countries/societies were recruited through international polling company Nielsen (see details for methods and sample in Gil de Zúñiga & Liu, 2017). The same respondents were invited to Wave 1 (September 2015) and Wave 2 (March 2016) with a six-month interval. The present study included a sample from 18 countries/societies, including Argentina, Brazil, China, Estonia, Germany, Indonesia, Italy, Japan, South Korea, New Zealand, Poland, Russia, Spain, Taiwan, Turkey, United Kingdom, Ukraine, and the United States). Four countries/societies in the original survey were excluded: Chile and the Philippines were excluded because Wave 2 data was partially or entirely absent due to panel provider error; South Africa and India were excluded because they were limited samples where only respondents from one urban area were recruited. Participants who responded to both waves were selected, resulting in 8587 respondents retained (49.6% female, $M_{\text{age}} = 45.12$, $SD_{\text{age}} = 14.57$, the panel attrition rate in these countries/societies is 55.5%) for the following analyses. The average sample size for each country/society was 477, ranging from 101 (Ukraine) to 733 (Estonia).

Measures

Trust in community and close relations was assessed by three items for each construct from the Global Trust Inventory (Liu et al., 2018). Participants were asked to indicate their

feelings of trust towards: “people in your neighbourhood”, “your own ethnic group”, and “other citizens of your country” for trust in community (Cronbach $\alpha = .81$ for Wave 1; Cronbach $\alpha = .83$ for Wave 2); “immediate family”, “extended family”, and “friends” for trust in close relations (Cronbach $\alpha = .79$ for Wave 1; Cronbach $\alpha = .79$ for Wave 2). The answers ranged from 1 (“do not trust at all”) to 7 (“trust completely”).

Satisfaction with life was used as an indicator of subjective well-being. Five items were adopted from the Personal Well-being Index (Lau, Cummins, & Mcpherson, 2005). Participants were asked how satisfied they are these days with “your life as a whole”, “your health”, “your standard of living”, “your safety and security”, and “your relationships” (Cronbach $\alpha = .87$ for Wave 1; Cronbach $\alpha = .87$ for Wave 2). The answers ranged from 1 (“completely dissatisfied”) to 7 (“completely satisfied”).

Demographics were measured in wave 1, including age (in years) and gender (0 male, 1 female). Participant’s self-reported social status was measured using a single item: “On a scale of 1 to 10, with 10 being the people who are the most well off, and 1 being the people who are the least well off, where would you describe your position?”. These basic demographics were included as control variables because previous research showed that trust was unevenly placed across demographical groups. For example, age was found to be positively associated with social trust (e.g., Li & Fung, 2012; Poulin & Haase, 2015). Although previous research did not show a significant impact of gender on social trust, it is often theorised as an important predictor of cooperation from an evolutionary perspective. Subjective social status (or subjective social class) was found to be positively associated with social trust (e.g., Hamamura, 2011), as high-status individuals have more resources that are essential in dealing with the risk involves in trust relationships.

Data analysis

Firstly, cross-national and longitudinal measurement invariance was tested by using multigroup confirmatory factor analysis (Newsom, 2015; Vandenberg & Lance, 2000). In the baseline model, all parameters were freely estimated across groups and across time. Then, a cross-national and longitudinal metric invariance model was estimated, where all the factor loadings were constrained to be equal across groups and time. Following Vandenberg and Lance (2000), multiple indices were used to examine model fit, including Chi-square, Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), Tucker–Lewis index (TLI), and the standardised root mean squared residual (SRMR). As the present study covered respondents from more than 10 groups (i.e., countries/societies) that are highly diverse, more liberal cut-off criteria were used for the model acceptance (CFI > .90, TLI > .90, SRMR ≤ .10; Boer, Hanke, & He, 2018). If the model fit of metric invariance model does not deteriorate considerably from the baseline model (Δ CFI = .01), it indicates that metric invariance is supported (Vandenberg & Lance, 2000).

Secondly, the longitudinal association between trust and satisfaction with life was assessed by using a cross-lagged panel model on the overall sample. All constructs in Wave 1 (i.e., trust, satisfaction with life, and demographical variables) were specified as exogenous variables, while all constructs in Wave 2 were specified as endogenous.

All analyses were conducted using Mplus 7.31 using Maximum Likelihood with Robust estimation (MLR).

Results

The descriptive statistics for each country are presented in Table 4.1. The descriptive statistics and bivariate correlations for the overall sample are presented in Table 4.2.

Table 4.1. Descriptive statistics by country/society.

Country	N	Age	% Female	Comm t1 (α)	Comm t2 (α)	Close t1 (α)	Close t2 (α)	SWL t1 (α)	SWL t2 (α)
Argentina	359	44.04	46.7%	4.08 (.74)	4.01 (.74)	5.72 (.70)	5.54 (.71)	5.16 (.79)	5.16 (.81)
Brazil	353	39.16	53.7%	3.52 (.79)	3.72 (.85)	5.07 (.67)	5.15 (.79)	4.89 (.79)	4.96 (.79)
China	387	40.96	39.7%	4.21 (.83)	4.35 (.84)	4.94 (.81)	5.00 (.82)	4.97 (.88)	4.94 (.89)
Estonia	733	50.52	48.6%	4.65 (.75)	4.69 (.78)	5.89 (.73)	5.89 (.72)	4.88 (.80)	4.89 (.82)
Germany	643	48.25	53.3%	4.11 (.80)	4.19 (.79)	5.56 (.78)	5.53 (.82)	5.11 (.87)	5.09 (.86)
Indonesia	305	37.74	44.3%	4.19 (.84)	4.25 (.86)	5.12 (.78)	5.11 (.79)	5.27 (.92)	5.28 (.93)
Italy	579	41.52	55.8%	3.94 (.81)	4.02 (.78)	5.30 (.71)	5.31 (.71)	4.88 (.86)	4.81 (.86)
Japan	574	47.49	39.5%	3.96 (.85)	3.97 (.88)	4.80 (.78)	4.78 (.79)	4.07 (.89)	4.09 (.90)
Korea	572	40.96	47.7%	3.79 (.82)	3.86 (.81)	4.98 (.74)	5.08 (.74)	4.12 (.90)	4.13 (.90)
New Zealand	605	49.87	55.9%	4.39 (.79)	4.36 (.81)	5.62 (.78)	5.63 (.77)	5.11 (.88)	5.07 (.87)
Poland	628	44.09	51.8%	3.78 (.83)	3.77 (.84)	5.12 (.77)	5.14 (.80)	4.75 (.87)	4.72 (.88)
Russia	551	41.47	49.4%	3.90 (.80)	3.90 (.82)	5.49 (.82)	5.49 (.80)	4.65 (.84)	4.55 (.84)
Spain	302	40.32	53.7%	4.03 (.81)	4.08 (.83)	5.47 (.76)	5.42 (.73)	5.12 (.84)	5.15 (.87)
Taiwan	426	38.97	45.3%	3.17 (.85)	3.14 (.84)	4.51 (.82)	4.39 (.80)	4.56 (.91)	4.43 (.90)
Turkey	331	37.92	47.9%	3.87 (.73)	3.95 (.77)	5.48 (.73)	5.30 (.69)	4.68 (.87)	4.53 (.87)
UK	649	53.79	51.1%	4.21 (.82)	4.21 (.86)	5.52 (.81)	5.47 (.81)	5.00 (.86)	4.96 (.86)
Ukraine	101	34.38	37.6%	3.85 (.65)	3.90 (.70)	5.93 (.80)	5.77 (.85)	4.32 (.80)	4.19 (.86)
USA	489	55.69	56.2%	4.35 (.81)	4.40 (.85)	5.52 (.84)	5.57 (.82)	5.25 (.87)	5.20 (.84)

Table 4.2. Correlation matrix.

	1	2	3	4	5	6	7	8	9
1 Trust Comm T1									
2 Trust Comm T2	.67**								
3 Trust Close T1	.54**	.44**							
4 Trust Close T2	.46**	.56**	.70**						
5 SWL T1	.33**	.31**	.37**	.33**					
6 SWL T2	.31**	.35**	.33**	.37**	.77**				
7 Gender (1=Female)	-.03**	-.04**	0.01	0.01	.04**	.04**			
8 Age	.19**	.20**	.11**	.13**	.06**	.06**	-.12**		
9 Social status	.23**	.23**	.23**	.21**	.51**	.47**	.00	-0.02	
M	4.04	4.08	5.33	5.32	4.82	4.79	-	45.12	5.41
SD	1.21	1.20	1.14	1.13	1.14	1.14	-	14.57	1.82

Note: ** $p < .01$. Trust Comm = Trust in Community; Trust Close = Trust in Close Relations; SWL = Satisfaction with Life.

Measurement invariance tests

Results of measurement invariance tests are presented in Table 4.3. A baseline model of configural invariance involving trust in community, trust in close relations, and satisfaction with life in both waves was estimated. All parameters were allowed to be freely estimated, but only designed relationships between variables as specified by the theoretical model were allowed. This model showed an acceptable model fit. Then a metric invariance model was estimated. This model showed an acceptable model fit. More importantly, the model fit for metric invariance model did not deteriorate compared to the baseline model ($\Delta\text{CFI} = -.007$), suggesting the cross-national and longitudinal metric invariance was supported.

Table 4.3. Model fit indices for the configural and metric measurement invariance models in 18 countries.

	χ^2 (df)	RMSEA [95% CI]	CFI	TLI	SRMR	ΔCFI
Configural	6786.520 (3294)	.047 [.046, .049]	.961	.951	.054	
Metric	7741.560 (3625)	.049 [.047, .050]	.954	.948	.099	-.007

Maximum Likelihood with Robust estimates of standard errors (MLR)

Cross-lagged panel model

After establishing metric invariance across groups and across 2 waves, a cross-lagged panel model based on all respondents ($N = 8587$) was estimated. This model showed a good model fit: $\chi^2(231) = 3530.171$, RMSEA = .041 [.040, .042], CFI = .965, TLI = .955, SRMR = .044. The standardised results for the cross-lagged panel model are presented in Table 4.4, and model is presented in Figure 4.1.

Table 4.4. Standardised regression estimates of the cross-lagged panel model.

	Estimate	SE	Z	<i>p</i>
Trust Community - t2				
Trust Community – t1	0.67	0.02	44.85	<.001
Trust Close – t1	0.06	0.02	3.54	<.001
SWL – t1	0.06	0.01	4.05	<.001
Gender	-0.01	0.01	-1.55	.121
Age	0.06	0.01	6.95	<.001
Social Status	0.03	0.01	2.51	.012
Trust Close – t2				
Trust Community – t1	0.10	0.02	6.14	<.001
Trust Close – t1	0.65	0.02	39.94	<.001
SWL – t1	0.06	0.01	4.11	<.001
Gender	0.01	0.01	1.12	.264
Age	0.03	0.01	3.66	<.001
Social Status	0.01	0.01	1.02	.308
SWL – t2				
Trust Community – t1	0.04	0.01	2.93	.003
Trust Close – t1	0.02	0.01	1.12	.263
SWL – t1	0.73	0.01	67.74	<.001
Gender	0.01	0.01	1.93	.054
Age	0.01	0.01	1.38	.167
Social Status	0.10	0.01	9.79	<.001

Regarding the association between demographics and endogenous variables, being older and having self-reported higher social status was associated with higher trust in community; being older was associated with higher trust in close relations; having higher social status was associated with higher satisfaction with life.

All autoregressive effects were positive and significant, showing all constructs were relatively stable across the six-month interval.

For satisfaction with life in Wave 2, only the cross-lagged effect of trust in community from Wave 1 was significant ($\beta = .04$, $S.E. = .01$, $p = .003$). Surprisingly, the effect of trust in close relationships was not ($\beta = .02$, $S.E. = .01$, $p = .263$). Therefore, different forms of trust vary in their longitudinal predictability for satisfaction with life. This is consistent with Wollebaek et al.'s (2012) research, where community trust is a better predictor of local problem solving than particularised and generalised trust. The lack of the

main effect of trust in close relations on well-being seems to contradict to results based on the cross-sectional data (e.g., Glanville & Story, 2018), where particularised trust was found to be associated with better self-rated health when tested side by side with generalised trust at a single moment in time.

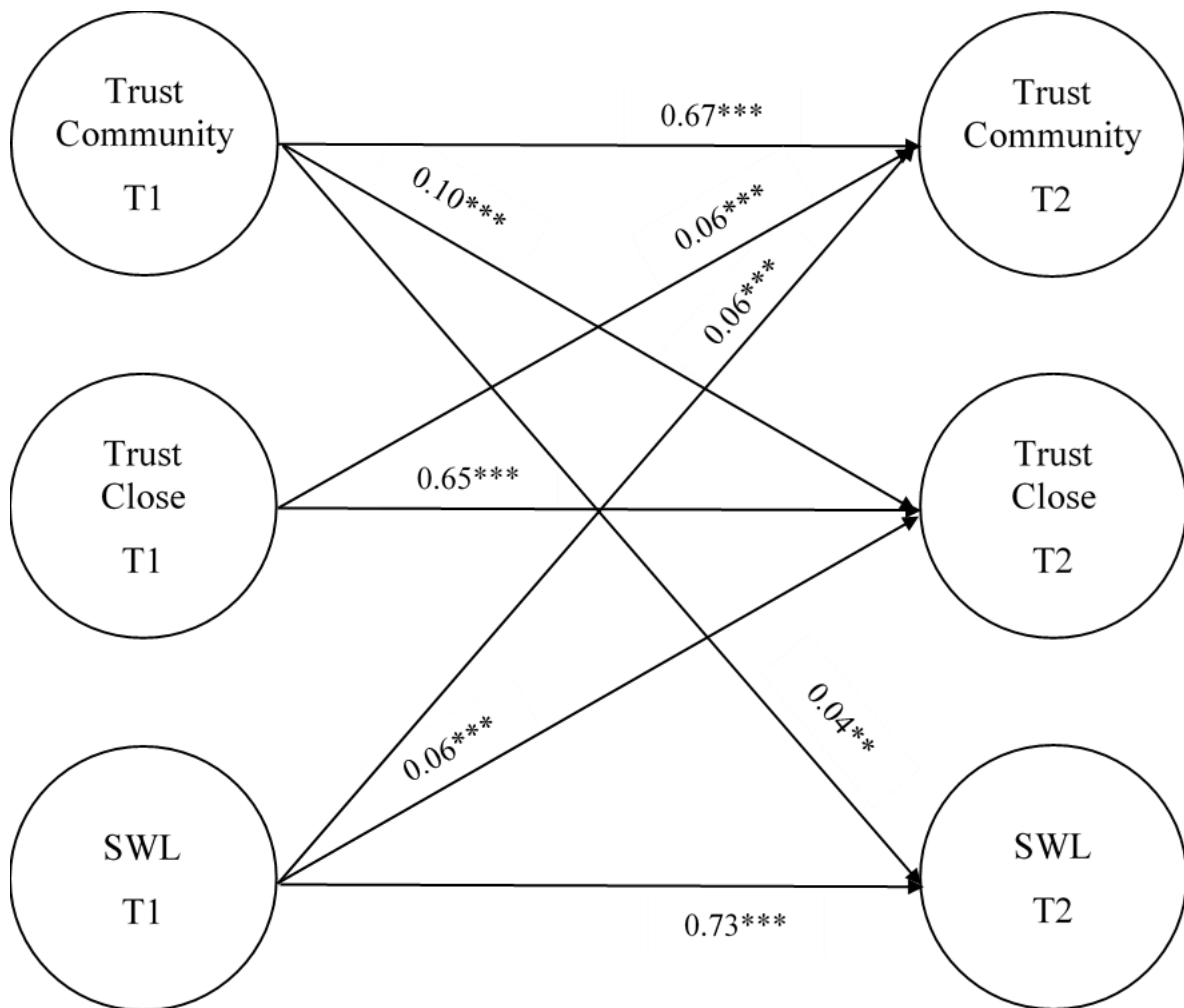


Figure 4.1. Cross-lagged panel model based on all respondents ($N = 8587$).

For trust in community in Wave 2, the cross-lagged effects of trust in close relations and satisfaction with life from Wave 1 were both significant ($\beta = .06$, $S.E. = .02$, $p < .001$; $\beta = .06$, $S.E. = .01$, $p = .001$; respectively). For trust in close relations in Wave 2, the cross-lagged effects of trust in community and satisfaction with life from Wave 1 were significant

($\beta = .10$, $S.E. = .02$, $p < .001$; $\beta = .06$, $S.E. = .01$, $p < .001$; respectively). Therefore, satisfaction with life was longitudinally associated with both forms of trust across cultures, which is in line with the reverse causality from well-being to trust found in Giordano and Lindström's (2016) research.

We also examined whether measurement invariance still held in the cross-lagged panel model. The baseline model showed acceptable model fit: $\chi^2(3294) = 6786.537$, $RMSEA = .047$ [.046, .049], $CFI = .961$, $TLI = .951$, $SRMR = .054$. The metric invariance model also showed acceptable model fit: $\chi^2(3625) = 7741.556$, $RMSEA = .049$ [.047, .050], $CFI = .954$, $TLI = .948$, $SRMR = .099$, and it did not deteriorate from the baseline model ($\Delta CFI = -.007$). Therefore, the measurement model was invariant across countries/societies and across two waves.

Discussion

Overall, the present study examined the bidirectional associations between trust and satisfaction with life by using a relatively diverse sample from 18 countries/societies ($N = 8587$). After establishing cross-national and longitudinal metric measurement invariance, cross-lagged panel analysis suggested a bidirectional link between these two constructs over the six-month interval. Satisfaction with life at time 1 had significant associations with both types of trust at time 2, however, only trust in community at time 1, had a significant association with satisfaction with life at time 2.

This study provides clarification on the directionality of the link between trust and well-being. When examining the relationship between trust and well-being outcomes, many researchers tended to impose causality on the cross-sectional findings based on the assumption that social capital is the antecedent/exogenous variable. However, this is not the most rigorous way to interpret the data as the reverse causal link is also plausible (e.g., Giordano and Lindström, 2016). Using a two-wave panel design, which is more suitable for

examining causal direction(s), this study suggested that the causality depends on the type of trust in question: while trust in community had a reciprocal relationship with satisfaction with life, trust in close relations could not longitudinally predict satisfaction with life. On the one hand, these findings confirmed the reciprocal link found in Giordano and Lindström's (2016), where a single-item generalised trust was used as the predictor of self-rated health. With a more comprehensive two-factor measure of social trust, this study further clarified that this reciprocal relationship is limited to trust in community but not trust in close relations. On the other hand, these findings also add to the discussion of the well-being benefit of particularised trust (Glanville & Story, 2018; Kim, 2018), in that trust in the intimate circle may be better considered as an outcome rather than an antecedent of well-being conditions.

There are at least two key aspects of understanding the relevance of trust in community versus trust in close relations in terms of its well-being benefit. Firstly, risk is a vital component of trust, which is more salient for trust in community than trust in close relations. When opening up to the risk involved in trust in community, one could be in a better situation to receive its well-being benefit through mobilising additional physical and symbolic resources in the community. By contrast, the risk of trust in close relations (i.e., particularised trust) is substantially minimised by the "encapsulated interest" (Hardin, 2001; see also Yamagishi & Yamagishi, 1994), so is the potential benefit because not much additional value could be capitalised. Therefore, whether or not to take a leap of faith in community might make a bigger difference longitudinally on well-being through the extra value embedded in broader connections.

Secondly, as Delhey (2010) suggested, there may not exist a universal recipe for happiness, so the relevance of different types of trust is likely to vary according to societal development. For example, it might not be a coincidence that Nordic countries are in the highest stock of generalised trust (e.g., Delhey & Newton, 2005; Delhey et al., 2011), and

they also have the highest satisfaction with life (e.g., Bjørnskov, 2003). It is expected that the beneficial effect of trust in community is particularly significant in these countries because the potential benefit of trust could be maximised when doing so is safeguarded by an effective rule of law and the contextual stock of trust is high so that one's gesture of trust is highly likely to be reciprocated (see also Calvo, Zheng, Kumar, Olgiati, & Berkman, 2012). In contrast, in countries where the basic rule of law has not been well established, trust in close relations may be realistically more important for one's well-being than trust in community, because any interaction with "outsiders" involves much more risk, which might be a liability to well-being (see Adjaye-Gbewonyo, Kawachi, Subramanian, & Avendano, 2018). The countries included in the present study are generally high in the Human Development Index (UNDP, 2019) and the Rule of Law Index (World Justice Project, 2019), and I suspect this may contribute to the salience of the well-being benefit of trust in community.

The present study also confirmed that the psychometric stability of the two-factor model of social trust. By merging the same data used in their original study (Liu et al., 2018) with new longitudinal data, but focusing on only the two factors that involve social trust, this study suggested the "community-close relations" structure is psychometrically stable over a six-month interval. Trust in close relations can roughly correspond to particularised trust in previous research (Freitag & Bauer, 2013; Newton & Zmerli, 2011), but does not include neighbours, which is different from close relations in that one does not necessarily know his/her neighbours in person. Compared to generalised trust, which ideally revolves trust in a broad and loose category of people that may have heterogeneous social backgrounds (e.g., people of another religion or nationality), trust in community may be narrower, but is definitely more concrete and inclusive, and therefore may serve as a more practical proxy of the concept of bridging social capital. This two-factor model of social trust, hence, is a robust

tool to examine different components and functions of social capital, particularly in cross-national studies.

There were some limitations of the present study. Firstly, I explored the association between trust and well-being at the individual level, leaving the potential contextual impact unexplored because of the limited country-level sample size ($N = 18$) and the range of their societal development (i.e., high human development with relatively good rule of law). Future research could benefit from testing how this individual-level association varies cross-nationally in accord with country-level characteristics in a broader range of countries. Low-HDI countries with less mature political infrastructure on the one hand and Nordic countries on the other hand worth particular attention so as to examine the universality of the well-being benefit of different trust types. Secondly, I included two important types of social trust in the present study, namely, trust in community and trust in close relations. Future research could integrate other form(s) of trust into the equation. For example, the inclusion of outgroup trust would allow a direct comparison on the effects of community/ingroup versus outgroup trust on well-being and thus dialogue with previous research (e.g., Glanville & Story, 2018; Kim, 2018).

Chapter 5: General discussion

Major findings

This thesis has focused on three important features of trust: dimensionality, interconnectedness, and cross-national comparability. To test the interconnectedness of trust, the first study examined how different types of trust were associated or disassociated with one another. Seven types of trust derived from the Global Trust Inventory were treated as nodes and their partial correlations as edges in network analysis based on samples from 11 Western democratic societies. Results showed that multiple types of trust formed two clusters around social and political trust, respectively. More importantly, there were cross-cluster associations between social and political trust – that is, the links between trust in neutral institutions (e.g., governing bodies and security institutions) on the one hand and trust in community on the other. These findings contribute to a conditionally interconnected view of trust that could accommodate contradictory results in previous research.

The other two studies were conducted to explore the dimensionality and the cross-national comparability of trust. The second study applied the Global Trust Inventory in four East Asian societies, where cultural values or political configurations are very different from Western societies. This study used all trust items from the Global Trust Inventory but focused on a small number of culturally homogenous societies. Through confirmatory factor analysis, it was found that China had a unique model of trust, featuring a top-down separation between trust in various apparatuses of the central government and subordinate implementing bodies for governance. The other three democratic East Asian societies shared another model of trust, which has a degree of similarity with both the China model and the Western model. Since a direct comparison on the level of trust was inappropriate between structurally different models, a practical Chi-square test of independence was used to compare the

proportion of different types of trustors in the four societies. Results confirmed that China had the highest proportion of high trustors compared to the other three East Asian societies.

The third study examined the longitudinal associations between two types of social trust and satisfaction with life across 18 countries and two waves with a six-month interval. Since different models of global trust were found in societies with different cultural values and political configurations, a direct comparison of the impact of global trust could not be made. This study used an alternative way to test its impact, where only a small number of trust items were included to get cross-nationally valid sub-measures across the maximum number of societies. By doing so, metric measurement invariance was established on the sub-measures of the Global Trust Inventory across 18 countries and across two time-points. Through the use of cross-lagged panel analysis, a longitudinally bidirectional link was found between trust in community and life satisfaction, and life satisfaction was able to predict trust in close relations but not vice versa.

Extensive discussions

Interconnectedness

The first study contributed to the literature on the interconnectedness of trust. There are two major views around the interconnectedness of social and political trust. On the one hand, according to Newton and Zmerli (2011), social and political trust are two constructs with potentially full interconnectedness, as they put it, “both forms of social trust appear to be necessary, but not sufficient conditions for political trust” (p. 169). On the other hand, according to Uslaner (2002; 2018), social and political trust are two constructs with no theoretical interconnection, because social trust is believed to be morally based, whereas political trust is rationally based.

Built on Liu et al.’s (2018) work, the use of network analysis on a multidimensional measure of trust has the potential to reconcile contradictory theorisations and empirical

findings in terms of whether or not social and political trust are connected in the context of democratic societies. Compared to the relatively simplistic treatment of social and political trust as two unidimensional concepts, the Global Trust Inventory provides a detailed categorisation on trust in the context of democratic societies, which allows a more accurate examination of the potential avenues for trust flow between institutionalised power and civil society. A network analysis based on the multidimensional measure of trust suggested that social and political trust were neither entirely interconnected nor completely disconnected. Instead, there is conditional interconnectedness between them.

The current examination of interconnectedness provided an individual-level account of how and what aspects of political trust is associated with social trust in the context of democratic societies. Political theorists such as Levi and Stoker (2000) emphasised the role of political trust in general, without further specifying the distinctive dimensions of it. Rothstein and Stolle (2008) propose a meaningful distinction between partisan institutions and neutral institutions, but empirically they mainly focused on aggregate-level analysis. The first study of the thesis examined the individual-level interconnectedness of trust based on a more specific categorisation. Given its cross-sectional nature, this study cannot speak to directionality in and of itself. But when connecting with previous research, where a unidimensional political trust was longitudinally associated with a unidimensional social trust (Sønderskov & Dinesen, 2016), it is speculated that the associations might be predominantly flowing from neutral institutions to trust in community. If trust toward non-familiar others (e.g., fellow-citizens whom one may not know personally) is a secret ingredient for the prosperity of modern societies, as suggested by Fukuyama (1995b), this norm of trust seems to be associated with, if not determined by, the quality of neutral institutions. Therefore, neutral institutions can provide incentives for citizens to trust one another if they are

perceived to be effectively and impartially implementing the law. This perception might encourage social trust by reducing the risk involved in other types of trust relationships.

In contrast, trust in representative government had little association with social trust. How much one trusts the representative government is believed to have a strong partisan component (e.g., Citrin, 1974; Hetherington & Rudolph, 2015). For example, democratic and republican voters in the US have considerably different levels of trust toward the president depending on whether the president in power represents the voter's political view (Pew Research Center, 2019). Trusting a president as well as partisan institutions probably cannot provide the necessary incentives equally for all citizens, as it does not primarily reflect the governmental institutions' ability to reduce the risk of trusting another person. Even if trusting in a particular politician can somehow lead to some forms of social trust, this influence is probably indirect (as it might reflect, to some extent, the quality of governance) and limited in certain scope (increase trust toward people who share similar political views but at the same time evoke hostility against those who have different political views).

Some researchers believe an overly high level of trust in one's intimate circle leads to familism or family centrism, which may impede trust, cooperation and tolerance in wider society (Banfield, 1958; Fukuyama, 1995b). As Yamagishi and Yamagishi (1994) put it, "commitment (to insider) may create a vicious circle of distrust of outsider" (p. 137). However, the results of the first study suggested the opposite pattern, where a positive link was found between trust in community and trust in close relations. It is speculated that close relations are where one develops his/her default sense of trust, and then generalised to other relationships (Bahry, Kosolapov, Kozyreva, & Wilson, 2005; Freitag & Traunmüller, 2009; Glanville & Paxton, 2007; Park, 2004). This form of trust is primarily based on personal knowledge of and emotional connection with familiar others. It is difficult to conceive that this form of trust can be challenged by most institutional level changes in the context of

relatively stable democratic societies. Exceptions might exist. For example, dramatically different political views between family members might destroy trust within close relations, which might be particularly likely to happen in less mature democracies. However, it is believed these are rare cases rather than general patterns. Therefore, I concur with Newton and Zmerli (2011) on the conditionality of trust flow, in that trust in close relations is believed to be a loose antecedent, rather than the consequence, of other types of trust.

Trust in community, by contrast, is under influences from two directions. On the one hand, a person who cultivates a habit of trust, optimism, and control within a familiar circle might be also more likely to trust a random fellow citizen, which is in line with the moralistic view of trust. On the other hand, neutral institutions can provide contextual constraints (e.g., punishing cheaters) that encourage trust towards other citizens in communities. This is in line with the rationalistic view, in that the potential risk involved in trusting relationships is substantially reduced by the rule of law. As it receives influences from both directions, trust in community might serve as a bridge that connects micro-level trust in familiar others to macro-level trust in institutions in the context of democratic societies.

Despite the interconnectedness between certain types of social and political trust, subtypes of social trust formed a cluster and subtypes of political trust formed another. This contradicts the extreme view, although this is quite implicit and much less popular in social science, where trust toward all types of relationships could be simply reduced to individual dispositions altogether, based on the heritable component is shared by both social and political trust (e.g., Ojeda, 2016).

It is worth noticing that the discussion around the interconnectedness of trust has been largely limited in the democratic societies, where the link between social and political trust has been theorised to be critical for political functioning (e.g., Putnam, 1993, 2000). It is a less theorised topic whether and how social and political trust is interlinked in authoritarian

states (Rivetti, & Cavatorta, 2017). It is speculated that social and political trust may still be interconnected in authoritarian states, but probably with different underlying mechanisms. The bottom-up link from social trust to political trust may be much weaker or even negative in authoritarian states because civic associations are less valued and more strictly controlled. On the other hand, the top-down link from political trust to social trust may be more salient, in that governmental institutions with concentrated power might be more central to the maintenance of trust among citizens, which is in sharp contrast to the relatively marginal role of representative government in the democratic system.

Overall, social and political trust may be better understood as two distinct concepts with conditional interconnectedness in the context of democratic societies.

Dimensionality

The second study added to the literature on a culturally and politically contingent view of the dimensionality of trust. The Global Trust Inventory as a whole is expected to provide a comprehensive reflection on the social representation of trust embedded in societal reality. An invariant model was found in relatively homogeneous regions or societies (Liu et al., 2018). However, different models of trust should be expected when sufficiently heterogeneous societies are included. In the most extreme instance studied, China is a Communist state where the central government has the authority to give orders to lower-level implementing institutions (e.g., local government), whereas the US is a democratic state where different branches of government are separated from one another by law and serve as checks and balances for one another's power and authority. People would be either naïve or disconnected from these social realities if they had the same structure of trust for the US and China.

One signal finding of this thesis is the identification of a China model of the Global Trust Inventory. There is a growing interest in understanding the "China model" in general,

as it has generated unprecedented economic growth over the past several decades while maintaining an authoritarian political arrangement. Trust seems to be a useful lens to understand the social and political dynamics in China from an emic viewpoint, as macro-level contextual constraints seem to leave a relatively unique mark on how people navigate their trust relationships in China. Specifically, respondents from Mainland China showed a structurally different way of placing their trust in institutional power, characterised by a hierarchical separation of the central government on the top and implementing bodies on the bottom. This is fundamentally different from the Western model, where trust toward political institutions was grouped into three different groups of institutions based on functional differences rather than power distribution (central government, local government, and security, see Liu et al., 2018).

Specifically, this unique trust pattern can be used as a base to understand the internal logic of cooperation and political functioning in China. Economically, a powerful and highly trusted central government could efficiently facilitate trust and cooperation among fellow citizens compared to a polarised partisan-based government that frequently divides interest groups in young democracies with a similar level of economic prosperity. The concerning level of political polarization frequently observed in young democracies (as well as the US today) is largely absent in China. Instead, the central government is portrayed by the state-controlled media as a unifying force that brings together all citizens regardless of their ethnicity and social status. Politically, this high political trust toward the central government leaves citizens more dependent on the authority (Shockley & Shepherd, 2016). This might reduce willingness to engage in direct political participation calling the government to account, which is an undesirable consequence from the viewpoint of bottom-up participatory democracy. As Mishler and Rose (1997) put it, “excessive (political) trust cultivates political apathy and encourages a loss of citizen vigilance and control of government, both of which

undermine democracy” (p. 419). However, this may be the exact desired outcome for a centrally controlled non-democracy. Future research might use experimental designs to empirically test how the salience of the central government might facilitate or hinder various aspects of cooperative behaviours and political participation in China.

This China model of the Global Trust Inventory is not likely to be found or replicated in other countries due to its unique combination of the cultural traditions of Confucianism and its current authoritarian political system. One interesting finding in the China model is that trust toward central government is almost as high as trust in close relations. This is in dramatic contrast with the Western model (Liu et al., 2018), where trust in representative government is much lower than trust in close relations. This unusual pattern of trust observed in China has to be understood as part of the societal context. Culturally speaking, high trust in central government might be derived from the benevolent view of political authority that is embedded in Confucian cultural values and political philosophy (e.g., Liu et al., 2015; Shi, 2014). Under this cultural script, leaders are not only the symbolic head of governmental institutions, but also considered as the head of a big family in public narratives (e.g., Shi, 2001; Fong, 2004). Therefore, the evaluation of political leaders and authority might be based on a more benevolent frame of reference (see Shi, 2001), compared to a rather critical frame of reference in evaluating political power according to the Lockean traditions.

Governmental control might be one of the key factors that reinforces this high political trust, particularly trust towards the central government. Many researchers have focused on the impact of direct and coercive government control, where speculations were made that the high trust in China might be due to fear of government surveillance and repercussions for expressing negative views (e.g., Newton, 2001; Uslander, 2002). Empirical researchers examined this issue with various methods and results have been mixed. For example, by using survey data, Shi (2001) found a weak correlation between political fear

and political trust in China ($r = .04-.14$); Yang and Tang (2010) found that the presence of another person during an interview, as a proxy of political fear, had a positive but weak association with political trust in China; Stockmann, Esarey, and Zhang (2018) argued that Chinese citizens have genuinely positive emotions toward the central government, based on experimental evidence that priming of the central government led to a positive evaluation of a follow-up advertisement.

Others focused on the indirect and less explicit way of political control, such as via media control. For example, Yang, Tang, Zhou, & Huhe (2014) found that consumption of political news was positively associated with trust in high-profile institutions in China (including the national government), but negatively associated with trust in low-profile institutions (including local government). Similarly, Wu and Wilkes (2018b) found that political news consumption, which is controlled by the central government, was associated with the prevalence of so-called hierarchical trustor in China (defined as people who place higher trust in central government than local government), whereas internet exposure, which is believed to be less controlled and with wider availability of alternative information, had the opposite effect (see also Zhang & Guo, 2019).

The hybrid East Asian model of trust seems to indicate that the model of trust is formed under the combined impacts of enduring cultural values and relatively recent political democratisation. Several East Asian societies adopted Western-style democratic political structures in the mid to late 20th century. However, it was not entirely clear whether this structural change would lead to changes in civic political culture in these societies, that are rooted in Confucianism influences. Fukuyama (1995a) provided an optimistic account, in claiming that there is no fundamental incompatibility between democracy and cultural aspects of Confucianism. But latter empirical evidence seems to bring some doubts. For example, decades after their political democratisation, East Asian societies have a narrower

radius of trust compared to Western societies, which is associated with less desirable civic attitudes (Delhey et al., 2011). Through comparison of the dimensionality of trust, this thesis suggested that East Asian democratic societies were not entirely the same as Western democracies in terms of their overall civic structure. This seems to be in line with Inglehart and Baker's (2000, 2009) account of socioeconomic development, where cultural values would change after political democratisation, but in a hybrid manner where some heritage culture endures.

The two social trust factors in the Global Trust Inventory are identified relatively consistently across societies, which provides further support for the multidimensionality of social trust. These two factors seem to meaningfully capture the relatively “thick” and bonding form of trust within a small circle of people who have intimate familiarity, and the relatively “thin” and bridging form of trust with a broader range of people, with whom one shares a certain identity but not necessarily familiar. This distinction is, either explicitly or implicitly, at the core of many comprehensive theorisations of social capital (e.g., Gittell & Vidal, 1998; Putnam, 2000; Szreter & Woolcock, 2004). These two types of social trust are believed to be proxies of functionally different forms of social capital: trust in close relations is crucial for personal life as it helps one in “getting by”, whereas trust in community is crucial for the mobilisation of additional information and resource that helps in “getting ahead” (Putnam, 2000; see also Glanville & Story, 2018).

The two social trust factors have both associations and distinctions with the unidimensional measure of generalised trust. Theoretically, it is expected that trust in community is more closely linked to the idea of a generalised form of trust toward non-specific others, as trust in community includes trustees whom one does not have intimate familiarity with. Empirically, the “most people” question did have a stronger correlation with trust in community than trust in close relations (see additional analyses in the appendix).

However, compared to the unidimensional treatment of social trust that often exclusively focuses on generalised trust, the multidimensional view of social trust provides a more comprehensive, although by no means exhaustive, picture of how people manage dependencies on various enduring and meaningful social relationships in modern society. It has the advantage of better acknowledging the relational nature of trust, in that the target of trust is specifically directed and therefore it can more precisely measure trust in real-life situations.

Overall, combining empirical findings from different parts of the world, including Western democracies (e.g., Liu et al., 2018; Schaap & Scheepers, 2014), Post-communist states (e.g., Breustedt, 2018; Mishler & Rose, 1997), and East Asian societies in the current study, it seems to be quite safe to conclude that the factorial structure of trust, particularly political trust, is not universal. A set of macro-level contextual constraints, such as cultural values, political institutions, and historical trajectories, would influence how the specific model of trust is manifested in a specific context. Therefore, a more delicate cross-national comparison is required with the consideration of qualitatively different structures of trust.

Cross-national comparability

As the structure of global trust inventory, particularly political trust subfactors, bear considerable cross-national variations, it is important to consider these qualitative differences when making cross-national comparisons, which has been largely dismissed previously. For example, large polling institutions often construct international trust rankings based on simplistic mean comparisons of trust (e.g., Edelman Trust Barometer). As it does not seem to fit into the Western-oriented theoretical framework that China and other non-democratic societies have a high level of trust, they have been at times treated as an outlier and therefore have been excluded from cross-national analysis (e.g., Bjørnskov, 2007; Uslander, 2002). Such overlooking of important structural differences might make cross-national comparisons of

trust empirically inaccurate and theoretically biased, and therefore less likely to generalise to the broader world (Henrich, Heine, & Norenzayan, 2010). It is recommended to take structural differences into account to make sure we are not comparing apples with oranges (Davidov, 2014).

Technically, this thesis adds to the discussion of how to deal with configural measurement noninvariance across heterogeneous societies. Among the three levels of invariance tests, more suggestions are focusing on what to do when metric and scalar invariance is not fully achieved. For example, partial measurement invariance has been widely used, in which the measure is largely invariant in terms of the structure, metric units, and even intercepts, but occasionally varies on a small proportion of indicators (Byrne, Shavelson, & Muthén, 1989). Also, compared to the more strict multigroup CFA approach, new methods have been introduced to get a more liberal solution for measurement invariance across groups (e.g., ESEM, Bayesian modelling, and alignment; see Boer et al., 2018; Davidov et al., 2014). However, what is relatively underexplored is how to make cross-national comparisons when a single structural model, which is considered the prerequisite of further tests of invariance (Vandenberg & Lance, 2000), cannot be identified across heterogeneous societies (i.e., failure to achieve configural invariance).

This thesis explored two practical ways of making cross-national comparisons when configural invariance was theoretically not expected and empirically not supported. The first approach is to establish separate models within homogeneous societies and make a practical and approximate comparison based on different models. For example, in study 2, three democratic East Asian societies shared the same model of trust while China had a different model. Given the fact that a single invariant model of global trust was still not achieved within these societies, a Chi-Square test of independence was used to test the distributions of trust profiles (e.g., “high trustors”, “moderate-to-high trustors”, “moderate-to-low trustors”,

and “low trustors”) across societies. Shifting away from a more rigorous but psychometrically demanding method that compares mean levels of trust, the use of a nonparametric Chi-square test of independence could provide a practical but less accurate solution for cross-national comparisons with structurally different models. This approach can be applied in future research to compare the proportion of different types of trustors in a broader range of societies (e.g., East versus West).

The validity of this approximate approach requires future examination. In the context of East Asian societies, this approximate approach provided results consistent with the “most people” question (e.g., Bjørnskov, 2007), in that Mainland China had the highest proportion of high trustors and Taiwan had the lowest. But it is unclear whether trust profiles have better predictability on trusting behaviours compared to the “most people” question. The “most people” question has the advantage of simplicity, probably at the expense of missing important cross-national differences in terms of who is considered “most people”. In comparison, the Global Trust Inventory is a more comprehensive measure, which allows both the detection of cultural and political nuances and practical cross-cultural comparisons. It is speculated that trust in community should be the strongest predictor of the perception that most people can be trusted, although the strength of association might vary across cultures as suggested by Delhey et al. (2011).

The second approach (Study 3) is to use sub-measures of global trust that are relatively invariant across East and West to make cross-national comparisons in a wider range of societies. This approach has been widely used in cross-cultural research, which is based on the possibility that different components of a complex measure might have different levels of cross-national invariability. For example, Davidov (2009) found that patriotism had better cross-cultural psychometric properties than the closely related concept of nationalism. Similarly, this thesis selected the two social trust factors that were invariant across Eastern

Asian societies and Western societies, and therefore was able to compare the impacts of two distinct forms of social trust on well-being in a broader range of societies.

Overall, the concept of global trust has different meanings across heterogeneous societies, reflecting in structurally different models. Given that, cross-national comparisons on trust can be made either by using an approximate comparison based on the Chi-square test of independence or by selecting a subset of the measure with better measurement properties.

Trust and distrust

There is no easy answer to what is the optimal level of trust toward governmental institutions in a democracy, but a multidimensional treatment of political trust would probably bring us closer to the answer. Trust in representative government is a combination of approval of incumbent elected office-holders (i.e., the president or the prime minister) and confidence in executive regime institutions (i.e., national and local government) in Norris' model of political support (2017), and more "political" branches of government in Warren's model of trust in government (2017). One of the most salient features of this aspect of political trust is the partisan component. For example, the level of trust placed on the incumbent differ considerably between democrats and republicans in the US: both of them tend to have more trust in the Presidency when the president in power is from their party (Pew Research Center, 2019). However, the fluctuation of trust or even distrust toward the representative government has important functions in a two-party or multiparty political system. For example, distrust toward an incumbent motivates citizens with discontent to vote for the opposition party (Hooghe & Dassonneville, 2018), which is considered as a "safety valve" for the long-term stability of democracy.

Trust in governing bodies and security institutions is roughly equivalent to the confidence in less-partisan regime institutions in Norris' model (2017) and less "political" branches of government in Warren's model (2017). They are conceptually distinct from trust

in representative government, in that they are less influenced by the partisanship and short-term performance of a particular elected incumbent. Fair and effective regime institutions are believed to serve as “the basic pillars of society” (Norris, 2017) through facilitating cooperation in economic transactions and encouraging public engagement in public issues. As trust toward governing bodies and security institutions are more likely to affect trust in community as found in Study 2, the loss of trust toward these institutions is likely to be much more concerning than the regular fluctuation of trust in representative government.

The quality of political institutions, together with other macro-level factors, also help to understand the potential implications of social trust in different contexts. Some researchers praise the importance of generalised trust over particularised trust as “the purest form of trust” (Gouldner, 1960) because it does not seem to be based on pre-existing knowledge of a specific trustee; therefore, it is more likely to lead to cooperation in modern society (see also Yamagishi & Yamagishi, 1994; Granovetter, 1973). However, although generalised trust may not rely on direct knowledge about the specific trustee at the individual level, it is associated with macro-level factors. For example, empirical evidence showed that the proportion of trustors (i.e., people trust “most people”) was higher in societies characterised by good government, economic prosperity, Protestant religious tradition, and high ethnical/economical homogeneity (Bjørnskov, 2007; Delhey & Newton, 2005). Therefore, trusting generalised others may still be rational to some extent if macro-level structures are considered.

Among the two social trust factors in the GTI, trust in community is more general: such trust involves a higher level of risk, as the trustor does not necessarily know the trustees in person. There is probably no optimal level of trust in community that is universally applicable to all contexts. Instead, one is more likely to manage these trust relationships at an appropriate level if macro-level factors are taken into consideration, either in the form of

informal or institutionalised sanction in a given place and time (for a detailed discussion on the topic of gene-culture co-evolution of cooperation, see Richerson et al., 2016). By contrast, trust in close relations is more specific: the trustees are close others one has extensive and enduring interactions with. Therefore, a higher level of trust in close relations is more universal.

In summary, the multidimensionality of trust may contribute to the understanding of the paradoxical balance between trust and distrust toward governmental institutions in democracy, as well as the optimal level of trust toward different social relations. On the one hand, a citizen should ideally neither have “uncritical trust” nor “generalised distrust” toward government (Warren, 2017, p.37). Instead, a high level of trust in neutral and order institutions and a vigilant level of distrust toward partisan and representative government might be more desirable for the functioning of democracy. On the other hand, the ideal level of trust in community is probably contingent on contextual factors, while a high level of trust toward close relations seems to be more universally applicable and beneficial.

Revisiting the conceptualisation of trust

As elaborated in the introduction, trust is a complex construct. Although rationalistic and moralistic views are at times depicted as incompatible in the study of trust, efforts have been made to integrate them in the same theoretical framework (e.g., Mayer, Davis, & Schoorman, 1995). Following this integrated view of trust, it is argued that two aspects can coexist and can be observed through proper analytical procedures.

This thesis uses a multiple-item battery of trust, namely the Global Trust Inventory, as a tool to measure trust in a set of specific and meaningful relationships. Compared to the other frequently used research paradigms in the research of trust and trusting behaviours, such as experimental research or survey research that uses a vague survey item to measure generalised trust, perhaps the most salient feature of the survey research with specific trustees

is that it takes into account more real-life contextual information. It is supposed to measure trust in long-term *relationships* with meaningful others (e.g., from family and friends to banks and government), rather than trust in short-term *interaction(s)* with strangers or partners in an arbitrary task. Trust evaluations are purposefully directed to specific others, which involves potential risks and moral obligations embedded in real-life relationships. In other words, it is not aiming to measure abstract and decontextualised individual differences, but rather dependencies that a person decides to give to the trustee with the consideration of real-life constraints.

In contrast, other research paradigms primarily emphasise either the moralistic aspect or the rationalistic aspect of trust. On the one hand, researchers using the “most people” question often emphasise the moral aspect of trust over the rational aspect (e.g., Uslaner, 2002). This is probably because a trust evaluation becomes less of a relational construct when the trustee is vaguely targeted as “most people”, rather than a specific and meaningful trustee. The trustor’s disposition, in this case, one’s moralistic belief on human nature, plays a more important role in determining the level of trust when the trustee is vague. At the same time, the rational aspect is not salient, as there is no easily foreseeable immediate gain or loss at the individual level of whether or not to trust “most people”. On the other hand, experimental research, often favoured by behavioural economists, social and evolutionary psychologists, primarily emphasises the rationalistic aspects of trust. Trust is relational in this approach as there is a trustee, but the moral aspect is made insignificant by assigning participants into a short-term interaction with a stranger in a rather arbitrary task, and the rational (or instrumental) aspect is made salient by explicit encouraging participants to maximise their benefit from the game (in the form of actual rewards or symbolic tokens).

Although moralistic and rationalistic aspects can coexist in survey research with specific trustees, the choice of analytical procedures can lead to the salience of a particular

aspect. When using the variable-centred approach to examine the dimensionality of trust, the rationalistic aspect is salient in that individuals would instrumentally place varying levels of trust to different trustees. For example, the highest level of trust has been consistently placed on close relations, where the risk of being exploited is minimalised by abundant information and encapsulated interests. By contrast, when using the person-centred approach (i.e., latent profile analysis), the moralistic aspect is salient in that some people (i.e., high trustors) do tend to trust more than others across all relationships. Therefore, these two aspects of trust may be coexisting like multilayered codes hidden in parchment, and they are only visible through the right lenses.

Future research directions

It is a popular belief that trust has been in decline in major democracies in recent decades (e.g., Pew Research Center, 2019), which is often considered a crisis for democracy. However, this claim is frequently based on unidimensional measures of social and political trust. This is problematic because there is no optimal level of trust universally applicable to different subcomponents/types of trust. With recent developments in measures of trust, including the Global Trust Inventory that is used in this thesis, it has become increasingly clear that trust is a multidimensional concept with distinct but interconnected subcomponents. Future research can further inspect stability and/or change of different types of trust and therefore make a more accurate evaluation of its implications for the functioning of democracy.

The stability of the hierarchical structure of trust in China is an interesting question worth future scrutiny. On the one hand, it is expected that critical citizens would emerge with socio-economic development (Norris, 1999), who would shift to liberal democratic values and prioritise political liberty when evaluating political performance. From this viewpoint, the high level of trust toward authoritarian government is believed to be hard to sustain (e.g.,

Wang, 2005, 2016). On the other hand, political trust in authoritarian settings may have a regime-strengthening function (Rivetti & Cavatorta, 2017). Specifically, the structural separation of central and local government in China, in contrast to power rotations between two or more political parties in democracy, may also serve as a safety valve for regime stability. Specifically, political trust toward the central government is consistently high, while trust toward local government fluctuates as public discontent is largely directed towards this level (Cai, 2008; Huang, 2018). Moreover, China's political system has also been evolving to include some forms of deliberation, which may further contribute to the stability of its political system (He & Warren, 2011). From this viewpoint, the high political trust might be sustainable in the near future. Future research would benefit from longitudinal design with longer intervals between measurement points to test the structural stability of trust.

The social trust factors in the Global Trust Inventory allow a refined examination of the radius of trust problem – that is, how the “most people” question is associated with different types of social trust. Although the “most people” question may have questionable cross-cultural psychometric properties, it can provide important insight into how people from different cultures perceive the default scope of their moral community when linked to more specifically worded trust measures. Delhey et al. (2011) addressed this question by regressing two social trust factors on the binary answer to the “most people” question. However, group-based or community-based trust is missing in their model. Theoretically, human beings tend to see themselves as group members (Ellemers, 2012; Tajfel & Turner, 1979), and a shared identity, rather than a different one, is believed to facilitate the trust-building process (Freitag & Bauer, 2013; Wollebaek, Lundåsen, & Trägårdh, 2012). Empirically, when answering the “most people” question, few people reported that they thought of unknown outgroup members, whereas a considerable proportion of respondents thought of close relations (e.g., family, friends) and people in the same community (e.g., colleagues, neighbours, people from

my church; Sturgis & Smith, 2010). Therefore, it is believed that the two-factor model of social trust in the Global Trust Inventory, which covers both close relations and important ingroup-based communities, is an appropriate tool that can augment the literature on the radius of trust.

Limitations

This thesis analysed self-report data from a multinational online survey. The online survey is believed to be a relatively inexpensive and sufficiently reliable method (Bosnjak, Das, & Lynn, 2016; Callegaro et al., 2014). However, some cautions should be made on the varying degree of access and usage of the internet across countries. According to the International Telecommunication Union (2019), the world average of internet penetration rate in the year of 2019 is 53%, but there is a considerable digital divide between the developed world (86%) and the developing world (47%). Among the countries included in this thesis, developed states, such as South Korea, United Kingdom, and New Zealand, have internet usage rates as high as 90%, while developing states, such as China, Indonesia, and Ukraine, only have around 60% internet users. The current online samples rely on stratified quota sampling techniques from a massive pool curated by Nielsen across 22 countries, and they closely match the demographics based on the official census (Gil de Zúñiga & Liu, 2017), therefore some of the limitations around the coverage of off-line population are minimised.

The trust measure used here is open to future amendments. Compared to the relatively comprehensive sub-measures of political trust that can capture diverse structures, sub-measures of social trust might need further revisions. For example, the two social trust factors might be more equipped to address local/national issues in the modern world, but less so in predicting global problem solving (e.g., global warming, the refugee crisis, and international inequality). This is because trust within familiar networks (i.e., close relations) or within groups (i.e., community) might concur with parochialism, which could reduce intergroup

cooperation (De Dreu, Greer, Van Kleef, Shalvi, & Handgraaf, 2011). What might be lacking in the current measure is trust in an even broader circle and demographically heterogeneous groups, which has been operationalised as outgroup trust in previous research (see Delhey & Welzel, 2012; Welzel & Delhey, 2015). This form of trust might be needed to facilitate cooperation in an international scope that transcends traditional group boundaries around religiosity, ethnicity, and nationality (Chiu, Gries, Torelli, & Cheng, 2011; Liu & Macdonald, 2016).

Closing words

To sum up, this thesis presents three survey studies on the issue of trust, which may contribute to the debate around dimensionality, interconnectedness, and cross-national comparability of trust. By applying the Global Trust Inventory through an online survey in a number of societies, this thesis may add to an integrated view of trust that incorporates both moralistic and rationalistic aspects. Specifically, the dimensionality and the interconnectedness of trust are expected to be sufficiently similar in Western democratic societies, but different structures and ways of making connections exist when more heterogeneous societies, such as China and other East Asian societies, are included. It is recommended that global comparisons on the level of trust as well as its implications should be made with considerations of macro-level contextual constraints in terms of cultural values and political arrangements. Moreover, although trust has been frequently portrayed as a good thing, there is probably no single form of trust can bring all of its benefits in different contexts and forms altogether. A balanced dose of multiple forms of trust may be what is needed in this complex world.

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Appendix

Supplementary materials for Study 1

1. Overall networks

1.1 Network centrality

Strength centrality, closeness centrality, and betweenness centrality are presented in Figure S1. All three centrality indices showed similar patterns in that trust in governing bodies and trust in community had relatively high centrality. The centrality index for trust in security institutions showed some variability, where it had the highest closeness centrality, moderately high strength centrality, but low in between centrality. As betweenness centrality assesses “the number of times a specific node lies between two other nodes on their shortest connecting edge” (Epskamp, Borsboom, & Fried, 2018, p. 339), this may suggest trust in security institutions is not as central in connecting two random trust types as trust in governing bodies, which is the alternative neutral and order political institution.

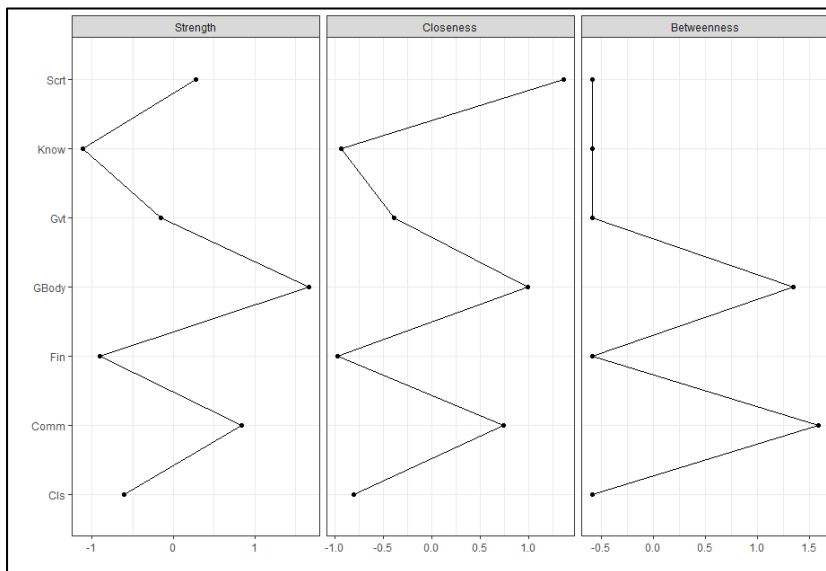


Figure S1. Centrality indices of the overall network.

1.2 Network stability

Network stability was tested by using R-package *bootnet* (Epskamp, Borsboom, & Fried, 2018). The nonparametric bootstrap was used to estimate the 95% confidence intervals of the edge weights, and the correlation-stability for strength centrality based on the case-dropping subset bootstrap was used to evaluate the stability (a value above 0.25 is considered moderate stability, while 0.5 is considered strong stability, see Epskamp et al., 2017).

Results suggested that the 95% confidence intervals were relatively small (see Figure S2), and the correlation-stability coefficient for strength centrality was 0.75, which exceeded the recommended threshold of 0.50 for a strong stability. This suggested the findings are accurate and stable.

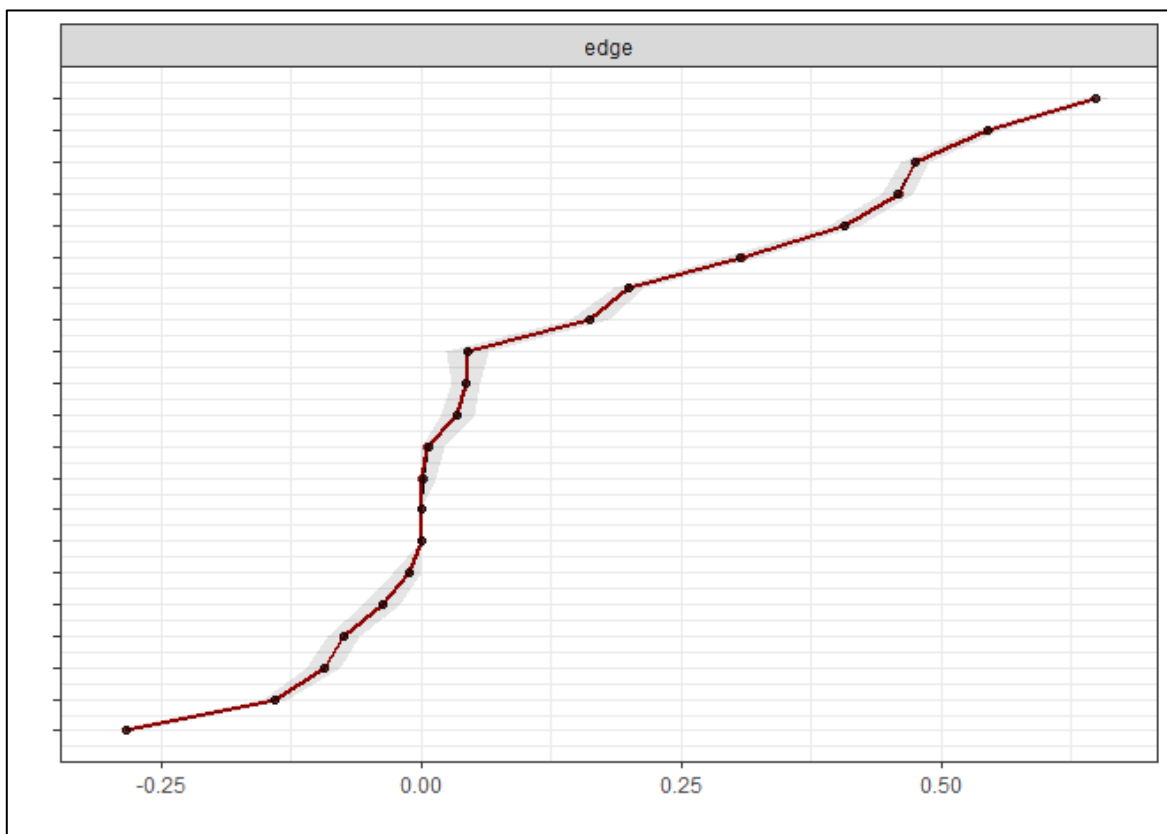


Figure S2. Bootstrapped confidence intervals of all edge weights.

2. FGL network analysis

2.1 FGL networks for each of the 11 countries

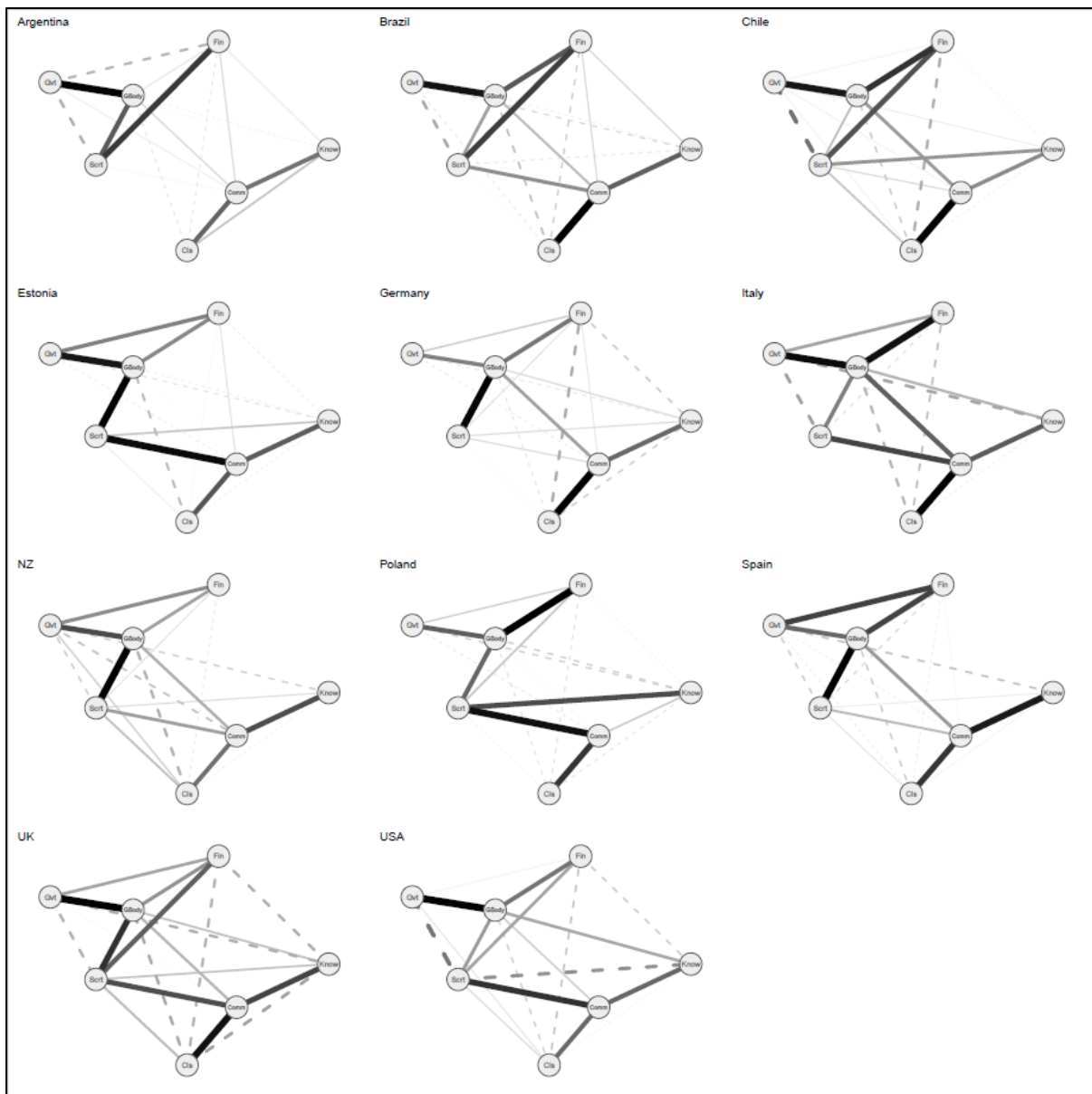


Figure S3. FGL networks for each of the 11 countries. A thicker edge indicates a stronger relationship between two nodes. A solid edge indicates a positive relationship while a dashed one indicates a negative relationship. Gvt = trust in representative government, GBody = trust in governing bodies, Scrt = trust in security institutions, Fin = trust in financial institutions, Know = trust in knowledge producers, Comm = trust in community, Cls = trust in close relations.

2.2 Centrality index of the FGL model

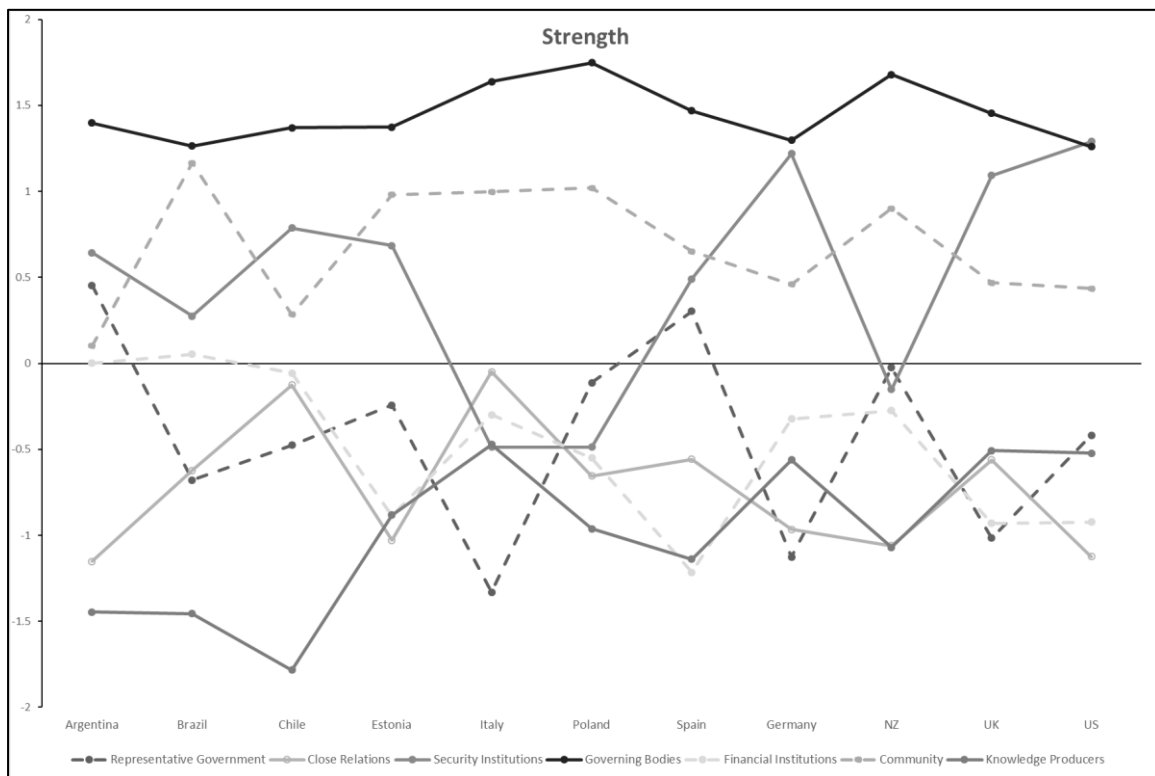


Figure S4. Strength centrality of FGL networks.

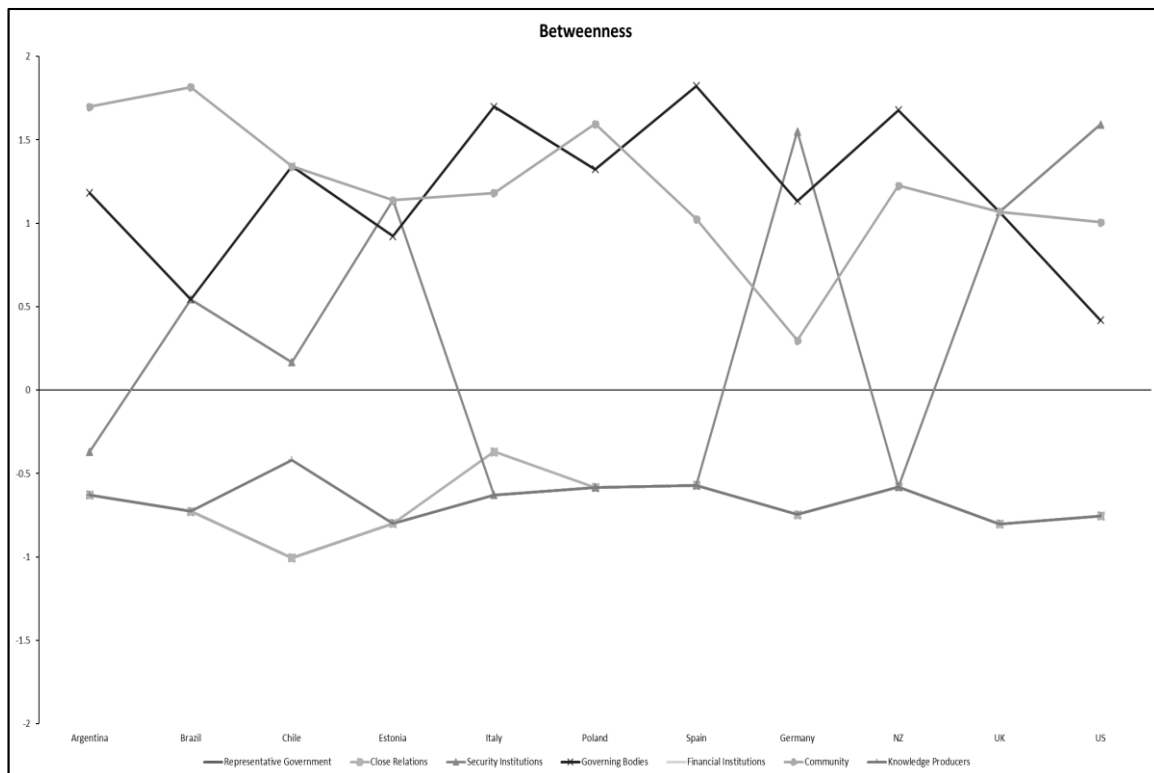


Figure S5. Betweenness centrality of FGL networks.

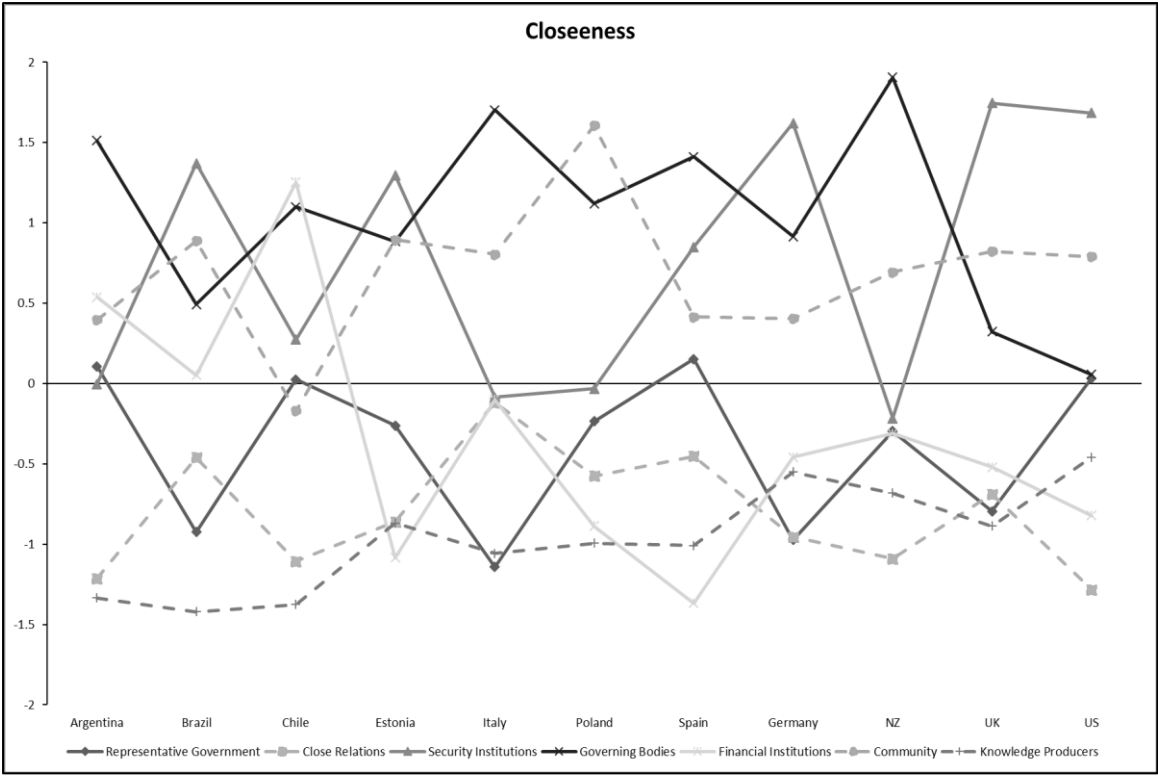


Figure S6. Closeness centrality of FGL networks.

3. Alternative network analysis based on the mean scores

To ensure the robustness of our findings, an alternative network was estimated using the mean scores instead of the factor scores on the pooled overall sample. Results (Figure S7) showed a very similar network, with different types of trust grouped into two clusters centring around social and political trust, respectively, and cross-cluster associations were found between trust in governing bodies and security institutions on the one hand, and trust in community on the other hand. Centrality indices (Figure S8) suggested trust in governing bodies and trust in community had relatively high centrality, which is consistent with the findings using factor scores that are presented in the main text.

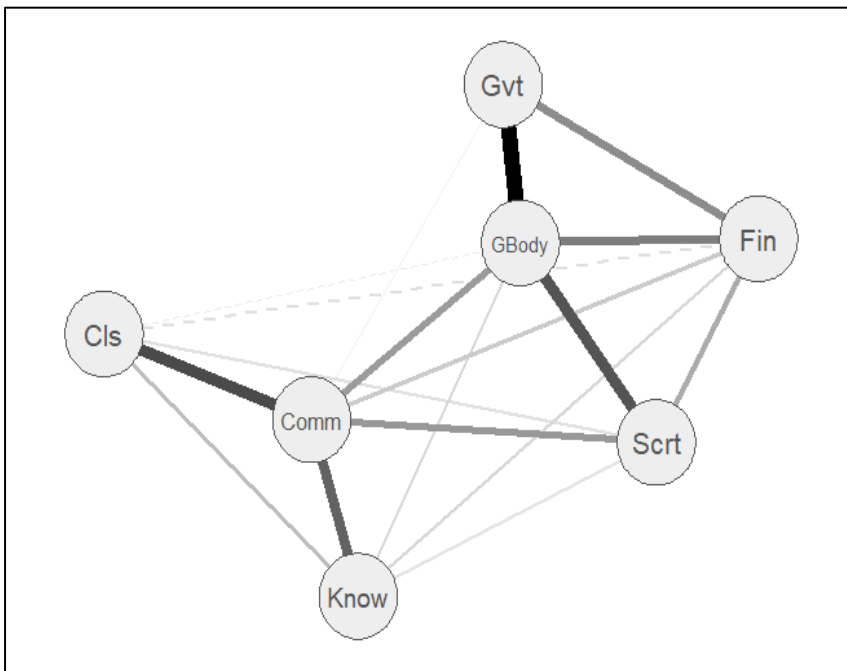


Figure S7. Overall network based on mean scores.

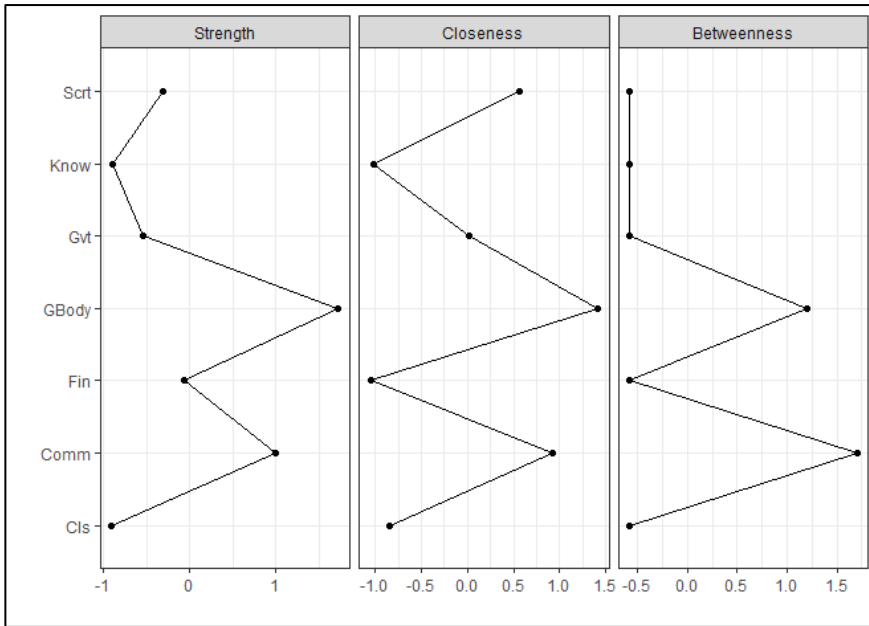


Figure S8. Centrality indices of the overall network based on mean scores.

Supplementary materials for additional analyses

The associations between generalised trust on the one hand, and trust in community and trust in close relations on the other hand, are presented in Table S1. Results showed, in line with the prediction, that generalised trust was found to have a stronger correlation with trust in community than trust in close relations relatively consistently across 18 societies and 2 waves.

Table S1. Correlations of generalised trust with trust in close relations and trust in community across societies ($N = 8587$).

	Wave 1 data		Wave 2 data	
	Close	Community	Close	Community
Argentina	.320**	.421**	.182**	.256**
Brazil	.215**	.314**	.316**	.376**
China	.384**	.392**	.257**	.379**
Estonia	.249**	.355**	.322**	.378**
Germany	.339**	.454**	.280**	.438**
Indonesia	.168**	.167**	.222**	.281**
Italy	.217**	.283**	.123**	.302**
Japan	.428**	.447**	.391**	.401**
South Korea	.167**	.279**	.256**	.328**
New Zealand	.248**	.356**	.252**	.395**
Poland	.195**	.316**	.229**	.321**
Russia	.281**	.393**	.268**	.401**
Spain	.261**	.346**	.258**	.327**
Taiwan	.318**	.297**	.290**	.319**
Turkey	.091	.211**	.148**	.184**
UK	.283**	.374**	.265**	.374**
Ukraine	.209	.407**	.225*	.310**
US	.298**	.413**	.304**	.407**

Note: * $p < .05$, ** $p < .01$

Survey items used in the thesis

Global Trust Inventory (Liu et al., 2018)

Please rate your feelings of trust towards the following people and organizations ():

(1) national government; (2) local government; (3) prime minister; (4) judiciary;
(5) election outcomes; (6) the tax system; (7) government surveillance agencies; (8) police;
(9) military; (10) banks; (11) the stock market; (12) multinational corporations; (13) oil
companies; (14) universities; (15) scientists; (16) neighbors; (17) one's ethnic group; (18)
other citizens in one's country; (19) friends; (20) immediate family; (21) extended family.

Scores: 1 = do not trust at all; 2 = trust a little; 3 = trust in some ways; 4 = trust
moderately; 5 = trust significantly; 6 = trust a lot; 7 = trust completely.

Generalised trust

Generally speaking, would you say that most people can be trusted, or that you need
to be very careful in dealing with people.

Scores: 0 = Need to be very careful; 1 = Most people can be trusted.

Satisfaction with life (Lau, Cummins, & Mcpherson, 2005)

All things considered, how satisfied are you these days with:

(1) your life as a whole; (2) your health; (3) your standard of living; (4) your safety
and security; (5) your relationships.

Scores: 1 = completely dissatisfied; 2 = dissatisfied; 3 = somewhat dissatisfied; 4 =
neutral; 5 = somewhat satisfied; 6 = satisfied; 7 = completely satisfied.