
13 Trust promotes health: addressing reverse causality by studying children of immigrants*

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INTRODUCTION

Many studies find positive correlations between social capital and health, which this *Companion* is a testament of. How to interpret these correlations can be complicated since causal relationships may exist in both directions; social capital can promote health but health can also promote social capital. My research has applied a method that can inform us about the causal direction from social capital to health.

The approach is to measure health and social capital in different contexts, in order to plausibly rule out causality in one direction. Health is measured at the individual level while social capital and other potentially persistent factors are measured in the ancestral country. Restricting the sample to children of immigrants ensures that health, measured in the individual's country of birth, is measured in a different context than social capital, measured in the ancestral country (which differs from the individual's birth country by construction of the sample).

Moreover, all comparisons are made within birth country. This holds constant all shared influences on health in the birth country such as the health care system or average trust. These two features, measuring health and social capital in different contexts and accounting for shared influence on health, address concerns of reverse causality and omitted variables in studies that correlate health and social capital using variables measured in the same context. The approach discussed in this chapter may be a substantial complement to existing studies.

Generalized trust is the part of social capital focused on in my work, as trust has been shown to be important in the literature, see, for example, Algan and Cahuc (2014). Trust is measured through a survey question that reads "Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?" The answer that you in general can trust most people captures that an individual has high trust. Trust is here conceptualized as part of an individual's preferences and beliefs that in turn could influence behaviors and health

outcomes. Focusing on trust is motivated by the importance of trust in the previous literature as well as evidence that, some discussed below, trust is a persistent trait transmitted across generations.

This chapter proceeds by first discussing how children of immigrants can be considered a “natural experiment”, followed by an analysis of how trust is transmitted across generations within families. The subsequent section discusses how the approach can be used to examine the influence of trust on health. The next section examines a concern that migrants’ health differs from natives and present evidence that they are not significantly different. The last section briefly discusses the approach that addresses reverse causality.

CHILDREN OF IMMIGRANTS AS A “NATURAL EXPERIMENT”

If you ask people about their trust and health, it is likely that those expressing high trust also are feeling healthy. Can we conclude that trust caused their well-being? It is of course possible but it could also be that those who are in good health express high trust because life has gone well for them. Similarly, those with poor health may express suspicion toward people in general. To understand if trust leads to well-being, we must go beyond studying correlations among individuals as they may measure causal effects in both directions.

How can the problem of determining the causal direction between trust and well-being be resolved? We need a measure of trust that cannot be influenced by the individual’s well-being. Children of immigrants constitute one kind of “natural experiment” that can be utilized to shed light on the issue. They all live in the same country and are influenced by the same institutions and environment but their parents have different backgrounds. If trust is transmitted within the family, from parent to child, then trust in the ancestral country can be used as a measure of the child’s trust. Crucial for this approach is that the well-being of the child, living in a country other than where their parents were born, cannot affect trust in another country. If there is a link between trust in the ancestral country and the child’s well-being, the causal direction can only be from trust to well-being. In my research I have used this approach that addresses reverse causality from well-being to trust.

The first step in the approach is to study if any factor in the ancestral country is affecting the trust expressed by the child. If so, the factor that affects the child’s trust can be used as a measure of the child’s trust, as it captures the persistent component of trust transmitted across generations.

In the second stage the factor in the ancestral country is related to the child's health. In the next section I study the ancestral factors that shape trust on the maternal side. The method is based on the cultural transmission theory by Bisin and Verdier (2001, 2010) and discussed in further detail by Fernandez (2010).

The individual data I use is from the European Social Survey. The survey is conducted every two years, beginning in 2002. The survey covers up to 30 countries, mainly European. Random samples are surveyed in each country and wave. Not all countries participate in each wave of the survey.

One distinctive feature of this survey is that it includes questions about the respondent's country of birth and the parents' birth countries. This means that I can identify the children of immigrants and which countries they have ancestry from. The survey also contains information on social trust, health, education, labor supply, and marital status, in addition to demographic information like age and gender.

The children of immigrants I study are adults, on average 43 years old. They are similar to the general population along observable dimensions. They have similar education and marital status. They have slightly higher unemployment but also slightly higher labor force participation than the general population. Therefore, it would not appear as the studied population, children of immigrants, differs from the general population. Notably, the children of immigrants express as high trust as the general population, on average. However, this similarity on average conceals systematic differences based on ancestry, which I present below.

The data on the share of the population that express high trust in the ancestral country is from the combined European Values Study and World Values Survey (EVS/WVS). With the help of those surveys I can extend the originating countries beyond Europe to all parts of the world. I can match children of immigrants in the European Social Survey to some 90 ancestral countries in the worldwide survey. Ancestral measures are computed as county averages across the waves to capture persistent differences across countries.

TRUST TRANSMISSION WITHIN THE FAMILY

There is a strong positive relationship between the child's trust and the fraction that express high trust in the mother's country of birth. The connection is illustrated in Figure 13.1. The horizontal axis measures the proportion expressing high trust in the mother's country of birth. The vertical axis denotes the difference in trust between those with a certain ancestral

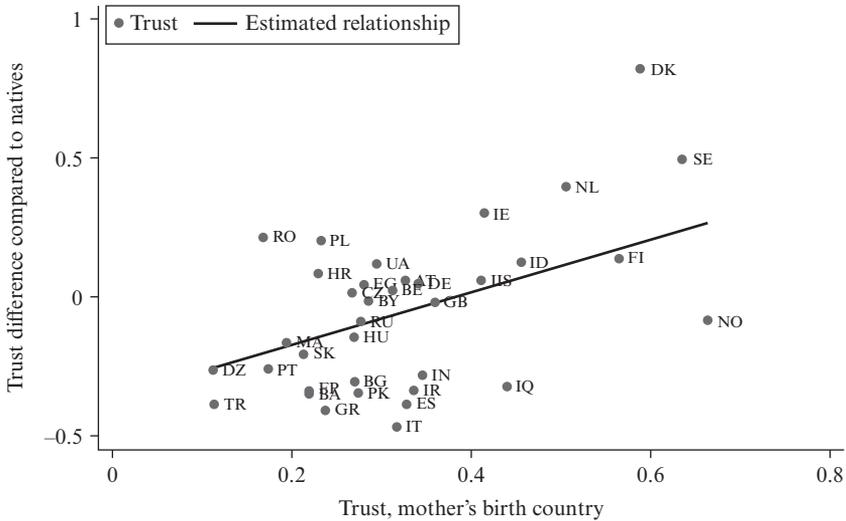


Figure 13.1 Difference in trust among children of immigrant and the share with high trust in the mother's birth country

country and the natives (it is an average across the 29 countries of birth in the study). For example, 0.5 means that children of immigrant mothers express a half point higher trust than natives (with native mothers). The trust measure on the vertical axis is from the European survey in which individuals may select their trust on a scale from 0 (lowest trust) to 10 (highest trust). On the horizontal axis will be the data from the worldwide survey. Here trust is measured as the proportion expressing high trust, so 0.4 indicates that 4 out of 10 in the country express high trust.

Figure 13.1 illustrates that those with a mother from a country with a high level of trust (e.g. Sweden, “SE” in the figure) have higher trust than those with a mother from a low trust country (e.g. Portugal, “PT” in the figure). The positive correlation indicates that the trust is transferred from the mother to the child even if the child is born and lives in a different environment than where the mother was born. It thus shows that family is important for the formation of the child's trust. Part of the trust persists across generations even if the child lives in a completely different environment.

In Figure 13.1 we see the relationship without taking into account other factors. It is possible that children with ancestry from countries with high trust differ from others in various ways. In the analysis I have taken into account age, gender, education, labor market participation, marital status and religion. It does not affect the strong correlation. It could also be that

women who migrated are different from others and meet other spouses. In order to take into account differences among the parents I have accounted for the mother's and father's education and whether they worked when the child was 14 years old. These factors do not affect the relationship between the individual's trust and the trust in the ancestral country. High parental education has a positive relationship with the child's trust. It indicates that increased education could have beneficial long-term effects because it could increase the trust in the next generation.

Do mothers have a greater influence on daughters than sons? I find no evidence that this is the case. The estimated effect is a little higher for daughters than sons, but it cannot be ruled out with any certainty that the effects are the same. I also see that the mother's influence continues over the life cycle; I find no difference in the ancestral influence when I compare older individuals with younger who are closer to their childhood and the parents' strong influences.

The comparisons are made within the same country and between individuals with different countries of ancestry. This means that all common influences on an individual's trust such as that the political system and the average trust in the birth country is taken into account. Another issue is if other factors in the ancestral country may explain the individual's trust. The average trust in a country is strongly correlated with economic development and well-functioning institutions so it could be these factors that shape an individual's trust instead of the ancestral country's trust.

I examine several additional potential ancestral influences on individual trust. First, I account for the level of economic development in the country, as measured by gross domestic product per capita. This does not affect the strong positive influence from ancestral country trust. I also find evidence that those with ancestry from a more developed country have higher trust. In the next step I account for how democratic the political institutions are (as measured by the polity2-variable). The political institutions in the mother's country of birth have no noticeable influence on the individual's trust. I also account for women's labor force participation as well as education in the ancestral country. Here, I find that ancestral countries where more women work have a strong positive predictive power over the individual's trust (but when this factor is included economic development is no longer a significant predictor). The influence of trust in the ancestral country remains a strong positive predictor for the individual's trust, even when all other factors in the ancestral country are included in the model.

The estimated effect of ancestral country trust is quantitatively important. To increase the trust from the level of Portuguese ancestry to the Swedish equivalent correspond to more than the effect of a high school education (compared with less training) and half the effect of a college

education. Education is the factor that most powerfully predicts trust and the estimated effect of ancestral country trust is on the same level as education, which indicates that the estimated influence of inherited trust is important in terms of effect size.

So far, only trust in the mother's birth country has been considered. What does the father's side look like? When I estimate the effect of trust in the birth country of the father, I find a positive estimate but it is not strong enough to reasonably exclude that there is no effect. This means that there is no strong evidence that the trust in the father's birth country has a clear influence on the child's trust.

I have also studied a model where the trust in both the mother's and the father's countries of origin are included. I find a strong effect on the mother's side but no clear effect on the father's side, as in the previous separate models. In this joint model, I find that the difference between the mother's and the father's influence is significant. It shows that there are distinct differences between the role of the mother and the father for how norms like trust are formed in the family.¹

The result does not mean that fathers do not play a role in shaping norms like trust. It is possible that fathers have other influences not taken into account in the analysis discussed above. The role of the father is explored by Ljunge (2014c).

TRUST PROMOTES HEALTH

Thus far the discussion has concerned how trust is shaped by various influences on the mother's side, where the strong factor is trust in the ancestral country. Does trust have any impact on how healthy individuals feel? In the following section I focus on the influences on the mother's side as this is where the strong trust transmission was found.

I study the individual's health. The primary measure is self-assessed health, which is measured by a question in the survey I use. The individual is asked how he or she feels about their health in general. The four response options are very good, good, poor, or very poor. Most state their health is good (2 out of 5) or very good (1 out of 4).

Individuals with a mother born in a high trust country express better health than those with a mother born in a country with low trust. The method is the same as when studying how trust is transmitted across generations. I study children of immigrants and relate their self-assessed health to trust in the mother's birth country.

The positive relationship between trust and health is illustrated in Figure 13.2. The horizontal axis presents the share of the population that expresses

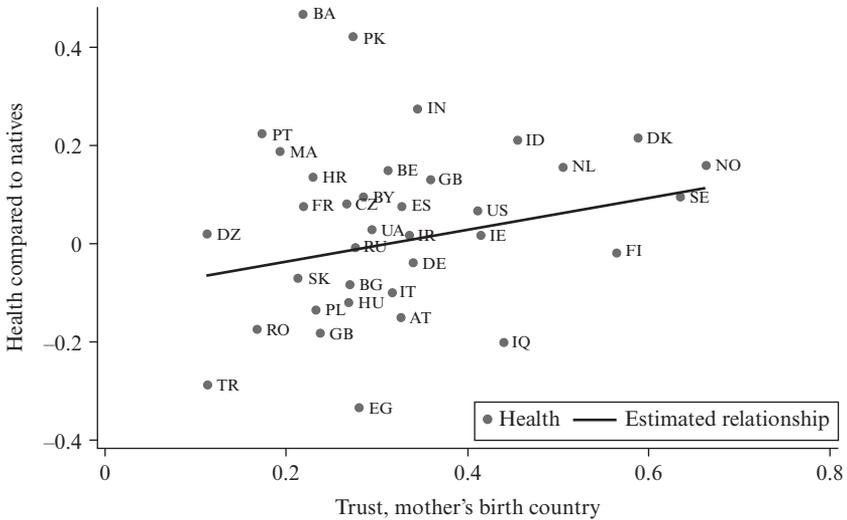


Figure 13.2 Differences in health among children of immigrants and the share with high trust in the mother's birth country

high trust in the mother's country of birth (as in the previous figure). The vertical axis indicates the difference in self-assessed health among children of immigrants with a given ancestry and natives (the difference is an average over the 30 European countries where the children live).

The positive relationship in Figure 13.2 shows that those with ancestry from countries with high trust express better health than those who have ancestry from low trust countries. What does the relationship mean? As previously seen trust in the ancestral country is a measure of the individual's trust. This persistent part of an individual's trust, as measured by the ancestral country's trust, can thus be interpreted as a cause behind the individual's health. A major advantage of the approach to study children of immigrants, as previously discussed, is that it provides a clear causal direction from trust to health. It is not reasonable that an individual's health affects the average trust in another country.

The pattern in Figure 13.2 is systematically examined using regression analysis. The baseline analysis is ordinary least squares regressions:

$$\text{Health}_{i\text{cat}} = \beta_0 + \beta_1 \text{Mean_Trust}_a + \beta_2 X_i + \gamma_{ct} + \varepsilon_{i\text{cat}} \quad (13.1)$$

$\text{Health}_{i\text{cat}}$ captures the subjective health by individual i , born and residing in country c with a parent born in country a , and $a \neq c$, in period t . This regression is run on a sample of children of immigrants. The mean level of

ancestral trust, Mean_Trust_a , is common to all individuals with a parent born in country a . X_i captures individual demographic and economic controls that may affect self-assessed health. The country of residence-by-year fixed effect is denoted by γ_{ct} , and ϵ_{icat} is the error term.

The inclusion of the country-by-year fixed effect γ_{ct} means that the institutional structure and all other unobserved differences which apply to all residents in country c in period t are accounted for. It also means that the variation used to identify the estimate on ancestral trust is to compare the outcomes of second generation immigrants within each country of residence and year relative to the values in their countries of ancestry.² Since the country fixed effects are included for each year they account for non-linear trends that may differ across countries. All standard errors are clustered by the mother's birth country to allow for arbitrary correlations of the error terms among individuals with the same ancestral country.

The baseline analysis only includes the most exogenous individual characteristics, e.g. age, its square, and gender. This is to avoid including potentially endogenous individual factors. As health could influence labor market status and income, it is preferable in the main analysis to avoid such potential endogeneities to bias the estimate of main interest; how trust influences health.

I have also examined if the relationship between trust and health can be explained by individual factors such as education and marital status. Good health correlates positively with high education, work, marital status, and medium or higher income. I find that the link between trust and health remains also when the individual factors are taken into account.

The parents' education and labor market participation (where the individual was 14 years old) has also been taken into account. High education of the father has a strong positive association with the individual's health. The relationship between trust in his mother's birth country and health remains strong also in this case.

Furthermore, I investigate if additional ancestral country factors relate to the individual's health. Trust is, as previously mentioned, associated with economic development. I use the gross domestic product per capita as a measure of economic development but the measure has no discernable impact on the individual's health while ancestral country trust remains a strong predictor. It could also be that countries differ in how they report their self-perceived health. Countries with a high level of trust could also have a very high self-assessed health, and it could be the self-assessed health rather than trust that affects an individual's health. I find, however, that the average self-assessed health in the ancestral country has an insignificant influence on an individual's health but that trust continues to be a strong factor.

In addition to self-assessed health I also take into account objective health measures in the country of origin. I use three broad dimensions; average life expectancy, infant mortality, and the probability of a child dying before turning five years of age. None of these measures have a significant relationship with individual health when I take into account the country-of-origin trust, which has a strong influence on health.

I have also accounted for institutional factors in the ancestral country. High trust societies tend to be characterized by more equal income distribution, the rule of law, and democratic political institutions. These factors could have an impact on individuals' health. In particular, income inequality and health have been debated intensively after the book *The Spirit Level* by Wilkinson and Pickett (2009), who argue that more equality promotes health. I use two measures of income inequality, the Gini coefficient and the ratio of the incomes of the highest and lowest quintile of the population (the Gini coefficient is used more generally, while the ratio is preferred by Wilkinson and Pickett (2009)). I do not find any significant effect of inequality when using either of the measures, while trust is a strong influence as previously. The estimates indicate that if there is an effect of inequality on health, then there is no evidence the effect is persistent.

The other two institutional factors, the rule of law and the degree of democracy, have no clear associations with the individual's health. Trust continues to be a strong factor. A survey measure related to trust is happiness, see Uslaner (2002). I find no correlation between the level of happiness in the ancestral country and the individual's health, while the influence of trust remains strong.

Moreover, I study a more objective health measure. The survey asks whether the individual is hindered in their everyday life by any illness or disability. I find that fewer among those with high trust expresses that their daily lives are hindered by health problems, compared to those with low trust ancestry. It shows that the effect of trust not only predicts higher self-assessed health but also influences an objective manifestation of good health.

How could trust affect health? There are many possible channels. Trusting individuals could have a greater tendency to seek care from health care professionals and they may be more likely to follow the doctor's prescriptions. Those with higher trust may also have larger social networks where they can access information about good health. Networks may also act by encouraging healthy living if it is cherished in the group. Trust may also influence the individual choices that are risk factors behind health. Labor market status, for example, has a strong association with health. If the trust affects labor market status then the relationship can explain some of the positive relationship between trust and health.

IMMIGRANTS' HEALTH AND HAPPINESS

There may be concerns that migrants differ from the general population. In particular, a healthy immigrant effect has been documented in the United States. That is, immigrants are healthier than natives upon arrival, but become more like natives the longer the time they spend in the new country. Such effects caution against considering migrants as similar to natives in all relevant dimensions. Are similar patterns observed in Europe?

Migrants to Europe have similar health as natives, on average. The self-assessed health level among migrants and natives in 30 European countries are very similar, contrasting with the US experience. Moreover, the socioeconomic gradient of health, the predictive power of socioeconomic characteristics for health, is similar for natives and migrants in Europe, as found in Ljunge (2016). The only exception is Muslim migrants who appear to pay a health penalty, while there is no such effect for native Muslims.

The similarities of average health and the socioeconomic gradient across natives and migrants do mask some systematic differences across ancestral groups. Health is significantly higher for those born in countries with better health. This indicates that migrants bring their health with them, and that health is not solely determined by current contextual factors but also persistent influences. The persistence of health is robust to accounting for birth country GDP per capita (in log), life expectancy, infant mortality, income inequality, and political institutions. Moreover, there is no evidence the persistent component of health dissipates with years in the destination country or over the life cycle.

The persistence of health can be used to shed light on the issue of health and well-being. Individual data show a very strong correlation between health and well-being measures such as happiness and life satisfaction, but it is hard to understand the causal relationships in such data as it could run both ways.

Studying migrants and using birth country health as a measure of individual health it is possible to study one direction of the relationship. Since the well-being of a person in one country cannot plausibly determine the average health in another country there cannot be reverse causality from well-being to health.

The results show that those with better health, where variation in birth country health is used as an instrument for individual health, express substantially higher happiness and life satisfaction. The results are robust to accounting for a range of other birth country characteristics. A one standard deviation improvement in health predicts higher happiness by

more than four times the happiness difference of changing employment status from unemployed to employed.

DISCUSSION

Many studies use observational data to examine the relationship between social capital and health. Correlations between social capital and health add information, yet can be complicated to interpret as correlations can represent causality in both directions.

This chapter has presented an approach that addresses reverse causality. Studying children of immigrants allow measuring health and social capital in different contexts. I have studied how self-assessed health is explained by trust in the mother's birth country, after establishing that trust is transmitted across generations among children of immigrants. The approach addresses reverse causality since an individual's health assessment cannot plausibly determine average trust in a different country. An added benefit, as all comparisons are made within birth country, is that all shared influences are accounted for through fixed effects. This addresses omitted variable concerns present in correlational studies using data from the same context.

The approach presented in this chapter could be used to examine a range of questions in social capital and health. Yet, there are some limitations to the approach as well. First, the approach can only be utilized for persistent influences, that is, beliefs and norms that are transmitted across generations (or brought by migrants when studying immigrants). Trust is such a factor as discussed above and it may apply to a range of other culturally transmitted norms and beliefs. Second, there may be concerns that immigrants and their children are a particular group and that the results are not informative beyond this group. US evidence points to this as a potential concern. Yet, studying European data does not reveal big differences between natives and immigrants (or their children) as discussed in the previous section, alleviating such concerns. Taken together, the approach can shed light on a wide range of issues of interest in the literature on social capital and health and provides a fruitful avenue for future research.

NOTES

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1. The result does not mean that fathers do not play a role in shaping norms like trust. On the father's side the political institutions in the ancestral country strongly predicts trust, see Ljunge (2014c).
2. For example, the comparison is if individuals with high trust ancestry born in Spain have better self-assessed health than those born in Spain with lower trust ancestry.

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