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Abstract

We examine the persistence of the association between subjective health assessments of both first and second-generation migrants with that of their country of origin. To mitigate potential selection bias, we use European data containing records from 30 countries, including over 90 countries of birth and control for timing of migration, selective migration and other variables including citizenship and cultural proxies. Our results show robust evidence of persistence of health assessments, and such associations do not fade over generations. We estimate that a one standard deviation change in ancestral health assessment increases a first-generation migrant’s health assessments by an average of 16%, and that of a second-generation migrant between 11% and 25%. Estimates differ by gender (larger for males) and lineage (larger for paternal lineage). Hence, we can posit that self-reported health largely reflects country-of-origin specific social norms.

JEL-Codes: I180, H230, Z130.

Keywords: health assessments, cultural persistence, first generation migrant, second generation migrant.

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1. Introduction

Economists have traditionally conceptualised health production as a result of people's choices between available health inputs, in addition to genetic endowments. In contrast, other social sciences have traditionally envisaged health as 'socially determined' or context specific. However, recent research is increasingly bridging this disciplinary gap. Specifically, culture, one of those so-called 'social determinants of health'[1], and more specifically, how social norms influence how we produce and evaluate health status is increasingly more salient. How important are social norms for health reports? Are evaluations of self-reported health dependent on the country-specific cultural norms? Literature shows little about the cultural persistence in health outcomes, with the exception being studies documenting the effect of cultural proxies such as language proficiency (Schachter *et al*, 2012) and generalised trust (Ljunge, 2014) on health.

Health status (or 'health capital' as we use henceforth) is measured in surveys through self-assessment, which are well known to correlate with objective measures of health status (Bound, 1991), as well as historical, current, and future hospital records (Heiden, 2015). However, health assessments reflect, at least partially, cultural specific reference points and potentially portable health inputs (e.g., beliefs and social norms, inert health behaviour etc) influencing people's health. Hence, it is important to understand how cultural social norms affect health evaluations

[1] Culture, defined as "differences in beliefs and preferences that vary systematically across groups of individuals separated by space" (Fernandez, 2008)

A common approach to measure 'persistence' in social behaviours and outcomes is through the so-called 'epidemiological approach' (Fernandez and Fogli 2006). Namely, the epidemiological approach exploits very large samples of immigrant populations which are heterogeneous both in countries of ancestry as well as residence to mitigate potential migrant selection bias. Such evidence, when available, qualifies as a 'quasi-natural experiment', especially when examining second generation immigrants (who are less subject to problems of selection). Indeed, given that second generation migrants have been brought up under the institutions of their country of residence, the effect of their 'ancestor's culture' can be isolated from that of the institutions of residence. Nonetheless, migrants do not qualify as being part of a random sample of their population of residence, so in examining immigrant data it is especially important to control for any characteristics that make immigrants different from the rest of the population. For instance, in European countries, it is particularly important to control for citizenship, as immigrant citizenship can explain differences in the access to health care and other health related inputs, which influence health outcomes and wellbeing more generally. Similarly, time since migration can influence the institutional knowledge of the institutions in the country of residence, and more generally, ability to assimilate.

Studies using only data on first generation migrants typically find difficultly identifying the effect of local institutions as the country of destination is not well established. Additionally, there is limited consensus on the influence of culture in the literature (Antecol and Bedard, 2006; Subedi and Rosenberg, 2014, Ljunge, 2016). Focusing on other outcomes, earlier work explores beliefs across first and second-generation immigrants. Alba and Nee, (1997 and Antecol (2000) find that cultural effects persist into the second generation. Similarly, Borjas (1992) finds that cultural persistence is strikingly higher for the second generation than for any further generation of immigrants. Lazear (1999) makes the case that

the smaller the minority group the less likely it is an individual to maintain a cultural engagement with the country of origin. Our empirical strategy will address the issues raised in previous research by examining the effect of time in the country of residence and minority status. Other studies examining health capital argue that the transmission of human capital declines across generations (Becker and Tomes, 1986).

This paper uses the epidemiological approach (Fernandez and Fogli 2006; Luttmer and Singhal 2011) to investigate the cultural persistence of health capital. Specifically, we examine the association between individual health assessments to the average health assessment of their country of origin for both first and second-generation migrants. . We draw upon six waves of the European Social Survey (ESS) containing self-reported health records from 30 different European member states. The ESS allows us to control for migrant characteristics (e.g., citizenship, income etc) which we refer to as 'wellbeing controls' and self-selection (which is attenuated by the long list of country of origin/ destination and by our controls). Sample selection is an important issue which we explore in some detail, given that migrants tend to differ from the rest of the population in key socio-economic dimensions. The most notable issue we address is the fact that immigrant health is often found to be better than natives at the point of immigration, which is known as the 'healthy migrant effect' (Antecol and Bedard, 2005). However, this effect may be mitigated in European populations given that many countries are still more homogeneous than the United States where the 'healthy migrant effect' is typically documented[2]. We are also able to address omitted variable bias (including biases from measures of health knowledge, parental health, and parental specific characteristics). Our contribution lies in measuring the persistence of assessments of ancestral paternal and maternal country of birth which avoids the problem of potential reverse causality,

[2] Heathy migrant effects is largely dependent on patterns of socialisation, to the extent that immigrants who network among themselves are shown to have reduced stress and improved self-esteem (Umberson and Montez 2010), but at the price of a slower rate of assimilation.

as the child's health evaluation cannot affect health evaluation in the father or mother's country of origin.

Results are reported in standardised coefficients, to compare the mean across first and second generations. We find cultural persistence in health capital reporting, especially when measured across generations (our study is unique as it goes beyond measuring only first generation migrants) (Salant and Lauderdale, 2003). A one unit change in migrants' self-assessed health increases one's own self assessed health by 0.36 scale units (16%) irrespective of gender. The effect increases to 0.45 (or an average of 25%) on maternal lineage and 0.57 scale units (or an average of 25%) on paternal lineage. However, for second generation migrants, the effect is 0.24 scale units (or 11% on average) among maternal lineage and 0.32 scale units (or 14%) among paternal lineage. We run a number of robustness checks including potential differential effects by gender, the potential selection effect of migrants to EU countries, or those born in EU countries, and current residence location.

However, such concerns are contradicted by studies which find migrant health does not differ much from the health of the general population in the country of residence (Ljunge, 2016). Further, others find that even when using data from older populations the health selection disappears within a decade (Constant *et al*, 2015). This may be more prominent in the case of Europe, where migrants can move more freely across EU borderzones. Another empirical challenge is that migration is institutionally induced by different regulations across counties. Hence in addition to controlling for citizenship we examine subsamples of migrants originally from EU countries or not.

The structure of the paper is as follows. The next section provides the background. Section three addresses data and methods. Section four contains the results, followed by robustness checks and the final section concludes.

2. Migration and Cultural Norms

Migration is not a random process, but a costly one, and in many cases subject to self-selection, for example, healthy people are more able to migrate. This phenomenon has been termed the 'healthy immigrant effect' in the literature, which argues that on average, migrants possess better health than native counterparts upon arrival (Antecol and Bedard, 2005, 2006, Palloni and Arias 2004). However, research outside the United States, and in Europe (where migrants move from and to many different countries) shows that migrant health does not differ much from that of natives, with the exception of Muslim migrants (Ljunge, 2016).

One explanation for the healthy dividend of migrants is argued to stem from common beliefs, which economics labels as 'culture'. Owusu-Daaku and Smith (2005) show that Ghanaian women who have moved to the UK uphold Ghanaian perspectives about health and illness while adapting to the British health system. That is, migrants come with 'protective cultural factors' towards healthier lifestyles (Scribner 1996). Some evidence shows that a migrant's health advantage declines with time spent in-country (Deri 2003). Antecol and Bedard (2005) show that immigrants to the US are less likely to report poor health, however, assimilation to poor health (as opposed to good or average health) takes place within ten years of arrival. In the US, the health advantage for Latin American populations declines the longer they stay in the country, a sign of unhealthy adaptation to increased stress (Kaestner et al. 2009).

Other evidence finds that immigrant's health improves with the time they remain in the country (Jasso et. al. 2004). Given this mixed evidence, it is difficult to predict the

direction of change in immigrant assessments of health capital over time that results from changes in circumstance, including health care access. This is explained by the idea that exposure to a new environment can cause immigrants to adopt native-born behaviours (such as, diet and exercise), although some evidence also shows that health advantages are lost in childhood (Hamilton et al, 2011), and many health conditions worsen across generations (Mendoza 2009). Hence, an important gap in the literature is in understanding persistence in health capital assessments across generations. Similar studies have been carried out for other outcomes. For example, Luttmer and Singhal (2011) argue that culture is a strong determinant of preferences for redistribution. By comparing immigrants' redistributive preferences with the average preferences of people in their birth countries, they find that immigrants from countries indicating high levels of preference of redistribution are more likely to vote for pro-redistributive political parties.

3. Data and Empirical Strategy

3.1 Data

We draw upon data from the European Social Survey, Waves 1-6, representing every two years between 2002 and 2012 inclusive. All datasets across waves were first merged and variables made consistent. The data includes 30 participating countries and the survey contains information about the respondent's country of birth and that of his/her father and mother. This allows us to collect information on over 90 countries and accordingly, individual level data can be matched with health measures constructed at the country level from the World Values Survey. Similarly, we can control for country of origin and residence country income (GDP per capita), mainly obtained from the World Bank database which uses comparable survey wording[3]. When we restrict our analysis to migrants from the European

[3] Available online at http://www.europeansocialsurvey.org. Other sources of GDP per capita are available form IMF and World Bank.

Union, we draw from estimates from the European Social Survey data alone. This strategy has been previously used by Luttmer and Singhal (2011) to study preference for redistribution. In our case, we have data on health assessment for all waves such that we are able to take advantage of variation in health assessments over time. However, unlike redistributive preferences, health measures are less reliant on changes in context (e.g., migration) and possibly more dependent on changes in individual specific circumstances.

Dependent variables: we use self-reported health (subjective, measured on 5 levels (very good, good, fair, bad, very bad)). The question is asked as follows: "*How is your health in general?" Would you say it is,..* (See Table A1 in the Appendix).

It is important to acknowledge that while self-reported health is the most commonly used measure of health, it is not without its biases, and can show inflated responses (Green et al, 2015) and significant cross-country variation (Jurges, 2006). However, the presence of cultural specific biases in self-reporting health can partially be captured in our 'cultural persistence equation'

Independent variables: we use average health assessments in the individual's country of birth for first generation migrants and in father's country of birth and mother's country of birth (where applicable, using values for where parents were born in the same country). The baseline specification includes population weights and wave controls but no others. We also include controls that we classify as those proxying for welfare (whether hampered in daily activities by illness, disability, infirmary or mental problem); level of happiness; opinion on state of health services in country nowadays; whether feel discriminated; socioeconomic and demographic status (gender, age, and household size) as well as religious denomination which has been shown to explain some health effects of migration in Europe (Ljunge, 2016). Our data contains records on how long individuals have lived in-country and whether they

belong to a minority ethnic group in-country; alongside educational attainment, we include main occupational activity and household net income quintile. Finally, to control for institutions, we include the opinion on state of health services in their country of origin and their feeling about household's income 'nowadays' as well as citizenship information. Further details of all variables are available in Appendix 1.

From our master dataset, we have created two samples: one for the first generation (defined as people born in one country and moved to another) and another for second generation (defined as children of first generation immigrants – where parents (one or both) are not born in the same country as the child).

3.2 Empirical Strategy

The broad range of immigrants from various countries in the ESS reduces the concern that estimates are driven by the effect of limited variation in ancestral backgrounds. We present summary statistics in Table A1. As in other studies using the same data (Ljunge, 2016) we find that immigrants are similar to the general population on observable variables, with some differences in religion and education, which we control for along with a number of other controls. However, first generation migrants would have been affected by the institutions of both countries having lived in both country of origin and present country of residence. Hence, the effects for first generation migrants are not reflective of cultural effects alone. On the other hand, given that they made the choice of migration, one can expect first generation migrates to have more incentives to adopt the health-related norms of the country of destination.

Specifically, we examine the association between measures of health of immigrants and that of their country of origin. We rely on the following specification that measure cultural acculturation of first generation migrants:

$$H_{ijt} = \rho\bar{H}_{jt} + \varphi X_{ijt} + \gamma_{jt} + \varepsilon_{ij} \quad (1)$$

where H_{ijt} of an individual i residing in country j's health assessment, $\bar{H}_{jt}$ refers to the ancestral country j's health assessment for either first or second generation migrant, and X_{it} refers to individual specific controls that could upwardly bias the effect of cultural persistence, specifically $X_{ik} = \{W_{it}|S_{it}\}$ where W_{it} indicates proxy measures for welfare and institutional controls, S_{it} is a vector of an immigrant i's socioeconomic and demographic status. We include a parameter γ_{jt} which refers to a country of origin-by-year fixed effect to account for the institutional setting and any other unobserved characteristics whether time invariant or country specific. Indeed, health assessments may pick up some biological determinants too and thus we include measures of objective health as covariates (which in addition control for positive selection) and the afore-mentioned country of origin fixed effects

Finally, ε_{ij} indicates random shocks, which may include country of origin fixed effects. All standard errors are clustered by the individual's country of origin to account for the arbitrary correlations of error terms among individuals from the same country of origin. We have estimated linear probability models but the results are replicated using both ordered probit and logit models for robustness. We have standardised the regression parameters to compare size effects and interpret coefficients as 'the effect of one standard deviation on health assessments'.

These regressions are regarded as reduced form equations where ρ measures cultural persistence, accounting for a number of other factors influencing attachment to the ancestral country's health related culture, such as time spent in the country. However, one of the limitations of such a strategy is that migrants have been raised under the institutions of the country of origin, and hence, inevitably, ρ picks up institutional effects and not cultural effects alone. A common way to control for local institutions, in addition to controls, includes

focusing on second generation migrants. In so doing, we are able to measure cultural transmission resulting from parental transmission of preferences (from parents to children). We run two different specifications, one for the paternal lineage and one for maternal lineage. In addition to this we also run one regression where both parents are from the same country (and use father's country to cluster).

In our robustness checks, we restricted our analysis to migrants from countries other than where the survey was undertaken. This way we can precisely estimate the effect for the country of origin of migrants. Further, given that mobility restrictions within Europe are less stringent than between Europe and other parts of the world, and rights and regulations differ, we take a sample of migrants who are just from Europe to overcome potential sources of unobserved heterogeneity that could not be entirely controlled for with destination country fixed effects.

4. Results

4.1 Descriptive Evidence

Figure 1 reports the association between the first generation's assessed health capital and the average health capital in their country of origin. We show average health assessments and a circle represents the standard deviation of each measure. We show the fitted values of an association between the two measures. For the first generation, there is a higher concertation of values around the same area, but this is not the case among second generations. Importantly, the fitted values indicate a steep and positive association between migrants' health assessments and that of their ancestral countries. Further, we find that such associations are stronger for second generation migrants.

[Insert Figure 1 about here]

4.2 Cultural Engagement: First generation

In Table 1 we examine the association of individual health assessments and that of their countries of ancestry for first generation migrants only. We examine first a sample without controls, and then a smaller sample that includes a number of controls. We then include interactions effects with time in the country since arrival, consistent with literature by using three dummy variables: whether individuals have spent less than 10 years in the country, between 10 and 20 years ($T10_t$) and more than 20 ($T20_t$). For all samples, we find evidence of very strong cultural persistence of migrants and migrants bring with them some bias from their original environment[4]. In a separate estimation using a homogeneous sample we find that after including welfare controls, the coefficient halves to 0.43, and when socio-economic and demographic controls are included (our more robust specification) the coefficient drops to 0.36. Importantly, the results remain unchanged with and without clustering per country of origin. Furthermore, we find that time since arrival in the country increases the association with the culture of the country of origin. Up to ten years in the country increases cultural attachment to the country of origin by 0.2 scale units and the effect for those staying beyond ten years is, on average, 0.1 scale units. Further, as suggested by some literature, minority groups are more likely to assimilate – as indicated by the corresponding coefficient. Finally, we have included lagged values of average health in the country of origin to rule out the possibility that some unobserved variables are simultaneously affecting the health status of immigrants and natives (e.g, international epidemics).

[Insert Table 1 about here]

4.2 Cultural Effects: Second Generation

Table 2 reports the same estimates as for Table 1 but for second generation migrants (e.g., children of migrants). Again, as with Table 1, we report the estimates with and without

[4] For example, individuals' attitudes towards health systems in terms of trust or cultural differences

controls, and then include interactions with time of residence in the country, given that some arrived with their parents. Importantly, we find that cultural persistence is higher for second generation migrants when measured along paternal lineage. That is, the association is higher for paternal country of ancestry (0.44 scale units) than for maternal country of ancestry (0.33 scale unit). The latter results do not change when time in the country and minority controls are added. Consistently with Table, 1, we find that spending up to 20 years or more in the country increases cultural association with ancestral country's health, irrespective of lineage.

[Insert Table 2 about here]

4.4 Gender Specific Effects

Next in Table 3, we report the results for both first and second generations, splitting the sample by males and females. Much like earlier results, we see that associations are still very strong and moreover, the size of coefficients does not differ significantly when comparing like for like, namely, our results show very strong evidence of cultural persistence in the evaluation of health status. A change in one standard deviation in migrants' self-assessed health increases one's own self assessed health by 0.36 (16%) irrespective of gender. The effect increases to 0.45 (or an average of 25%) on maternal lineage) and 0.57 (or an average of 25%) on paternal lineage among men. However, among women the effect is 0.24 (or 11% on average among maternal lineage) and 0.32 (or 14% among paternal lineage) for second generation migrants.

[Insert Table 3 about here]

5. Robustness checks

Previous results can be affected by the specific country of origin composition, and specifically one can argue that beliefs can be influenced by the institutions in the country of

origin. Hence, to test for this alongside some potential selection, we restrict our analysis to migrants from EU countries which have similar rights and comparable institutional development in both the country of origins and destination. Specifically, we distinguish those *born* in EU countries, and those who *reside* in EU countries. This allows us to disentangle whether the effects are driven by migration to some of the non-EU countries in our sample. Further, this will also test whether individuals in different parts of Europe hold different cultural norms and beliefs. Results are shown in Table 4. Again, across all regressions, we find that cultural persistence is strong. When we focus on individuals born in the EU we find that cultural persistence increases for second generations from 0.27 scale points to 0.44 and 0.34 for paternal and maternal lineage, respectively. In contrast, we find no comparable strengthening effect (although not fading either) when we restrict our sample to respondents residing in an EU country b. In other words, when we examine a sample of comparable individuals in terms of institutional constraints (e.g., rights), we find that persistence strengthens.

We ran other robustness checks (unreported), including splitting the sample into those who were not born in Southern Europe[5] and those who were not born in East or Central Europe. We use these samples because one could argue that long lasting genetic triggers may be location specific, and choose to present results for those 'not born' rather than 'born' in these areas due to limited sample size. Once again, all results are significant, with first generation coefficients being 0.432 for non-southerners and 0.516 for non-easterners. For the second generation, parents' country has a large and significant effect irrespective of lineage.

6. Conclusion

[5] Country divisions were taken from the UN classification system. Non-South means everyone not born in Albania, Bosnia and Herzegovnia, Serbia and Montenegro, Spain, Gibraltar, Greece, Italy, Macedonia, Montserrat, Malta, Portugal, and San Marino. Non-Central and Eastern Europe implies everyone not born in Belarus, Cyprus, Czech Republic, Georgia, Croatia, Hungary, Kosovo, Moldova, Poland, Romania, Russia, Slovakia, and Ukraine.

We have studied the cultural persistence of health capital assessments in Europe by examining the association between subjective health assessments of first and second-generation immigrants (residing in 30 different European member states and over 90 countries of ancestry) and that of their ancestral country. Our findings suggest robust evidence of cultural persistence, an effect which increases for second generation migrants. In addition, we find that time in country of residence strengthens cultural association with the country of ancestry, and that such persistence does not decrease after one generation. This is the first paper to explore this and we believe the range of countries available in the dataset results in less likelihood of selection bias often found in other studies that focus on one country alone, for example those that look at the US. Furthermore, this same sample has been used to examine the cultural persistence of preferences for redistribution by Luttmer and Singhal (2011) where similar results have been found, and those that have compared health trajectories to destination country counterfactuals. Finally, the study builds upon previous research on the role of trust and language as proxies of culture (Ljunge, 2014).

Of course, we are not able to observe a third generation to be able to test for a longer run effect. However, we ran regressions on various samples, including those who were born in the European Union . It appears that the strengthening persistence is a specific effect emerging from migrants from European Union countries that share the same institutional environment.

One interpretation of our results is that intergenerational learning influences extend beyond the parents' generation. Indeed, migrant parents' (who chose to settle in the country) health assessments, are more likely assimilate to natives more than their children who have not made the choice themselves. This effect is in addition to learning from others from both the residing country and country of origin. Other explanations include some potential negative

assimilation as in Chiswick and Miller (2011), for health. Health behaviours and cultural beliefs of the host country might not be perceived as advantageous compared to that of grandparents and other ancestors' culture. Another explanation includes selection bias in return migration. Finally, cultural beliefs can be influenced by the availability of information technology which has vastly increased contact with and therefore influence from ancestral countries among second generation migrants, who typically would not have been involved in the choice of the country of residence of their parents.

These results can lead to different policy implications including the policy role of social norms in influencing health production, and more generally in building health capital in light of cultural norms, which has been traditionally ignored in health production models.

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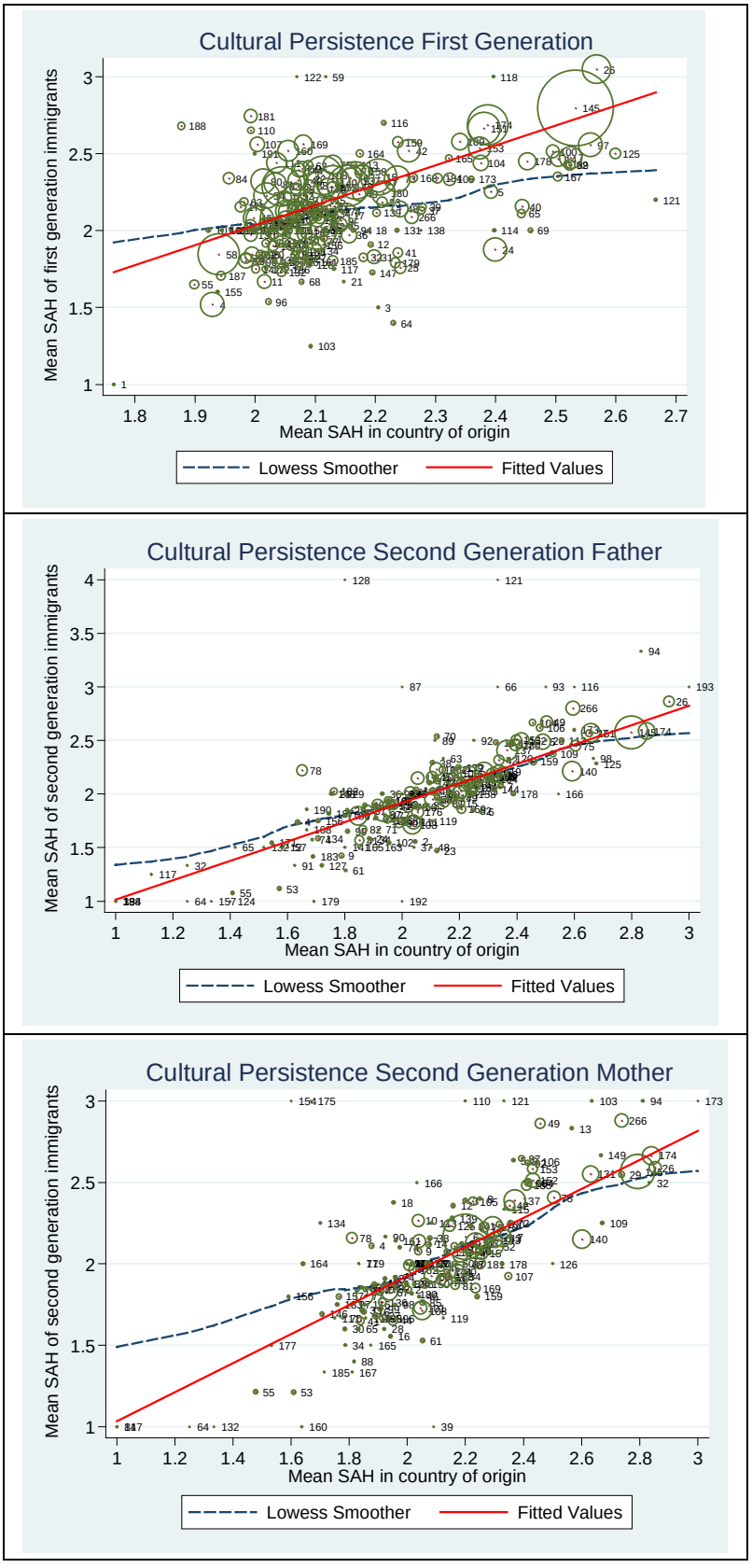
Figure 1. Cultural Persistence of Health Capital – Correlation of SAH between Country of Origin and Resident of- First and Second (Paternal and Maternal Lineage) Genenration Migrants



Note: This figure plots corrlelations between country of residence migrants' health and that of their country of origin for first genenration migrants, and that of the country of origin of the mother and father among second genenration migrants.The plot contains in cricles the standard error of the estimates.

Table 1 Cultural Persistence of Health Status (ρ)

	(1)	(2)	(3)	(4)
VARIABLES				
ρ	0.575***	0.365***	0.336***	
	(0.0306)	(0.0372)	(0.0394)	
$\rho_{(t-6)}$				0.361**
				(0.056)
ρ x$T20_t$			0.110	
			(0.0674)	
ρ x$T10_t$			0.199***	
			(0.0663)	
ρ_txM_t			-0.03***	
			(0.0118)	
Welfare	Yes	Yes	Yes	Yes
Socio-economic	No	Yes	Yes	No
Demographic	No	Yes	Yes	No
Cluster by country of origin	Yes	Yes	Yes	Yes
Constant	2.590***	2.704***	2.772***	
	(0.0924)	(0.242)	(0.241)	
Observations	23,065	17,340	17,340	9530
R-squared	0.411	0.481	0.482	0.49

Notes: All estimates include pweights and wave controls (essround). T_t refers to time in the country and M_t refers to belonging to the largest minority group. (1) Contains no controls. (2) Contains controls proxying for welfare (hlthhmp (whether hampered in daily activities by illness, disability, infirmary or mental problem; satisfaction with health services in country nowadays (stfhlth)); whether feel discriminated (dscrntn); socioeconomic and demographic status (rlgdnm (religious denomination); how long have lived in country (livecntr); whether belong to minority ethnic group in country (blgetmg); number of people in household (hhmmb); gender (gndr); marital status(marital); age group (age_gr); number of years of education (eduyrs_gr); main occupational activity (mnactic); household net income quintile (quintile); opinion on state of health services in their country of origin (trust_hs); feeling about household's income nowadays (hincfel); whether citizen of country (ctzcntr); country variable; country income quintile (country quintile). Standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1

Table 2. Cultural persistence of Health Status: Paternal and Maternal Lineage (OLS estimates)

Paternal Lineage	(1)	(2)	(3)
ρ	0.437***	0.440***	0.440***
	(0.0545)	(0.0540)	(0.0515)
ρ x$T20_t$		0.304***	0.304***
		(0.0683)	(0.0604)
ρ x$T10_t$		0.251	0.251
		(0.221)	(0.202)
ρ xM_t		-0.0284	-0.0284
		(0.0318)	(0.0318)
Constant	2.584***	2.473***	2.473***
	(0.340)	(0.341)	(0.475)
Observations	8,156	8,156	8,156
R-squared	0.488	0.491	0.491
Maternal Lineage	(6)	(7)	(8)
ρ	0.330***	0.330***	0.330***
	(0.0556)	(0.0554)	(0.0582)
ρ x$T20_t$	(0.0598)	(0.0660)	0.288***
		0.288***	(0.0564)
ρ x$T10_t$		(0.0687)	0.246
		0.246	(0.217)
ρ xM_t			-0.0226
			(0.0323)
Constant	2.919***	2.817***	2.817***
	(0.336)	(0.338)	(0.357)
Welfare	Yes	Yes	Yes
Socio-economic	No	Yes	Yes
Demographic	No	Yes	Yes
Cluster by country of origin	No	No	No
Observations	8,354	8,354	8,354
R-squared	0.483	0.486	0.486

Notes: All estimates include pweights and wave controls (essround). T_t refers to time in the country and M_t refers to belonging to the largest minority group. Controls includes variables proxying for welfare (hlthhmp (whether hampered in daily activities by illness, disability, infirmary or mental problem; satisfaction with health services in country nowadays (stfhlth)); whether feel discriminated (dscrntn); socioeconomic and demographic status (rlgdnm (religious denomination); how long have lived in country (livecntr); whether belong to minority ethnic group in country (blgetmg); number of people in household (hhmmb); gender (gndr); marital status(marital); age group (age_gr); number of years of education (eduyrs_gr); main occupational activity (mnactic); household net income quintile (quintile); opinion on state of health services in their country of origin (trust_hs); feeling about household's income nowadays (hincfel); whether citizen of country (ctzcntr); country variable; country income quintile (country quintile). Standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1

Table 3. Cultural Persistence of Health Evaluations by gender

	(1)	(2)	(3)	(4)	(5)	(6)
	First Generation		**Second Generation Paternal Lineage**		**Second Generation Maternal Lineage**	
	Male	Female	Male	Female	Male	Female
ρ	0.368***	0.358***	0.445***	0.242***	0.577***	0.319***
	(0.0401)	(0.0446)	(0.0783)	(0.0770)	(0.0730)	(0.0770)
Welfare	Yes	Yes	Yes	Yes	Yes	Yes
Socio-economic	Yes	Yes	Yes	Yes	Yes	Yes
Demographic	Yes	Yes	Yes	Yes	Yes	Yes
Cluster by country of origin	Yes	Yes	Yes	Yes	Yes	Yes
Constant	2.457***	3.016***	2.335***	3.521***	1.869***	3.287***
	(0.342)	(0.278)	(0.425)	(0.462)	(0.410)	(0.468)
Observations	7,758	9,582	3,802	4,552	3,711	4,445
R-squared	0.463	0.493	0.465	0.508	0.475	0.509

Notes: All estimates include pweights and wave controls (essround). Contains controls proxying for welfare (hlthhmp (whether hampered in daily activities by illness, disability, infirmary or mental problem; satisfaction with health services in country nowadays (stfhlth)); whether feel discriminated (dscrntn); socioeconomic and demographic status (rlgdnm (religious denomination); how long have lived in country (livecntr); whether belong to minority ethnic group in country (blgetmg); number of people in household (hhmmb); gender (gndr); marital status(marital); age group (age_gr); number of years of education (eduyrs_gr); main occupational activity (mnactic); household net income quintile (quintile); opinion on state of health services in their country of origin (trust_hs); feeling about household's income nowadays (hincfel); whether citizen of country (ctzcntr); country variable; country income quintile (country quintile). Standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1

Table 4. Cultural Persistence of Health Evaluations by EU birth and EU residence

	Born in the European Union			Residence in the European union		
	First Gen	Second Gen Maternal	Second Gen Paternal	First Gen	Second Gen Maternal	Second Gen Paternal
	(1)	(2)	(3)	(4)	(5)	(6)
ρ	0.270***			0.400***		
	(0.0508)			(0.0320)		
ρ _mother lineage		0.444***			0.395***	
		(0.0726)			(0.0628)	
ρ _father lineage			0.346***			0.410***
			(0.0674)			(0.0585)
Welfare	Yes	Yes	Yes	Yes	Yes	Yes
Socio-economic	Yes	Yes	Yes	Yes	Yes	Yes
Demographic	Yes	Yes	Yes	Yes	Yes	Yes
Cluster by country of origin	Yes	Yes	Yes	Yes	Yes	Yes
Constant	3.240***	2.755***	2.870***	2.623***	2.794***	2.651***
	(0.339)	(0.454)	(0.465)	(0.223)	(0.396)	(0.399)
Observations	8,074	5,094	4,956	14,154	6,244	6,109
R-squared	0.475	0.430	0.428	0.409	0.411	0.415

Notes: All estimates include pweights and wave controls (essround). Contains controls proxying for welfare (hlthhmp (whether hampered in daily activities by illness, disability, infirmary or mental problem; satisfaction with health services in country nowadays (stfhlth)); whether feel discriminated (dscrntn); socioeconomic and demographic status (rlgdnm (religious denomination); how long have lived in country (livecntr); whether belong to minority ethnic group in country (blgetmg); number of people in household (hhmmb); gender (gndr); marital status(marital); age group (age_gr); number of years of education (eduyrs_gr); main occupational activity (mnactic); household net income quintile (quintile); opinion on state of health services in their country of origin (trust_hs); feeling about household's income nowadays (hincfel); whether citizen of country (ctzcntr); country variable; country income quintile (country quintile). Standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1

Appendix

Table A1 Summary Table

Variable name	Definition	Unit and meaning	Mean	Standard deviation
Dependent variables				
Health	Subjective general health	1 (very good) -5 (very bad)	2.251	(0.937)
Health_migrant	Subjective general health in country of birth		2.251	(0.284)
Health_ fathers lineage	Subjective general health in father's country of birth		2.252	(0.288)
Health_ mothers lineage	Subjective general health in mother's country of birth		2.253	(0.270)
Welfare controls				
hlthhmp	whether hampered in daily activities by illness, disability, infirmary or mental problem	1 Yes a lot 2 Yes to some extent 3 No	2.686	(0.582)
stfhlth	opinion on state of health services in country nowadays	0 (extremely bad) – 10 (extremely good)	5.174	(2.602)
dscrntn	Whether feel discriminated on grounds of own nationality	0 (no); 1 (yes)	0.013	(0.114)
Sociodemographic controls				
rlgdnm	religious denomination	1 Roman Catholic 2 Protestant 3 Eastern Orthodox 4 Other Christian 5 Jewish 6 Islam 7 Eastern religion 8 Other non Christian	NA	NA
timeincntry	length of time in	1 <1 year	4.799	(0.616)

	country	2 1-5 years 3 5-10 years 4 10-20 years 5 20 years+		
blgetmg	whether belong to minority ethnic group in country	0 no 1 yes	0.058	(0.235)
hhmmb	number of people in household	0 1-4 1 5-8 2 9-12 3 13-24	0.123	(0.340)
gndr	gender	1 Male 2 Female	1.538	(0.498)
Marital	Marital status	1 married 2 separated 3 divorced 4 widowed 5 never married	NA	NA
age_gr	Age group	1 10-20 2 20-30 3 30-40 4 40-50 5 50-60 6 60+	3.692	(1.706)
eduyrs_gr	Education group	0 none 1 1-5 years 2 5-10 years 3 10-15 years 4 15+	1.807	(0.557)
mnactic	main occupational activity	1 paid work 2 education 3 unemployed, looking 4 unemployed, not looking 5 permanently sick or disabled 6 retired 7 community or military service 8 housework 9 other	NA	NA

quintile	household net income category, quintiles	1 (lowest group)-5 (highest group)	2.817	(1.496)
hincfel	feeling about household's income nowadays	1 living comfortably on present income 2 coping on present income 3 difficult on present income 4 very difficult on present income	2.105	(0.898)
ctzcnt	Whether individual is citizen of the country	0 no; 1 yes	0.959	(0.196)
Other controls				
Trusths_gr	trust in health system back in their original country	Mean stfhlth by country of birth, grouped into 3 (0 bad, 1 ok, 2 good)	1.012	(0.659)

*bold indicates omitted category

Appendix. Not for publication: Specification with all the controls

VARIABLES	(1) health	(2) health
mean_healthcob	0.336***	0.362***
	(0.0394)	(0.0563)
_Ihlthhmp_2	-0.654***	-0.639***
	(0.0336)	(0.0474)
_Ihlthhmp_3	-1.325***	-1.299***
	(0.0339)	(0.0506)
_Istfhlth_1	0.104	0.0803
	(0.0753)	(0.0989)
_Istfhlth_2	0.0307	0.0296

	(0.0484)	(0.0644)
_Istfhlth_3	-0.0355	-0.0580
	(0.0502)	(0.0655)
_Istfhlth_4	-0.0552	-0.0291
	(0.0456)	(0.0578)
_Istfhlth_5	-0.0669	-0.0611
	(0.0448)	(0.0504)
_Istfhlth_6	-0.0682	-0.0761
	(0.0457)	(0.0576)
_Istfhlth_7	-0.120***	-0.0901*
	(0.0448)	(0.0524)
_Istfhlth_8	-0.117***	-0.127**
	(0.0435)	(0.0551)
_Istfhlth_9	-0.159***	-0.104
	(0.0515)	(0.0672)
_Istfhlth_10	-0.213***	-0.246***
	(0.0586)	(0.0791)
_Idscrntn_1	-0.0204	-0.00737
	(0.0363)	(0.0479)
_Irlgdnm_1	0.0716***	0.0354
	(0.0258)	(0.0340)
_Irlgdnm_2	-0.0504*	-0.0773*
	(0.0279)	(0.0416)
_Irlgdnm_3	0.00126	0.0289
	(0.0266)	(0.0387)
_Irlgdnm_4	-0.0588	-0.126*
	(0.0497)	(0.0697)
_Irlgdnm_5	-0.100**	-0.151***
	(0.0395)	(0.0504)
_Irlgdnm_6	0.00854	0.00977
	(0.0379)	(0.0548)
_Irlgdnm_7	0.131***	0.184***
	(0.0441)	(0.0583)
_Irlgdnm_8	0.0457	0.0301
	(0.111)	(0.127)
_Itimeincnt_2	0.0216	0.0389
	(0.0691)	(0.0868)
_Itimeincnt_3	0.00385	-0.0128
	(0.0675)	(0.0795)
_Itimeincnt_4	-0.473***	-0.205
	(0.161)	(0.242)
_Itimeincnt_5	-0.290*	-0.125
	(0.175)	(0.189)
_Iblgetmg_1	0.0142	0.0367
	(0.0218)	(0.0260)
_Ihhmmb_1	-0.00901	-0.0292
	(0.0279)	(0.0351)
_Ihhmmb_2	0.0241	5.14e-05
	(0.143)	(0.200)
_Ihhmmb_3	0.305	-0.358***

	(0.658)	(0.105)
_Igndr_2	0.0707***	0.0767***
	(0.0158)	(0.0207)
_Imarital_2	0.0306	0.0728
	(0.0555)	(0.0811)
_Imarital_3	-0.0247	-0.0269
	(0.0278)	(0.0365)
_Imarital_4	-0.0167	-0.00572
	(0.0335)	(0.0388)
_Imarital_5	-0.0263	-0.0454
	(0.0228)	(0.0302)
_Iage_gr_2	0.0448	0.0736
	(0.0401)	(0.0503)
_Iage_gr_3	0.109**	0.102*
	(0.0466)	(0.0616)
_Iage_gr_4	0.227***	0.239***
	(0.0428)	(0.0577)
_Iage_gr_5	0.294***	0.281***
	(0.0452)	(0.0606)
_Iage_gr_6	0.394***	0.415***
	(0.0567)	(0.0818)
_Ieduyrs_gr_1	-0.153**	-0.0789
	(0.0775)	(0.0915)
_Ieduyrs_gr_2	-0.257***	-0.149
	(0.0783)	(0.0928)
_Ieduyrs_gr_3	-0.238***	-0.124
	(0.0887)	(0.107)
_Ieduyrs_gr_4	-0.156	0.0328
	(0.112)	(0.128)
_Imnactic_1	-0.0123	-0.158
	(0.136)	(0.102)
_Imnactic_2	-0.0784	-0.205*
	(0.141)	(0.108)
_Imnactic_3	0.0416	-0.0468
	(0.147)	(0.121)
_Imnactic_4	0.0651	-0.0904
	(0.149)	(0.134)
_Imnactic_5	0.508***	0.425***
	(0.146)	(0.129)
_Imnactic_6	0.0977	-0.0392
	(0.136)	(0.107)
_Imnactic_7	-0.339	-0.124
	(0.269)	(0.273)
_Imnactic_8	0.0196	-0.176
	(0.144)	(0.115)
_Imnactic_9	-0.145	-0.247
	(0.154)	(0.150)
_Iquintile_1	0.0387	0.0781*
	(0.0342)	(0.0469)
_Iquintile_2	0.0467	0.0494

	(0.0366)	(0.0437)
_Iquintile_3	0.0481	0.0471
	(0.0350)	(0.0520)
_Iquintile_4	0.0241	0.0269
	(0.0302)	(0.0385)
o._Iquintile_5	-	-
_Itrusths_g_1	0.0320	0.0331
	(0.0354)	(0.0385)
_Itrusths_g_2	0.0708*	0.0400
	(0.0378)	(0.0423)
_Ihincfel_1	-0.0948*	0.0493
	(0.0571)	(0.365)
_Ihincfel_2	-0.00110	0.139
	(0.0626)	(0.365)
_Ihincfel_3	0.132**	0.214
	(0.0645)	(0.364)
_Ihincfel_4	0.227***	0.323
	(0.0715)	(0.364)
_Ictzcntr_1	0.0405**	0.0566**
	(0.0195)	(0.0264)
_Icountryqu_2	-0.275***	-0.277***
	(0.0518)	(0.0724)
_Icountryqu_3	-0.129***	-0.127**
	(0.0383)	(0.0521)
_Icountryqu_4	-0.302***	-0.371***
	(0.0453)	(0.0580)
_Icountryqu_5	-0.325***	-0.349***
	(0.0429)	(0.0522)
healthcob_time20	0.110	0.0379
	(0.0674)	(0.0757)
healthcob_time10	0.199***	0.0850
	(0.0663)	(0.0959)
dummymeanhealth	-0.0330***	-0.0567**
	(0.0118)	(0.0221)
_Iessround_2	-0.0625**	
	(0.0273)	
_Iessround_3	-0.0792**	
	(0.0316)	
_Iessround_4	-0.0430	
	(0.0265)	
_Iessround_5	0.000979	0.0474
	(0.0430)	(0.0508)
_Iessround_6	0.0198	0.0605
	(0.0570)	(0.0613)
o._Iessround_2		-
o._Iessround_3		-
o._Iessround_4		-

Constant	2.772***	2.555***
	(0.241)	(0.429)
Observations	17,340	9,530
R-squared	0.482	0.488

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1