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Niclas Berggren, Andreas Bergh, Christian Bjørnskov and Shiori Tanaka

Research Institute of Industrial Economics
P.O. Box 55665
SE-102 15 Stockholm, Sweden
info@ifn.se
www.ifn.se

How Persistent Is Life Satisfaction? Evidence from European Immigration[Ψ]

Niclas Berggren[a, b], Andreas Bergh[a, c], Christian Bjørnskov[a, d, *], Shiori Tanaka[e]

[a] Research Institute of Industrial Economics (IFN), Box 55665, 102 15 Stockholm, Sweden

[b] Department of Institutional, Environmental and Experimental Economics (KIE), University of Economics in Prague, Winston Churchill Square 4, 130 67 Prague 3, Czechia

[c] Department of Economics, Lund University, Box 7082, 220 07 Lund, Sweden

[d] Department of Economics, Aarhus University, Fuglesangs Allé 4, 8210 Aarhus V, Denmark

[e] Department of Transdisciplinary Science and Engineering, Tokyo Institute of Technology, 4259 Nagatsuta, Midori, Yokohama, Kanagawa 226-8503, Japan

Abstract: This paper asks to what extent life satisfaction among immigrants remains similar to that in their country of origin and to what extent it adapts to that in their country of residence. We employ data from 29,000 immigrants in the European Social Survey to estimate the relative importance of these influences. We find evidence that the persistence of life satisfaction from the country of origin is strong for migrants from developed countries and close to zero for migrants from formerly communist countries. We also find that persistence for second-generation immigrants is similar but weaker than for their parents.

Keywords: Life satisfaction, happiness, life satisfaction, heritability, culture, immigration
JEL codes: I31, Z10

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[*] Corresponding author, e-mail: chbj@econ.au.dk

1. Introduction

What determines life satisfaction?[1] Contemporaneous factors in the country where people live have a strong influence, but recent research suggests that there is also persistence across generations (Nunn, 2012, 2014; Helliwell et al., 2016a). If elements of people's family backgrounds to some degree determine their traits, people are not completely malleable. Rather, they retain ways of thinking and behaving that stem from the past. Bisin and Verdier (2001, 2011) distinguish between the *horizontal* and *vertical* transmission of values, where the former is an influence from the surrounding society to the individual and the latter is the influence of parents on their children.[2] The stronger the vertical transmission is relative to the horizontal transmission, the more limited is the ability to influence life satisfaction (politically or individually), and it also suggests that life satisfaction is relatively more robust to the problems (or joys) of the present.

We examine first- and second-generation immigrants in 30 European countries to estimate the relative importance for their individual life satisfaction of the average life satisfaction in their country of origin (i.e., the country of birth of first-generation immigrants and the country of birth of the parents of second-generation immigrants) and of the average life satisfaction in their country of residence. To our knowledge, this is the first study that tries to determine the relative importance of these two transmission channels of life satisfaction for a large cross-country sample.

Several studies have indicated that background matters. Christoffersen et al. (2014, ch. 4) note that Swiss emigrants seem more satisfied in their new countries of residence than native citizens – they apparently bring Swiss life satisfaction with them. Other studies have focused on the persistence of social trust, which is known to be a key determinant of life satisfaction. Helliwell et al. (2016a) show that immigrants' degree of trust gradually converges towards the trust levels of their new countries, but also that they retain at least a core of the trust from their home countries. Bergh and Öhrvall (2016) confirm these findings but show that convergence in trust is only instantiated for immigrants below the

[1] By "life satisfaction" is meant how people subjectively evaluate their life as a whole (rather than their current feelings). A related concept is subjective well-being (well-being for short), by which is meant "a person's cognitive and affective evaluations of his or her life" (Diener et al., 2002, p. 63). The latter measure contains both life satisfaction and emotional reactions. On these measures, see Kahneman and Krueger (2006).

[2] Previous studies show that parents transmit a number of characteristics to their children, e.g., when it comes to female labor force participation (Fernández et al., 2004), work ethic (Bogt et al., 2005), party choice (Settle et al., 2009), tolerance (Berggren and Nilsson, 2015), generosity (Wilhelm at al., 2008), trust (Ljunge, 2014), cooperation (Bisin et al., 2004), risk attitudes (Dohmen et al., 2012) and religion (Bisin and Verdier, 2001).

age of 30. Ljunge (2014a) finds that trust is higher among second-generation immigrants with higher-trust ancestry, and that trust, if sufficiently high to begin with, is persistent in low-trust countries. Uslaner (2008), focusing on third-generation immigrants in the United States, concludes that their trust levels tend to resemble those in the countries from which their grandparents emigrated.[3]

By studying immigrants, we avoid the problem of reverse causality, which may be present when the life satisfaction of parents is directly related to the life satisfaction of their children. Since the life satisfaction of someone residing or having been born in a certain country has no or only a marginal effect on the average life satisfaction level in that country, reverse causality can be ruled out.[4]

Our main dependent variable is based on answers to the question "All things considered, how satisfied are you with your life as a whole nowadays?". All replies included come from first- and second-generation immigrants. We relate these replies to the average life satisfaction of their or their parents' countries of origin. By controlling for a large array of individual characteristics, we can examine the importance of various factors that, in addition to the life satisfaction of the country of origin and of the country of residence, are potentially related to individual life satisfaction. We also separate countries of origin into developed, developing and post-communist countries to examine if the relative importance of the country of origin and the country of residence varies between different types of origin countries. The basis for such a separation is that conditions affecting life satisfaction in the country of origin may vary systematically between these country types.

Our main findings are the following. Among first-generation immigrants, life satisfaction is related to both the average life satisfaction of their country of birth and to the average life satisfaction of their country of residence, but the estimate is on average almost four times larger from the country of residence. This average nevertheless hides significant differences between people with a background in developed countries, post-communist countries and developing countries. For immigrants from developed countries, the influence of the new country is about twice as large as that of the country of origin (when accounting for country-of-residence fixed effects they are even similar); for post-communist immigrants, only the average life satisfaction of the new country matters, suggesting that there is no transmission from the country of origin; and for immigrants from developing countries, the

[3] For a review of this literature, see Dinesen and Sønderskov (2016).

[4] The epidemiological method (Fernández, 2011) of regressing individual outcomes on variables from the countries of origin of immigrants has been used before to analyze determinants of trust (Algan and Cahuc, 2010; Ljunge, 2014a,b,c), women's labor supply and fertility (Fernández and Fogli, 2006, 2009; Alesina and Giuliano, 2010), political participation (Alesina and Giuliano, 2011), preferences for redistribution (Luttmer and Singhal, 2011) and health (Ljunge, 2016). As far as we know, we are the first to study life satisfaction using this method.

effect from the new country is about three times as big as the one from the country of origin. The importance of the new country is hence always strong, but the country of origin continues to matter for immigrants from developed and developing countries.

For second-generation immigrants, who were born in the new country and who therefore have no first-hand experience of living in the countries in which their parents were born, one would expect a lower degree of transmission from the country of origin, which is indeed what we find. The pattern is largely the same as for the first-generation immigrants, but with a stronger influence from the country of birth and residence than from the country of origin of their parents compared to the findings for the first-generation immigrants. Some form of transmission from the country of origin is still present except for those with a post-communist background, and the pattern is confirmed that the new country is relatively more important for those with a developing country background.

Lastly, we identify one individual-level mechanism that seems to explain the influence of the life satisfaction of the new country: having trust in other people and in the institutions of the new country. Our interpretation is that generalized and institutional trust enable people to partake in social life such that one is affected by the life satisfaction of the surrounding society.

In addition to gaining insights about the origins of life satisfaction, our study makes clear to what degree the life satisfaction of immigrants to European countries is affected by the countries they move to, which hints at questions such as how migrants fare after having migrated and which may be relevant for designing immigration policy.[5] If, for example, there is an effect on individual life satisfaction from the life satisfaction of the country of residence, then this may have implications for which countries are best equipped to accept immigrants. In other words, our study provides new knowledge about the potential for policy to affect life satisfaction and for "global" immigration policy.

2. Transmission of life satisfaction: Some theoretical considerations

Life satisfaction is influenced by a range of factors (see, e.g., Frey and Stutzer, 2002; Dolan et al., 2008). How and through which channels this influence occurs is one of the oldest scholarly debates. First, there is clear evidence of a considerable biological influence: For example, a meta-analysis of the literature indicates that the weighted average genetic heritability for life satisfaction is 32% (Bartels,

[5] However, we do not analyse how immigrants' life satisfaction is affected by their migration in any comparative sense: for such an analysis, see Stillman et al. (2015).

2015). Several studies likewise show that characteristics associated with life satisfaction are, at least partially, genetically transmitted. Loewen et al. (2013) for example find evidence, in a study of twins, that transmission of honesty norms appears to have a distinct genetic component. Other recent studies from different social sciences find that risk preferences, altruism, social trust and political values are also associated with genetic factors (Alford et al., 2005; Cesarini et al., 2009; Dohmen et al., 2012; Klemmensen et al., 2012). However, studies of work and gender norms among immigrants suggest that substantial assimilation also takes place. Neumann (2015) for example finds that female migrants from Third World countries in Sweden assimilate to Swedish norms such that their employment frequency is at an average level after 10–15 years in the country. Similarly, Åslund (2015) finds an influence of when migrants came to their present country of residence on social integration (living close to, working with and marrying natives). This suggests that there is also a considerable influence by environmental factors (which could also interact with biological factors), and these are of great interest for the present study.

Following Bisin and Verdier (2001, 2011), we distinguish between *horizontal* transmission, where the individual adopts characteristics based on observation of or interaction with members of their own generation and others in the surrounding society, and *vertical* transmission, where the individual adopts characteristics based on observation of or interaction with the parents or where the individual inherits traits. Whereas horizontal transmission is completely non-biological, vertical transmission is both biological and environmental, and their interaction is uncertain (Schnittker, 2008).

We are able to make some further distinctions for the two groups of immigrants under study. For first-generation immigrants, life satisfaction in the country of origin can matter both because of cultural transmission from that society and because of transmission (including but not limited to genetic transmission) from the parents. There is, in other words, a potential both for vertical and horizontal transmission of life satisfaction from the country of origin for this group – as well as horizontal transmission from the country of residence. For second-generation immigrants, life satisfaction in the country of origin will matter either to the extent it is transmitted through the parents, which is a vertical influence, or if they stay in contact with their country of origin through other channels than their family. This latter transmission will be horizontal, and is for example enabled by travel, satellite TV and the internet, both of which allow second-generation immigrants to keep in close contact with the culture of their parents.

Finally, it is worth considering the "psychological immune system" described by Gilbert et al. (1998, p. 619) as something that protects the individual from an overdose of gloom, through "the artful methods by which the human mind ignores, augments, transforms, and rearranges information in its unending battle against the affective consequences of negative events". If the psychological immune

system is relevant, we should see that the country of origin matters less when it is more likely to be associated with negative experiences, which we believe is likely to be the case for post-communist countries.

In summary, there are plentiful reasons to believe that life satisfaction can be transmitted both horizontally and vertically. While remaining agnostic of which exact mechanisms may be more important, in the following we separate horizontal transmission of life satisfaction from the new country of residence from any persistence in the form of horizontal or vertical transmission of relevant traits from immigrants' countries of origin.

3. Empirical method and the data

We use the epidemiological method (Fernández, 2011), which is illustrated in Figure 1. It connects to our theoretical understanding of how individual life satisfaction relates to the life satisfaction of others, as described in Section 2. The dependent variables are the life satisfaction of the first-generation immigrant and the life satisfaction of the second-generation immigrant, respectively (with red frames). Both are modelled as being influenced by the average life satisfaction of the society in which they reside (and in which the second-generation immigrants were also born) and by individual-level characteristics (specified below).

Figure 1 about here

The average life satisfaction of the country in which they live is an indicator of horizontal transmission, of how the immigrants are influenced by the surrounding society. However, in order to investigate vertical transmission, we cannot link first- and second-generation immigrants' life satisfaction to that of their parents, since such data are not available. We indicate that we do not directly test this influence by using dashed arrows in Figure 1. Instead, as an indicator of vertical transmission, we use the average life satisfaction of the country of origin of the first-generation immigrants and the country of origin of the parents of the second-generation immigrants. As indicated in Figure 1, we posit a link from this indicator to the life satisfaction of the parents of both the first- and the second-generation immigrants (which we, as mentioned, do not have direct data for). But it is not merely a necessity to use an indicator of this kind: the advantage in doing so is that we can rule out reverse causality. While the life satisfaction of a child can plausibly influence the life satisfaction of his or her

parents, the life satisfaction of a child living in one country arguably cannot affect the average life satisfaction of another country (especially not in the case of second-generation immigrants, when the parents are immigrants as well).

However, this approach does not enable us to differentiate between horizontal and vertical transmission from the country of origin. In the case of the first-generation immigrants, since they resided part of their lives in their countries of origin, they were presumably influenced by this surrounding society, as well as by their parents. In the case of second-generation immigrants, while one might think that the average life satisfaction of the country in which their parents were born proxies vertical transmission only, there is the possibility that they are influenced by personal and cultural contacts with the country of origin.

We employ the first six waves of the European Social Survey (ESS), which is a large survey with representative country samples conducted every second year in Europe since 2002. The survey has since its inception included the standard question on life satisfaction: "All things considered, how satisfied are you with your life as a whole nowadays?" The reply is given on a 0–10 scale, with 0 being the worst and 10 the best possible state. For each immigrant, we couple these individual answers to the average level in the country of birth (in the case of first-generation immigrants) and the country in which the parents were born (in the case of second-generation immigrants), which we get from the Gallup World Poll, as reported in Helliwell et al. (2016b). Both are referred to as countries of origin in our regression tables. The Gallup question is identical to the question in the ESS and asked on the same scale, which allows us to map satisfaction across countries. Our estimates in the following thus rely on the assumption that life satisfaction changes only very slowly over time, as we can only measure the *current* life satisfaction in the countries of origin.[6] We thus estimate the degree to which life satisfaction persists through the association between life satisfaction in the country of origin and individual life satisfaction. By using the average country measure for the countries of residence, we furthermore estimate the influence of the surrounding society by relating it to the individual life satisfaction measures.

In matching the life satisfaction of the country of birth of the fathers and mothers of second-generation immigrants when the father and mother come from different countries, we use the average

[6] We nevertheless believe that this is at most a minor problem. First, life satisfaction is known to change only very slowly. Satisfaction levels have for example only changed less than 8% in the 45 years for which data exist for Denmark, one of the world's happiest countries. Second, if satisfaction levels do change substantially over time, our strategy implies that we will obtain conservative estimates in the following. If anything, we are likely to underestimate the importance of persistence.

home country characteristics of the parents.[7] We exclude second-generation immigrants with only one immigrant parent, as it is not straightforward to link such respondents to country measures of life satisfaction. The merged ESS data from waves 1 to 6 include a total of 291,686 respondents, but we only use data for immigrant respondents, of which 26,191 are first-generation immigrants, defined as respondents who were not born in their country of residence, and 5,023 second-generation immigrants, defined as respondents who were born in the country of residence but whose parents were not. Of the 5,023 second-generation immigrants, 1,881 have parents from different countries.[8] The 30 European countries included as countries of residence are: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Great Britain, Greece, Hungary, Ireland, Israel, Italy, Lithuania, the Netherlands, Norway, Poland, Portugal, Russia, Slovakia, Slovenia, Sweden, Switzerland, Spain, Turkey and Ukraine. There are approximately 200 countries from which first-generation immigrants or parents of second-generation immigrants come in our data, and these cover all continents of the world, which makes it possible to ensure that the results are not driven by a particular background. We divide the identifiable countries into three groups: developed (50), post-communist (31) and developing (115). The separation of developed and developing countries follows the standard World Bank definition of high- and low-income countries, while we treat post-communist countries as a separate group due to their particular history, with long-term consequences of communism for the values, norms and behaviour of their populations (Necker and Voskort, 2010). The three country groups are specified in Table A1 in the Appendix.

Turning to the regression analysis, our typical regression equation is the following one:

$$S = \alpha + \beta_1 OS + \beta_2 RS + \lambda_1 X_1 + \lambda_2 X_2 + \lambda_3 X_3 + \delta Z + \eta D + \varepsilon \quad (1)$$

where S is individual life satisfaction, OS is the average life satisfaction of the country of origin (of first-generation immigrants or of the parents of second-generation immigrants), RS is the average life satisfaction of the country of residence, X_1 is a vector of three trust variables that indicate the degree to which a person is socially-culturally-politically aligned with the country of residence (political confidence, that measures trust in political actors and institutions; institutional confidence, that measures trust in the legal system and its enforcement; and social trust), X_2 is a vector of income and occupational dummies, X_3 is the health variable, Z is a vector of the remaining control variables, D is a

[7] We have experimented with separating the characteristics or using the minimum or maximum characteristic of the parents' home countries. However, the results of the different approaches are so similar that we report only the simple average.

[8] We exclude the 17,625 respondents where only one parent was born outside the country.

set of period dummies and ε is the set of error terms. To be a bit more precise about the individual-level controls, values for which are reported in the ESS, they are: income (in 12 categories), age, age squared, dummies for gender, employment status (in categories), dummies for having children living at home or having moved out, political confidence, institutional confidence, social trust, a dummy for living with a partner, religiosity and subjective health (in categories). As noted, all regressions include dummies for the survey year, and we also add country-of-residence fixed effects in a sensitivity check to account for fairly permanent features of the surrounding society, enabling us to isolate the persistent part of life satisfaction.

We estimate effects with a full specification as in equation (1), following the standard approach in the life satisfaction literature (cf. Bjørnskov et al., 2008; Dolan et al., 2008). A set of controls is important for two reasons. First, our estimates could suffer from omitted variables bias, in particular when individuals differ substantially in terms of age, ability, income and values. Second, a reasonably full set of background variables also alleviates the selection bias that estimates of heritability and reproduction of beliefs often suffer from (Lawrence and Breen, 2016). This would be particularly important if individuals, as is often thought, are more likely to migrate when they are younger, optimistic and have skills or other characteristics that they may believe are of specific use in the countries they aim to migrate to.

Finally, based on information on how many years the immigrant has lived in her present country of residence, we create an indicator separating the relatively young and old migrants. This indicator captures whether the immigrant was above or below 30 years of age when she moved, i.e., whether her "formative years" were conclusively over or not. We interact this variable with the average life satisfaction of the country of residence and country of origin as a way to test if the relative role of the country of origin and the country of residence in the transmission of life satisfaction varies depending on migrant age.

Summary statistics are presented in Table 1 and full definitions in Table A2 in the Appendix.

Table 1 about here

4. Results

4.1. An initial illustration

Figure 2 plots the average life satisfaction of first-generation immigrants against the average life satisfaction of non-immigrants in their country of residence. The correlation is 0.85 across all 30 European destination countries and only slightly smaller, in each case, when splitting the full sample of countries of origin into developed countries and post-communist Europe. The figure indicates that there is a strong correlation between the life satisfaction of first-generation immigrants and non-immigrants, suggesting that even though there is an effect from the country of origin, it is not dominant.

Figure 2 about here

4.2. Main results for first- and second-generation immigrants

We begin by presenting our results for *first-generation immigrants*, based on estimations of regression equation (1) without any controls in Table 2, and with a full specification of controls in Table 3. The latter does not specify the separate control variables to save space, but such a specification is available in Table A3 in the Appendix.

Table 2 about here
Table 3 about here

Table 2 reveals that among first-generation immigrants, life satisfaction is related to both the average life satisfaction of their country of birth and to the average life satisfaction of their country of residence. If one originates from a country with a life satisfaction level that is 1 unit higher than some other country, then one's own life satisfaction is on average about 0.22 higher; and if the new country of residence has a life satisfaction that is 1 unit higher than some other country, then one's own life satisfaction is about 0.90 higher. That provides a first indication that even though there is both a vertical and horizontal transmission of life satisfaction, the horizontal channel is likely to be the more important. Adding a full set of control variables in Table 3 reduces these estimates, as we both control for selection and potential factors through which transmission works. The influence from the country of origin, assessed by the point estimates, is now 0.14 and from the country of residence 0.50, which indicates that the relative importance of the present society in which one lives is substantially larger, with the point estimate being almost four times as large.

As can be seen in these two tables, we take a further step and divide the immigrants depending on whether their country of birth is a developed, post-communist or developing country. Interestingly, there are distinct differences. For developed-country immigrants, the two estimates are the closest in size (with the effect from the new country being about twice as large without fixed effects and of the same size with fixed effects), while the effect from the country of residence for developing-country immigrants is about four times as big as the one from the country of origin. The persistence of life-satisfaction is consequently present in both cases, with a larger point estimate for those with a background in a developed country, but the relative importance of the life satisfaction in the new country is much higher for the immigrants from developing countries, supporting the idea that there is a psychological immune system at work. As such, if an immigrant from a developed country and an immigrant from a developing country come to the same European country with a higher general level of life satisfaction, the latter will on average experience about twice as high an increase in life satisfaction, all other things being equal. Yet, when we look at immigrants from post-communist countries, only the average life satisfaction of the country of residence matters, implying no cultural heritability – in essence, no vertical transmission from parents or horizontal transmission from remaining personal ties. The size of the point estimate for life satisfaction from the country of residence is about as big as that for the developing-country immigrants (and substantially larger than for the ones from developed countries).

The control variables (shown in Table A3) all behave as expected based on other studies. Age exhibits a U-shaped association with life satisfaction, with a minimum in the mid-40s; people who are in a stable relationship (living with their partner), are religious and whose children have moved out are more satisfied with their lives; and income is approximately linearly associated with life satisfaction. We also see a positive association with being self-employed and a strong negative association with unemployment or living off other social benefits. Finally, social trust is positively associated with life satisfaction, as are confidence in institutions and confidence in politics. The point estimates of social trust and institutional confidence are about twice as large as that for political confidence. As expected, subjective health is positively associated with higher life satisfaction (note that the scale of our measure is such that a higher value implies worse health).[9]

[9] We could have added a number of other variables from the rich ESS dataset but follow what we consider a consensus specification for two reasons. First, adding more variables increases the risk of over-specifying the regressions and adding "bad" controls. Second, as further tests (not shown) suggested, neither education, other functional forms of age and income, taking the "distance" in life satisfaction between the countries of origin and residence into account, testing whether

Furthermore, in the lower panels of Tables 2 and 3, we report results when using a set of residence-country fixed effects. The reason is that both immigrant life satisfaction as well as the desire to migrate to a particular country could be affected by national aspects of such countries. Previous studies have for example found that migrants tend to prefer countries with better institutions (Bergh et al., 2015). However, we find no significant difference between the estimates in which we include country fixed effects and those in which we simply control for the average life satisfaction among the native population. As such, most immediate worries of omitted variables bias can be dismissed.

We next turn to *second-generation immigrants*, repeating the same analysis as for the first-generation immigrants. The main difference between these two groups is that the second-generation immigrants were born in their country of residence, which suggests that they are relatively more influenced by the horizontal transmission channels of the country of residence compared to first-generation immigrants.

Table 4 about here
Table 5 about here

Results can be seen in Tables 4 and 5; the full specification of Table 5, with control variables listed, is in Table A4 in the Appendix. The control variables are more or less of similar importance/unimportance as for the first-generation immigrants. As for life satisfaction, when looking at second-generation immigrants, who have no first-hand experience of living in their parents' country of birth, one would, as mentioned, expect a lower degree of cultural persistence – and this is indeed what we find. As can be seen in the tables, the pattern is largely the same as for the first-generation immigrants, but with a stronger relative influence from the country of residence of the second-generation compared to the findings for the first-generation immigrants. Here, the ratio of the point estimates is about 6 for the whole sample (compared to about 4 for the first-generation immigrants). Still, there is persistence in life satisfaction for immigrants both from developed and developing countries here as well, but again not for those with a post-communist background. The effect is decreasing over time and more persistent for migrants from developed countries.

4.3. Are young first-generation immigrants different?

immigrants speak their native language at home (as an indicator of lack of integration) or adding a set of other value measures changed any of our main findings. These results are available on request.

We already reported differences between first- and second-generation immigrants, with the latter being less influenced by their national background in their life satisfaction than the former. As an additional exercise, we have implemented a cut-off at 30 years of age when the first-generation immigrant arrived in the country of residence to see whether "young" and "old" are different. One reason for doing so is that it enables us to gain more knowledge about transmission mechanisms. If first-generation immigrants are influenced by the average life satisfaction of their new country of residence, this implies that their life satisfaction is not entirely determined vertically. This implication is further reinforced if the degree to which the average life satisfaction of the new country affects different age groups of first-generation immigrants differently. As can be seen in Table 6, we only find different effects for immigrants from developed countries. The ones who migrated at a younger age have higher life satisfaction. It is also the case that the influence from their country of birth is somewhat stronger than for older immigrants, plausibly a result of their keeping close contact with their country of origin through travel, TV, the internet etc., but the influence from both countries still matter.

Table 6 about here

4.4. Possible mechanisms for first-generation immigrants

A last thing we do is to see whether we can find indications of possible mechanisms that explain what individual characteristics that may contribute to explaining how individual life satisfaction is affected by country-of-origin and resident-country life satisfaction, respectively. We do this by excluding three sets (X_1, X_2 and X_3) of control variables: first, social trust, institutional confidence and political confidence; second, income and occupation; and third, subjective health. If individual life satisfaction is affected by particular factors that are proxied by these control variables, we may effectively be underestimating the degree to which the two societies' average life satisfaction as such matters. In addition, information on the possible channels through which life satisfaction is transmitted is valuable *per se* by providing necessary background upon which to interpret the overall findings. Results are presented in Table 7.

Table 7 about here

While all of these factors seem to play a role to some extent, the results indicate that social trust matters the most (by reducing the point estimates the most when included), especially for the effect

from the life satisfaction in the country of residence.[10] We find that the ratio of the point estimates for country-of-origin satisfaction and residence-country satisfaction in particular is approximately 50% larger than when not controlling for trust factors, indicating their substantial influence on life satisfaction.

5. Concluding remarks

High life satisfaction is a widely shared goal, both in policymaking and in private life. This makes it important to discover its determinants. In this study, we look at a particular aspect of how life satisfaction emerges, namely how it is transmitted, with implications for whether it is a persistent trait or if people adapt. We do so by focusing on immigrants, stemming from a large number of countries all over the world, who now reside in one of 30 European countries. More precisely, we investigate to what degree individual life satisfaction of first- and second-generation immigrants is shaped by the average life satisfaction in their country of origin (first-generation immigrants)/in the country of origin of their parents (second-generation immigrants) and by their life satisfaction in their country of residence, respectively. If they are influenced in their own life satisfaction by that of the country of origin, this implies persistence. If they are influenced by their present surrounding society, this implies a connectedness and adaptation to the present surrounding society (and greater malleability of life satisfaction).

Our findings suggest that both channels matter (except in the case of immigrants from post-communist countries, who are only affected by the life satisfaction of their countries of residence). More specifically, among first-generation immigrants, life satisfaction is related to both the average life satisfaction of their country of birth and to the average life satisfaction of their country of residence. However, when looking at magnitudes, the latter influence is about four times as large. Hence, while there is a background influence, it is not as important as the effect of living in the present society.

When looking separately at immigrants from developed, post-communist and developing backgrounds, we find variation in the results. For developed-country immigrants, the two estimates are of similar size when including country-of-residence fixed effects (but otherwise the influence from the

[10] Although not shown, we have experimented with excluding and including single variables as well as the full set of trust variables. We find the largest effect when excluding social trust, while the effect of excluding political confidence and institutional confidence are smaller and similar in size but only borderline significant.

country of residence is about twice as large); for post-communist immigrants, only the average life satisfaction of the new country matters, implying no evidence of any transmission from the background country; and for developing-country immigrants, the effect from the new country is about four times as big as the one from the country of origin. There are hence strong indications of a certain degree of transmission from the country of origin for all first-generation immigrants except those who stem from post-communist countries, and the degree of persistence is highest for immigrants from developed countries. Although we cannot rule out the influence of genes or other biological factors, our results seem hard to reconcile with theories implying that the vertical transmission of life satisfaction from parents to children is mainly genetic. Had genetic variation been a major influence, we would have expected to see a particularly strong persistence among immigrants from the relatively ethnically homogenous post-communist countries, and less so for immigrants from more heterogeneous poor countries. Yet, the opposite pattern emerges in the data.

When looking at second-generation immigrants, we expected a lower degree of transmission from the country of origin, since it is the country of origin of their parents, making them more removed from it than first-generation immigrants. This was confirmed by our empirical analysis: The pattern is largely the same as for the first-generation immigrants, but with a stronger influence from the country of birth. Yet, there is a background effect also here (except for those originating in post-communist countries).

What are the wider implications of our findings? First, they provide new knowledge about determinants of individual life satisfaction: that one is affected by one's cultural and personal background but that one in most cases can adjust one's satisfaction level in the presence of new circumstances. The latter is especially true for immigrants from developing countries and from post-communist countries to Europe, and less so for immigrants from other developed countries. Second, we find support for the presence of a psychological immune system, such that people adapt their life satisfaction to that of a new setting if their background provided worse living conditions. Third, one may take our results as one type of input when planning a comprehensive immigration policy, say, on the EU level. For example, our results seem to suggest that all else equal, the increase in life satisfaction from the surrounding European society is larger for developing-country than for developed-country immigrants. Surely, there are other factors to consider, but we submit that this is one that is relevant and one that now has empirical foundations.

Appendix

Tables A1– A4 here

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Tables and figures

Table 1. Descriptive statistics

Variable	Mean	Standard deviation	Observations
Life satisfaction	6.668	2.416	19,964
Country-of-origin satisfaction	5.771	.936	20,107
Resident-country satisfaction	7.051	.900	20,107
Living with partner	.599	.489	20,107
Children at home	.441	.497	20,107
Children moved out	.257	.437	20,107
Gender (women)	.556	.497	20,083
Age	47.4	17.7	19,962
Entry age below 30	.546	.498	19,838
Similar trust	.508	.499	19,467
Similar income	.504	.499	20,232
Political confidence	4.126	2.312	18,481
Institutional confidence	5.639	2.486	19,756
Social trust	4.997	2.474	19,977
Income (categories)	5.009	3.108	16,333
Subjective health (categories)	2.252	.985	20,085
Self-employed	.056	.229	19,535
Pensions	.225	.418	19,535
Unemployed	.032	.177	19,535
Social benefits	.049	.215	19,535
Investment income	.006	.078	19,535
Other income	.019	.136	19,535
Religiosity	5.144	3.081	18,881

Table 2. Individual life satisfaction of first-generation immigrants, no control variables

	All	Developed	Post-communist	Developing
Country-of-origin	.224***	.372***	.004	.150***
satisfaction	(.017)	(.034)	(.048)	(.037)
Resident-country	.898***	.726***	.921***	.673***
satisfaction	(.049)	(.038)	(.052)	(.092)
Controls	None	None	None	None
Observations	19964	6845	8307	4799
Countries	32	32	31	30
R squared	.124	.069	.123	.041
Wald Chi squared	523.44	504.82	333.17	75.08
Including country of residence fixed effects				
Country-of-origin	.228***	.422***	.037	.151***
satisfaction	(.018)	(.038)	(.051)	(.037)

Note: *** (**) [*] denote significance at p<.01 (p<.05) [p<.10].

Table 3. Individual life satisfaction of first-generation immigrants, with control variables

	All	Developed	Post-communist	Developing
Country-of-origin	.137***	.179***	.057	.119***
satisfaction	(.019)	(.039)	(.047)	(.038)
Resident satisfaction	.497***	.390***	.519***	.473***
	(.023)	(.046)	(.034)	(.059)
Controls	Full	Full	Full	Full
Observations	16185	5135	6447	3591
Countries	32	31	31	30
R squared	.286	.225	.286	.221
Wald Chi squared	6070.10	1477.86	2564.02	1004.71
Including country of residence fixed effects				
Country-of-origin	.147***	.228***	.031	.085**
satisfaction	(.019)	(.043)	(.053)	(.040)

Note: *** (**) [*] denote significance at p<.01 (p<.05) [p<.10].

Table 4. Individual life satisfaction of second-generation immigrants, no control variables

	All	Developed	Post-communist	Developing
Country-of-origin	.206***	.399***	-.036	.099***
average satisfaction	(.019)	(.036)	(.046)	(.033)
Resident-country	.879***	.653***	.971***	.624***
satisfaction	(.022)	(.107)	(.047)	(.049)
Controls	No	No	No	No
Observations	22974	6790	10026	6145
Countries	32	32	32	29
R squared	.125	.074	.144	.031
Wald Chi squared	467.44	198.17	450.33	197.94
Including country of residence fixed effects				
Country-of-origin	.214***	.409***	.011	.156***
satisfaction	(.018)	(.037)	(.048)	(.035)

Note: *** (**) [*] denote significance at p<.01 (p<.05) [p<.10].

Table 5. Individual life satisfaction of second-generation immigrants, with control variables

	All	Developed	Post-communist	Developing
Country-of-origin	.087***	.199***	.002	.088***
average satisfaction	(.019)	(.038)	(.046)	(.035)
Resident-country	.528***	.392***	.532***	.457***
satisfaction	(.022)	(.045)	(.031)	(.058)
Controls	Full	Full	Full	Full
Observations	17359	5107	7783	4460
Countries	32	32	32	27
R squared	.284	.231	.298	.206
Wald Chi squared	6874.85	1517.85	3289.77	1148.97
Including country of residence fixed effects				
Country-of-origin	.162***	.232***	.047	.117***
satisfaction	(.020)	(.043)	(.051)	(.037)

Note: *** (**) [*] denote significance at p<.01 (p<.05) [p<.10].

Table 6. Individual life satisfaction of first-generation immigrants, with control variables and age differentiation

	All	Developed	Post-communist	Developing
Country-of-origin	.152***	.312***	.070	.066
satisfaction	(.028)	(.057)	(.067)	(.061)
Resident-country	.541***	.384***	.558***	.554***
satisfaction	(.031)	(.068)	(.045)	(.092)
Entry age below 30	.806***	1.908**	.791	.548
	(.317)	(.760)	(.662)	(.907)
Entry * country-of-	-.026	-.158***	-.080	.096
origin satisfaction	(.037)	(.071)	(.095)	(.078)
Entry * resident-	-.079**	-.101	-.042	-.129
country satisfaction	(.038)	(.085)	(.057)	(.109)
Controls	Full	Full	Full	Full
Observations	15094	4907	6290	3534
Countries	32	31	31	30
R squared	.286	.216	.284	.230
Wald Chi squared	6026.96	1343.64	2483.26	1045.54

Note: *** (**) [*] denote significance at p<.01 (p<.05) [p<.10].

Table 7. Indications of transmission channels, first-generation immigrants

	All	Developed	Post-communist	Developing
		Full specification		
Country-of-origin	.137***	.218***	.046	.115***
satisfaction	(.019)	(.037)	(.048)	(.038)
Resident-country	.497***	.337***	.533***	.465***
satisfaction	(.023)	(.048)	(.035)	(.059)
		No income and occupation		
Country-of-origin	.179***	.290***	.062	.136***
satisfaction	(.019)	(.035)	(.045)	(.034)
Resident-country	.541***	.426***	.552***	.429***
satisfaction	(.026)	(.099)	(.033)	(.048)
		No trust variables		
Country-of-origin	.131***	.260***	.010	.11***
satisfaction	(.019)	(.037)	(.049)	(.039)
Resident-country	.714***	.526***	.739***	.661***
satisfaction	(.022)	(.046)	(.033)	(.059)
		No health		
Country-of-origin	.182***	.287***	.039	.122***
satisfaction	(.019)	(.038)	(.049)	(.039)
Resident-country	.548***	.323***	.586***	.438***
satisfaction	(.024)	(.049)	(.035)	(.061)

Note: *** (**) [*] denote significance at p<.01 (p<.05) [p<.10].

Table A1. The three country groups

Developing			Post-communist	Developed
Afghanistan	Gabon	Nicaragua	Albania	Antarctica
Algeria	Gambia	Niger	Armenia	Australia
Angola	Ghana	Nigeria	Azerbaijan	Austria
Antigua and Barbuda	Grenada	North Korea	Belarus	Canada
Argentina	Guatemala	Pakistan	Bosnia	Cyprus
Aruba	Guinea	Palestine	Burkina Faso	Denmark
Bahrain	Guinea-Bissau	Panama	Croatia	Faroe Islands
Bangladesh	Guyana	Papua New Guinea	Czech Republic	Finland
Barbados	Haiti	Paraguay	Czechoslovakia	France
Belgium	Honduras	Peru	Egypt	Germany
Belize	Hong Kong	Philippines	Estonia	Gibraltar
Benin	India	Republic of the Congo	Georgia	Greece
Bolivia	Indonesia	Reunion	Hungary	Greenland
Botswana	Iran	Rwanda	Kazakhstan	Iceland
Bouvet Island	Iraq	Saint Kitts and Nevis	Kyrgyzstan	Ireland
Brazil	Ivory Coast	Saint Lucia	Latvia	Israel
Bulgaria	Jamaica	Sao Tome	Macedonia	Italy
Burundi	Jordan	Saudi Arabia	Moldova	Japan
Cambodia	Kenya	Senegal	Mongolia	Jersey
Cameroon	Kuwait	Seychelles	Montenegro	Liechtenstein
Cape Verde	Laos	Sierra Leone	Poland	Lithuania
Central African Republic	Lebanon	Solomon Islands	Romania	Luxembourg
Chad	Liberia	Somalia	Russia	Malta
Chile	Libya	South Africa	Serbia	Netherlands
China	Libya	Sri Lanka	Slovakia	New Zealand
Colombia	Macau	Sudan	Slovenia	Norway
Comoros	Madagascar	Suriname	South Korea	Portugal
Comoros	Malawi	Swaziland	Soviet Union	Puerto Rico
Costa Rica	Malaysia	Syria	Tajikistan	San Marino
Cuba	Maldives	Tanzania	Turkmenistan	Singapore
DR Congo	Mali	Thailand	Ukraine	Spain
Djibouti	Martinique	Togo	Uzbekistan	Sweden
Dominica	Mauritania	Trinidad and Tobago	Yugoslavia	Switzerland
Dominican Republic	Mauritius	Tunisia		Taiwan
East Timor	Mayotte	Uganda		Turkey
Ecuador	Mexico	United Arab Emirates		United Kingdom
El Salvador	Montserrat	Uruguay		United States
Equatorial Guinea	Morocco	Venezuela		
Eritrea	Mozambique	Vietnam		
Ethiopia	Namibia	Yemen		
French Guiana	Nepal	Zambia		
French Polynesia	Netherlands Antilles	Zimbabwe		

Table A2. Variable definitions

Variable	Definition
Life satisfaction	Answers to the question "All things considered, how satisfied are you with your life as a whole nowadays?" The scale runs from 0 (extremely dissatisfied) to 10 (extremely satisfied).
Country-of-origin satisfaction	Same question, country average of the country of origin of the immigrant (first-generation immigrants); data derive from the World Happiness Report (2016).
Resident-country satisfaction	Same question, country average of the country of residence of first-generation immigrants; data derive from the World Happiness Report (2016).
Country-of-origin average satisfaction	Same question, country average of the country or countries of origin of the parents of second-generation immigrants; data derive from the World Happiness Report (2016).
Living with partner	Dummy capturing if the respondent lives with his or her partner
Children at home	Dummy for whether the respondent has one or more children living at home
Children moved out	Dummy for whether all children have moved away from home
Gender (women)	Gender of respondent (1 is women)
Age	Age of respondent
Political confidence	Average score of "how much you personally trust" in the country's parliament, political parties and politicians; scale from 0 (No trust at all) to 10 (complete trust)
Institutional confidence	Average score of "how much you personally trust" in the country's legal system and the police; scale from 0 (No trust at all) to 10 (complete trust)
Social trust	Answer to the question "generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people?"; scale from 0 (you can't be too careful) to 10 (most people can be trusted).
Income	Answer to question "which letter describes your household's total income, after tax and compulsory deductions, from all sources?"; ten categories and two non-answers.
Entry age below 30	Dummy capturing whether the respondent was below 30 years of age when entering the current country of residence.
Better trust	Dummy capturing whether the general trust level is higher in the country of residence than the country of origin; based on trust data from Bjørnskov and Méon (2013).
Better income	Dummy capturing whether real GDP per capita is higher in the country of residence than the country of origin; based on data from CIA (2016).
Better wellbeing	Dummy capturing whether the general wellbeing level is higher in the country of residence than the country of origin; based on data from World Happiness report (2016).
Similar trust	Dummy if the difference in trust levels in the country of residence and the country of origin of the resident is lower than the sample median
Similar income	Dummy if the difference in income levels in the country of residence and the country of origin of the resident is lower than the sample median
Subjective health (cat. 2)	Answer to the question "How is your health in general?"; categories are 1 (very good), 2 (good), 3 (fair), 4 (bad) and 5 (very bad).
Self-employed	Respondent stating that he/she receives primary income from self-employment.
Pensions	Respondent stating that he/she receives primary income from
Unemployed	Respondent stating that he/she receives primary income from
Social benefits	Respondent stating that he/she receives primary income from
Investment income	Respondent stating that he/she receives primary income from
Other income	Respondent stating that he/she receives primary income from other income.
Religiosity	Answer to the question "How religious would you say you are?"; scale from 0 (not at all religious) to 10 (very religious).

Table A3. Individual life satisfaction of first-generation immigrants, with full control variables

	All	Developed	Post-communist	Developing
Country-of-origin	.137***	.218***	.046	.115***
satisfaction	(.019)	(.037)	(.048)	(.038)
Resident-country	.497***	.337***	.533***	.465***
satisfaction	(.023)	(.048)	(.035)	(.059)
Living with partner	.123***	.076	.125**	.176**
	(.041)	(.071)	(.063)	(.087)
Children at home	.029	.025	-.029	.112
	(.044)	(.070)	(.075)	(.090)
Children moved out	.154***	.035	.146*	.282**
	(.053)	(.085)	(.084)	(.118)
Female	.047	.068	-.044	.158***
	(.034)	(.055)	(.056)	(.072)
Age	-.054***	-.042***	-.046***	-.079***
	(.006)	(.010)	(.009)	(.014)
Age squared	.001***	.001***	.001***	.001***
	(.000)	(.000)	(.000)	(.000)
Political confidence	.069***	.039**	.103***	.064***
	(.009)	(.016)	(.015)	(.019)
Institutional	.124***	.114***	.106***	.148***
confidence	(.009)	(.016)	(.014)	(.019)
Social trust	.108***	.104***	.098***	.135***
	(.007)	(.012)	(.011)	(.016)
Income (cat. 1)	-.547***	-.324	-.479***	-1.139***
	(.097)	(.202)	(.143)	(.231)
	-.248***	-.425**	-.065	-.818***
	(.087)	(.185)	(.129)	(.214)
	-.022	-.089	.076	-.582***
	(.082)	(.173)	(.121)	(.205)
	-.001	-.140	.127	-.569***
	(.076)	(.159)	(.113)	(.196)
	.096	-.160	.126	-.217
	(.076)	(.153)	(.117)	(.199)
	.227***	.099	.174	-.053
	(.079)	(.154)	(.125)	(.207)
	.342***	.029	.446***	.101
	(.083)	(.156)	(.139)	(.213)
	.427***	.213	.536***	.135
	(.085)	(.158)	(.144)	(.220)
	.479***	.347**	.563***	.054
	(.081)	(.151)	(.147)	(.215)
	.669***	.474***	.894***	.262
	(.094)	(.161)	(.181)	(.238)
	.468***	.405*	.400	-.123
	(.171)	(.226)	(.629)	(.361)
	.767***	.495*	.925	.621
	(.209)	(.266)	(.629)	(.459)
Subjective health (cat.	-.438***	-.405***	-.409***	-.544***
2)	(.045)	(.066)	(.084)	(.089)
	-.971***	-.894***	-.977***	-.939***
	(.052)	(.082)	(.091)	(.107)
	-1.798***	-1.680***	-1.825***	-1.648***
	(.075)	(.135)	(.117)	(.170)
	-2.721***	-2.442***	-2.808***	-2.710***
	(.120)	(.253)	(.174)	(.261)
Self-employed	.222***	.360***	.156	.067
	(.077)	(.109)	(.141)	(.172)
Pensions	.113*	.143	.013	.237*

	(.060)	(.101)	(.091)	(.143)
Unemployed	-.627***	-.681***	-1.029***	-.229
	(.097)	(.159)	(.177)	(.174)
Social benefits	-.279***	-.453***	-.393***	-.088
	(.082)	(.151)	(.144)	(.141)
Investment income	.308	.524	-.584	.791*
	(.222)	(.323)	(.427)	(.437)
Other income	-.039	.259	-.357	-.122
	(.132)	(.211)	(.277)	(.211)
Religiosity	.051***	.039***	.050***	.064***
	(.006)	(.009)	(.009)	(.012)
Annual FE	Yes	Yes	Yes	Yes
Observations	16185	4915	6355	3546
Countries	32	31	31	30
R squared	.286	.215	.286	.228
Wald Chi squared	6070.10	1336.79	2524.61	1036.14

Note: *** (**) [*] denote significance at p<.01 (p<.05) [p<.10].

Table A4. Individual life satisfaction of second-generation immigrants, with full control variables

	All	Developed	Post-communist	Developing
Country-of-origin	.087***	.199***	.002	.088***
satisfaction	(.019)	(.038)	(.046)	(.035)
Resident-country	.528***	.392***	.532***	.457***
satisfaction	(.022)	(.045)	(.031)	(.058)
Living with partner	.055	.004	.061	.066
	(.037)	(.067)	(.055)	(.075)
Children at home	.143***	.174**	.055	.2581***
	(.042)	(.071)	(.068)	(.080)
Children moved out	.173***	.091	.204**	.251**
	(.051)	(.086)	(.077)	(.110)
Gender (women)	.015	.042	-.010	.038
	(.032)	(.054)	(.050)	(.062)
Age	-.058***	-.037***	-.068***	-.064***
	(.006)	(.010)	(.009)	(.012)
Age squared	.001***	.001***	.001***	.001***
	(.000)	(.000)	(.000)	(.000)
Political confidence	.059***	.053***	.093***	.030*
	(.009)	(.016)	(.014)	(.017)
Institutional	.131***	.103***	.122***	.143***
confidence	(.0083)	(.015)	(.013)	(.016)
Social trust	.101***	.103***	.098***	.111***
	(.007)	(.012)	(.010)	(.014)
Income (cat. 1)	-.528***	-1.024***	-.444***	-1.492***
	(.091)	(.291)	(.133)	(.280)
	-.150*	-.823***	-.109	-.879***
	(.083)	(.287)	(.119)	(.274)
	.044	-.668**	.121	-.740***
	(.082)	(.285)	(.116)	(.274)
	.079	-.495*	.107	-.687**
	(.079)	(.282)	(.111)	(.273)
	.142*	-.575**	.066	-.357
	(.079)	(.281)	(.113)	(.274)
	.261***	-.224	.085	-.307
	(.081)	(.282)	(.118)	(.278)
	.329***	-.438	.305**	-.123
	(.083)	(.283)	(.125)	(.280)
	.461***	-.137	.403***	-.151
	(.085)	(.283)	(.129)	(.288)
	.513***	-.145	.478***	-.002
	(.084)	(.282)	(.135)	(.287)
	.671***	-.047	.760***	.062
	(.092)	(.286)	(.155)	(.293)
	.753***	.168	1.199	-.242
	(.204)	(.348)	(.762)	(.505)
	.773***	.200	.615	.111
	(.250)	(.388)	(.652)	(.648)
Subjective health (cat.	-.486***	-.424***	-.506***	-.546***
2)	(.042)	(.066)	(.075)	(.075)
	-1.052***	-.927***	-1.156***	-.881***
	(.048)	(.082)	(.082)	(.092)
	-1.762***	-1.612***	-1.951***	-1.353***
	(.069)	(.127)	(.108)	(.143)
	-2.778***	-2.477***	-2.833***	-2.984***
	(.122)	(.251)	(.173)	(.259)
Self-employed	.198***	.187*	.208	.161
	(.074)	(.111)	(.129)	(.149)

Pensions	.039	.184*	-.105	.302**
	(.057)	(.101)	(.082)	(.131)
Unemployed	-.640***	-.596***	-.702***	-.579***
	(.090)	(.156)	(.161)	(.148)
Social benefits	-.325***	-.447***	-.408***	-.197
	(.077)	(.149)	(.133)	(.122)
Investment income	.191	.467	.120	-.399
	(.208)	(.291)	(.394)	(.411)
Other income	-.195	.387*	-.728***	-.169
	(.126)	(.208)	(.234)	(.207)
Religiosity	.047***	.042***	.046***	.051***
	(.005)	(.009)	(.008)	(.011)
Annual FE	Yes	Yes	Yes	Yes
Observations	17359	5107	7783	4460
Countries	32	32	32	27
R squared	.284	.231	.298	.206
Wald Chi squared	6874.85	1517.85	3289.77	1148.97

Note: *** (**) [*] denote significance at p<.01 (p<.05) [p<.10].

Figure 1. Our empirical method

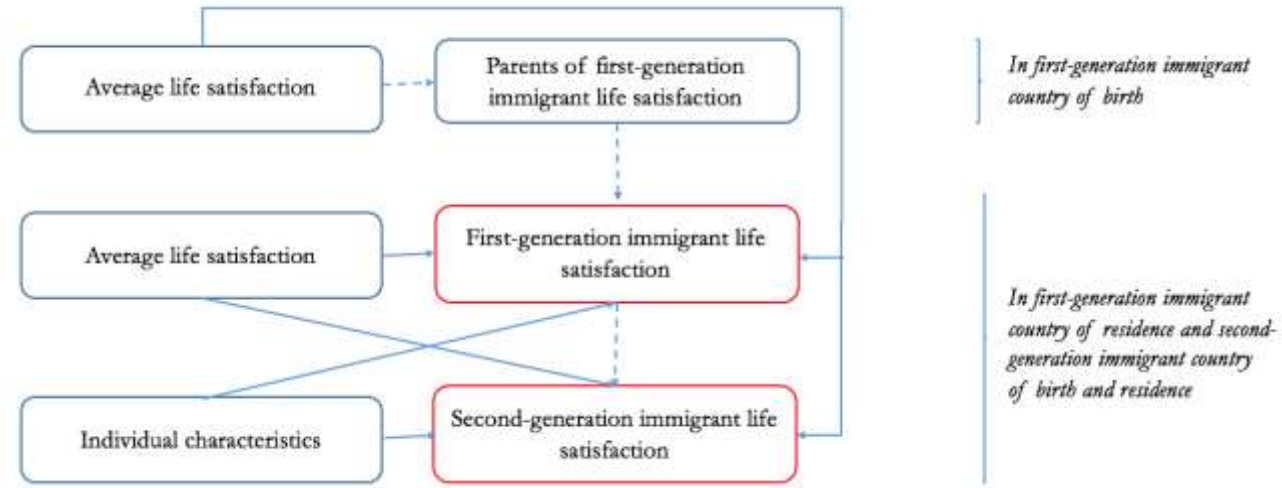

Figure 2. Life satisfaction of first-generation immigrants and of non-immigrants in their countries of residence