Migration as a test of the happiness set-point hypothesis: Evidence from immigration to Canada and the United Kingdom

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Abstract. Strong versions of the set-point hypothesis argue that subjective well-being measures reflect primarily each individual's own personality and that deviations are temporary. International migration provides an excellent test, since life circumstances and subjective well-being differ greatly among countries. With or without adjustments for selection effects, the levels and distributions of immigrant life-satisfaction scores for immigrants to the United Kingdom and Canada from up to 100 source countries mimic those in their destination countries, and even the destination regions within those countries, rather than those in their source countries, showing that subjective life evaluations are substantially driven by life circumstances and respond when those circumstances change.

Résumé. L'immigration comme test de la théorie des seuils de bonheur : l'exemple du Canada et du Royaume-Uni. Les principaux tenants de la théorie des « seuils de bonheur » font valoir que les évaluations subjectives du bien-être reflètent essentiellement la personnalité de chaque individu, et que les dérogations à ces seuils ne sont que temporaires. L'immigration internationale offre un excellent moyen de mettre cette théorie à l'épreuve étant donné que les circonstances de vie ainsi que le bien-être subjectif varient considérablement d'un pays à l'autre. Avec ou sans ajustements relatifs

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à l'effet de sélection, les niveaux et la distribution des taux de satisfaction face à la vie des immigrants originaires de 100 pays au Royaume-Uni et au Canada sont davantage semblables à ceux de ces deux pays, voire à ceux des régions de destination à l'intérieur même de ces deux pays, qu'à ceux de leur pays d'origine. Cela montre que les évaluations subjectives de la vie sont en grande partie liées aux circonstances de la vie, et s'adaptent lorsque ces circonstances changent.

JEL classification: F22, J61, I31

1. Introduction

It has increasingly been suggested that measures of subjective well-being could provide umbrella measures of human progress, able to capture the combined effects of income, health and the social context as supports for better lives. Others have argued instead that life evaluations change only temporarily with changes in life circumstances, reverting thereafter to a set point that varies among individuals based on personality differences that in turn may be driven by genetic differences (Brickman et al. 1978, Diener et al. 2006, Lykken and Tellegen 1996). There is a growing literature attempting to show which life events, if any, are followed by sustained changes in life evaluations (Lucas 2007, Clark et al. 2008). If the range of such changes is small, then the set-point hypothesis would stand in the way of using life evaluations more generally as measures of human progress.

There has been much less study of the extent to which people are affected over the longer term by the social and institutional contexts in which they live. Migration, especially international migration, takes people from one social context into another and hence offers a potentially powerful test. The set-point hypothesis supposes that the life evaluations of migrants might well rise or fall during the migration process, reflecting some mix of the psychological costs of uprooting and the expected benefits from moving to someplace better, but would eventually return to their pre-established set points. On the other hand, if life evaluations are determined in the long term by the institutional and social contexts in which people live, the average life evaluations of migrants should move towards and perhaps even match those of others in their new communities.

International migration provides a much more promising test bed for research than does internal migration, since there is much less difference in life evaluations among cities or regions within a country than among countries. For example, the range of average life evaluations among the nations surveyed by the Gallup World Poll is an order of magnitude larger than that among cities in Canada and among states in the United States (Helliwell et al. 2015, Lu et al. 2015, Oswald and Wu 2011, Rentfrow et al. 2009). International differences in the institutions and social contexts that have been found to support high life evaluations are similarly much larger than those among cities or provinces within the same country.

The exceptionally large sample sizes available through Statistics Canada's Canadian Community Health Surveys and General Social Surveys have already allowed comparison of the average difference in life satisfaction among Canadian immigrants from 43 different source countries (Frank et al. 2016). Remarkably, the differences between immigrants and the native-born tended to be small and not statistically significant. When immigrants' life satisfaction was compared with the satisfaction of those who remained in their source countries, the gap was almost as large in each case as the gap between life satisfaction in Canada and in each of the source countries, even where the source-country averages were far lower than those in Canada.

We immediately saw that these results could have important implications for the set-point hypothesis if they could be found to apply in other national contexts, using different and larger data samples, and if they could be further buttressed against the possibility of selection effects. The most powerful new evidence in this paper comes from applying comparable methods and much larger data samples to study migration from an expanded set of source countries to both Canada and the United Kingdom. This permits us to show that migrant life satisfaction converges, from both below and above, towards the averages in the destination countries. Our samples are large enough to show significant differences in the happiness of immigrants drawn from the same countries and moving to Canada or the United Kingdom. These differences closely match the differences in average life satisfaction of the locally born in the two destination countries, thus supporting a general convergence hypothesis rather than being attributable to specific features of national immigrant selection and integration policies.

We are also able, by using source-country data from the Gallup World Poll, to greatly increase the number of source countries while also making use of the much larger samples of immigrant life-satisfaction data now available for both Canada and the United Kingdom. We are further able to alleviate concerns that the pattern may arise from selection into migration by using Gallup World Poll data on emigration intentions, showing that the result is qualitatively unchanged when we compare the life satisfaction of immigrants to Canada or the United Kingdom with that of individuals in their source countries with declared intentions to move to Canada or the United Kingdom. We are also able to show that immigrant life satisfaction converges to that of the resident population not just on average but also in how the replies are distributed over the possible responses. The distribution shapes for immigrants to Canada are strikingly close to those for other Canadian residents, while differing materially from the distribution shapes in their countries of birth. It is hard to conceive of selection effects that would produce migrants not just with the same average life satisfaction as others in the destination country, but with a distribution among respondents that also mimics that of the destination country. Finally, we also find that within both the United Kingdom and Canada the life satisfaction of immigrants correlates with that of the residents of the regions

in which they settle. This provides still further evidence of convergence and casts further doubt on the set-point hypothesis.

2. Background

2.1. The set-point hypothesis

The idea that life events affect the happiness of individuals only in a transitory way first gained prominence in adaptation-level theory (Brickman and Campbell 1971). This view was supported by the widely cited subsequent finding that lottery winners reported levels of happiness that were not higher than those of controls, while recently paraplegic accident victims reported higher than expected levels of happiness (Brickman et al. 1978). Set-point theory in its strong form, in which all individuals have their own fixed long-term levels of happiness or satisfaction and from which they deviate only temporarily, was developed in large part from comparisons of the subjective well-being of twins (Lykken and Tellegen 1996). Using data from the Minnesota Twin Registry, the authors claimed that around half of the variation in happiness at any given time could also be attributed to genetics and that up to 80% of the variation in the "stable component" was heritable (Lykken and Tellegen 1996). The salience of this genetic factor depends crucially on the degree of environmental variability faced by Minnesotan twins. If their environments were fairly similar, then it is natural to expect that the role of genetics would appear comparatively large.

Analyses of longitudinal and panel data suggest that life satisfaction is only moderately stable over time. A meta-analysis found that individuals' test/retest correlations declined from around 0.6 for shorter time spans (months) to levels as low as 0.15 when 10 to 15 years had elapsed between measurements (Veenhoven 1994). Similarly, using data from the German Socio-Economic Panel (GSOEP) from 1984 to 2000, Fujita and Diener (2005) found the correlation between observations of the same individual's life satisfaction over time declined from 0.79 to 0.34 after 16 years even after allowance for measurement error. Furthermore, approximately one quarter of individuals in the GSOEP recorded changes in their five-year average for life satisfaction between the beginning and the end of the observation period that were significant at $p < 0.05$, five times as many as would have been predicted under the set-point hypothesis. In many cases, changes were also qualitatively large, with close to 10% of respondents recording changes of three points or more on an 11-point scale. Subsequent analysis of the GSOEP covering 1985 to 2005 yielded similar results (Headey 2008).

Although the presence of long-run changes may suggest that life satisfaction is responsive to individuals' life circumstances, individual-level regressions based on observed differences in material conditions tend to have relatively limited explanatory power (Diener et al. 1999, Fujita and Diener 2005, Headey et al. 2013). Whether this is because material conditions and environment are

unimportant or because important features of the environment—and especially the quality of the social context—have not been adequately captured remains an open question. More nuanced measurements of financial deprivation can perform substantially better than income alone (Christoph 2010), while levels of health and social capital have been shown to add substantially to explaining differences in subjective well-being among individuals as well as among communities and countries (Helliwell and Putnam 2004).

Another main strand of the literature on the set-point hypothesis has used event study designs in longitudinal data to attempt to determine the extent of adaptation to specific life events. It has been confirmed that life satisfaction drops with the onset of disability, and more dramatically for more severe disabilities (Lucas 2007). These decreases were also observed to remain stable for several years thereafter. Clark et al. (2008) find evidence of adaptation to marriage, widowhood, divorce, layoff and the birth of a child but find persistent negative effects of unemployment, especially for men. Others have found only partial adaptation to divorce (Lucas 2005) and near complete, though protracted, adaptation to widowhood (Lucas et al. 2003). Lucas et al. (2003) also find considerable heterogeneity in the extent and duration of adaptation, with individuals experiencing higher initial changes taking longer to converge to their baseline levels of subjective well-being. In a more recent meta-analysis, Luhmann et al. (2012) find similar patterns of partial or complete adaptation to the above events but are unable to draw a conclusion on the effects of migration. Varying degrees of anticipatory effects are also documented throughout this literature, wherein life evaluations begin to rise or fall before a life event takes place. As a result, baseline measurements taken shortly before an event may not correctly measure baseline levels of subjective well-being.

2.2. Subjective well-being and international migration

International migration offers a valuable opportunity to observe the effects of large changes in the material and social environment. However, the relationship between migration and subjective well-being has only recently become the focus of empirical study (Hendriks 2015). Due to a lack of longitudinal data sets suitable for studying the subjective well-being of international migrants, most studies, our own included, focus on cross-sectional comparisons. Existing cross-sectional research can generally be categorized as asking one of two questions about the subjective well-being of migrants. First, are migrants happier than stayers? Second, are migrants as happy as native-born? In the most commonly studied case of migration—international migration to countries with relatively high subjective well-being levels—it has routinely, though not always, been observed that migrants report lower life satisfaction on average than the native-born of their host country, while results have been mixed for migrants coming from more developed countries (Hendriks 2015). In some instances, this gap has been explained partly by accounting for the effects of

perceived discrimination (Safi 2010) or differences in occupational status and social support (De Vroome and Hooghe 2014). Obućina (2013) finds modest differences relative to the local population, both positive and negative, in the life satisfaction of immigrants in Germany from three different European regions. That paper also finds that life satisfaction declined with years since arrival for all three groups. It has been suggested that overestimation of the life-satisfaction gains from income could lead economic migrants to be worse off than if they had not migrated. Bartram (2011) finds that economic migrants to the United States from developing regions have happiness levels that rise more with income than is true for the local population, although in both cases the income effect is small, leaving open the question of whether the benefits of migration outweigh the costs. Answering this counterfactual question requires comparing migrants to stayers. Results of comparisons between migrants and stayers in the Gallup World Poll are suggestive of the importance of the relative levels of subjective well-being in the sending and receiving countries, with well-being higher among migrants to developed countries than stayers, but lower among migrants to developing countries (Esipova et al. 2013).

Although longitudinal data sets covering international migration are rare, results using these data sets have largely agreed with cross-sectional results. In a panel of Ingrian Finnish migrants from Russia to Finland who were interviewed during Finnish language courses prior to their departure and were followed for up to three years, stable and significant increases in life satisfaction were recorded after migration (Lönnqvist et al. 2015). In a randomized trial, migrants from Tonga to New Zealand who were entered into an immigration lottery reported decreased emotional happiness, but improved mental health, after moving (Stillman et al. 2015).

Lastly, national panel data sets have been used to assess the impact of migration within the same country. In panel studies of migrants between East and West Germany in the years after reunification, migrants from East to West experienced a persistent increase in life satisfaction but did not reach the levels of West German natives, while West to East migrants experienced lower satisfaction with life but remained above East German levels (Melzer 2012, Melzer and Muffels 2012). Melzer and Muffels (2012) also find decreases in life satisfaction preceding moves by one to three years. Nowok et al. (2013) also find decreased life satisfaction before migration for movers within the United Kingdom, followed by recovery to pre-migration levels in most cases, though they find persistent increases for males who moved only once during the study period.

The relative importance of culture versus experience has been tested by examining the immigration footprints for social trust, generosity and confidence in specific national institutions, making use of a fully global sample involving migrants to and from more than 130 countries in the Gallup World Poll (Helliwell et al. 2016). These results support the notion that social norms are deeply rooted in long-standing cultures, yet are nonetheless subject to adaptation when there are major changes in the surrounding circumstances

and environment. In particular, source-country social trust was a strongly significant predictor of the social trust of immigrants, with an effect size about one third as large as that from trust levels in the destination countries where the immigrants lived. The footprint for another social norm, generosity, is also significant, although not as large. This pattern is consistent with other studies showing that migrants have social trust assessments partway between those in their countries of birth and of residence (Dinesen 2012, Rice and Feldman 1997, Soroka et al. 2007). In contrast, trust in the national institutions of the new country, where footprint effects would not be expected, indeed shows no such effects.

Similar results for life satisfaction, which depends heavily on social trust, have also been obtained using data from the European Values Survey, showing life satisfaction for European migrants tended to be an "alloy" incorporating the levels in both the host and origin countries (Hajdu and Hajdu 2016, Senik 2014, Voicu and Vasile 2014). Others have found an average footprint of source country life satisfaction of 28% for migrants between 34 countries surveyed in the ESS, but also find the magnitude of this effect to vary considerably across destination countries (Hajdu and Hajdu 2016). With our large sample of migrants from many different countries to two different destination countries, we are able to assess the convergence hypothesis more powerfully than in previous studies, following the partial precedent of Frank et al. (2016).

3. Samples and measures

To maximize the size of our immigrant sample, data for Canadian residents are pooled from multiple waves of two nationally representative household surveys that ask nearly identical life-satisfaction questions: six waves of the General Social Survey (GSS) (2008 to 2011, 2013 and 2014) and six waves of the Canadian Community Health Survey (CCHS) (2009 to 2014).[1] For residents of the United Kingdom, we use the Annual Population Survey Three-Year Pooled Dataset (APS), covering January 2014 to December 2016.

We use two different sources for source-country life evaluations: answers to a life-satisfaction question from Waves 3 to 5 of the World Values Survey (WVS), conducted between 1994 and 2008, and responses to the Cantril ladder question from Waves 1 to 12.1 of the Gallup World Poll (GWP), collected from 2005 to 2018.[2] The WVS uses the same measure as the national data for incoming migrants in Canada and the United Kingdom. The GWP, which primarily uses the Cantril ladder, additionally asked a satisfaction with life question in one wave, allowing us to establish a relationship between satisfac-

1 Bonikowska et al. (2014) have confirmed that data from the two sources can be pooled, with the addition of constant terms for the different cycles of each survey.

2 The sample size in the GWP, combining all source countries and waves, is 1,367,584, compared with 175,386 in the WVS.

tion with life and the Cantril ladder. We can then predict mean satisfaction with life (SWL) scores for the larger set of countries found in the pooled waves of GWP data.

We construct our immigrant samples from within destination-country surveys by first collecting all respondents with a country of birth other than the destination country (Canada for the pooled CCHS/GSS sample or the United Kingdom for the APS) and who arrived within the last 40 years, regardless of their country of citizenship.[3] For data quality and privacy reasons, we then dropped subsamples from any country with fewer than 50 observations in the destination country sample. This yields a sample of 49,233 immigrants in Canada born in 100 different source countries and 23,800 immigrants in the United Kingdom from 71 source countries.[4] The sample sizes for the native-born are 408,331 and 247,780 for Canada and the United Kingdom, respectively.

All three destination-country surveys ask respondents similar life-satisfaction questions using an 11-point scale where 0 represents dissatisfaction and 10 represents complete satisfaction.[5] These surveys also collect country of birth and year of arrival for those born in a different country.[6] The WVS also asks a similar life-satisfaction question with a response scale from 1 to 10.

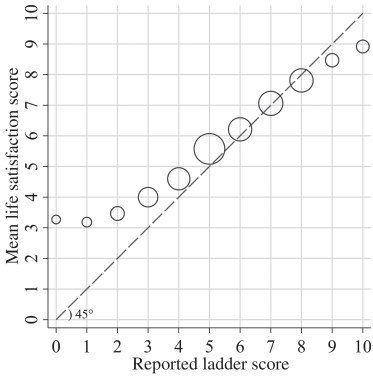
In all years of the GWP data, the main life evaluation question is the Cantril ladder, which asks respondents to think of their lives as a ladder and then to use a scale of 1 to 10 to rate their own current lives, with the best possible life for them being a 10 and the worst being a zero. Although this question uses the same response scale as the satisfaction with life question, the different conceptual framing renders comparisons of national SWL and ladder averages potentially challenging. Fortunately, the GWP also asked a satisfaction with life question, on the same 0 to 10 scale used in the recent

3 Since survey respondents must be matched to a source country sample in the WVS or GWP, those who listed their country of birth as the USSR, Yugoslavia or Czechoslovakia were dropped from the sample, because the WVS and GWP data we use were collected after the breakup of these countries, as were respondents whose country of birth was not coded as a specific country (e.g., "Africa," "the Middle East," "Other").

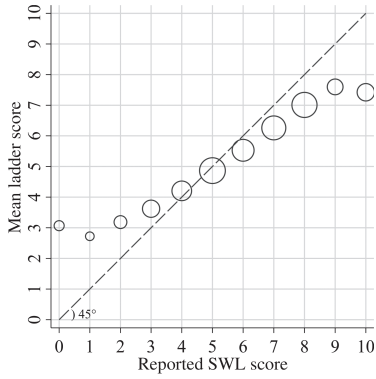
4 Table A.1 in the online appendix lists all of the source countries appearing in our immigrant sample alphabetically along with the number of immigrants from each observed in either destination country as well as the sizes of the WVS and GWP samples in each country.

5 Pre-2011 waves of the General Social Survey used a 10-point scale, going from 1 to 10. As shown in Bonikowska et al. (2014), this made no material difference to the average scores or their distribution, due mainly to the very small number of responses at the bottom end of the distribution.

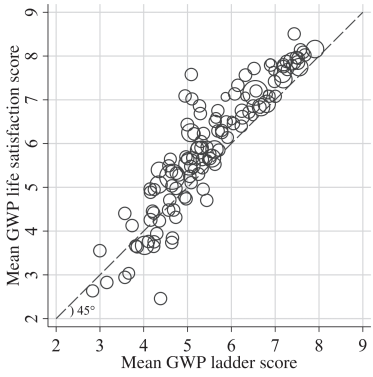
6 Date of arrival in our case refers to when an immigrant first came to the receiving country and not the date when they received official permanent resident status or citizenship.



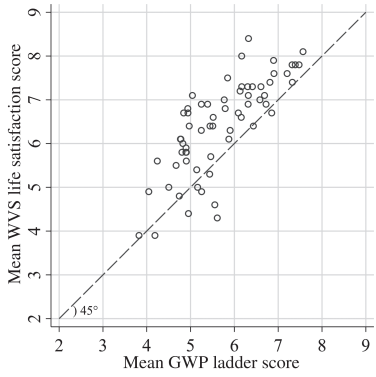
(a) Micro-level conversion: Mean SWL scores by actual ladder response. Circle size reflects sample size by ladder response level.



(b) Micro-level conversion: Mean ladder scores by actual SWL response. Circle size reflects sample size by SWL response level.



(c) Comparing SWL and ladder averages across 125 countries where both questions were asked in the GWP. Circle size reflects sample size for each country.



(d) Mean satisfaction with life from the World Values Survey and mean Gallup ladder scores across the 64 countries present in both surveys.

FIGURE 1 Comparing ladder and SWL responses
NOTE: The full joint distribution of ladder and SWL responses in panels (a) and (b) is also tabulated in the online appendix.

Canadian surveys, generally once in each of the countries covered in the GWP between Waves 2 and 5. Using this overlap, it was previously found that when asked of the same respondents, the answers were explained by the same underlying factors, with very similar coefficients, showing that despite differences in framing both questions elicited a similar type of evaluation of life in the respondents (Helliwell et al. 2010)[7]. Indeed, treating the two questions as independent measures of the same underlying quality of life, and

7 See table 10.3, in particular.

using their average as the dependent variable in the modelling of life evaluations, reduced apparent measurement error and delivered a tighter-fitting explanation.

That both variables exhibit strikingly similar relationships with observed predictors, and that their average apparently has a higher signal-to-noise ratio, suggests that both questions can be interpreted as somewhat noisy signals of the same underlying variable. In support of this point, figures 1(a) and 1(b) show the average individual answer to each question, conditional on the same respondent's answer to the other question, for over 140,000 respondents who answered both questions at different points in the GWP questionnaire. The two variables exhibit a clear positive relationship, which appears linear except for slight reversals at the extreme values. These direction reversals at 10 in figure 1(b) and 0 in both are consistent with coarsening of the scales, with some respondents preferring to use the midpoint or extremes. This is borne out by the data, in which a response of 5 is more common among respondents who also reported 0 (or 10) rather than 1 or 2 (8 or 9) on the other measure.[8] Both slopes are below one, which is to be expected in a classical errors-in-variables environment. The slope in figure 1(b) is lower, suggesting that the SWL scale may be a slightly noisier measure than the Cantril ladder, consistent with its higher standard deviation and consistent with the finding that anticipated Cantril ladder scores are the best single-measure predictor of observed decisions, followed closely by SWL (Benjamin et al. 2014).

When averaged across respondents within the same country, the life-satisfaction and ladder responses show a tight and approximately linear relationship between the country-level means for the 125 countries covered by the GWP wave in which both questions were asked.[9] The slope also increases markedly, with the averages clustered much closer to the 45-degree line, which is to be expected as averaging drastically reduces the attenuating effect of individual-level measurement error. A similar relationship is observed in figure 1(d), which plots mean SWL from the entirely separate sample in the WVS against the mean ladder scores in the GWP for the 64 countries sampled in both surveys.

This close and fundamental relationship between SWL and ladder scores allows us to predict country-level SWL scores for each source country using a slight linear transformation of the GWP ladder averages. The relationship in

8 The joint distributions of SWL and ladder responses are provided in the online appendix.

9 While the use of the same respondents on both "sides" of the equation in figure 1(c) theoretically biases these results, the sample sizes are large enough that the sampling variation is small relative to the underlying international differences. As a result, the results are indistinguishable if the samples are split so that non-overlapping subsamples are used to compute the national SWL and ladder averages.

figure 1(d) implies the following adjustment equation:[10]

$$\hat{swl}_k = -0.37 + 1.16 \times \overline{ladder}_k. \quad (1)$$

The fitted values are sloped slightly more steeply than 45 degrees, reflecting the fact that, although SWL and the Cantril ladder are determined by the same factors, SWL increases slightly more than does the Gallup ladder as underlying subjective well-being increases.

The GWP also includes a series of questions on international migration intentions, which allow us to check for signs of selection on unobservable characteristics. Each respondent in the GWP is asked whether, given the opportunity, they would like to move permanently to another country. Those who answer in the affirmative are also asked to name the country that they would most like to move to in that event. Starting in 2010, respondents were also asked whether they planned to move to that country within the next 12 months. While the large majority of individuals reported that they would prefer not to emigrate, approximately one in five indicated that they would do so given the chance. Of these, approximately one in 20 (or approximately 1% of the overall sample) reported that they would most like to move to Canada or the United Kingdom. Another one in 10 of these (approximately 0.1% of the overall sample) indicated a plan to make the move in the next year.

While we cannot directly confirm whether those who declare an intention to move to Canada or the United Kingdom in the GWP actually follow through, global patterns in immigration intentions are reassuringly predictive of where immigrants are found.[11]

4. Analysis

We begin by extending the key result from Frank et al. (2016) comparing life satisfaction of immigrants in Canada to the Canadian-born and to WVS respondents in their countries of birth and further extend the analysis to include large samples of migrants to the United Kingdom. This will permit us to show that the well-being gains and losses among migrants are linked to the living conditions in the destination country, with substantial convergence to destination country levels in both cases. For both the Canadian and United Kingdom results we are able to expand both the source-country coverage and the sample sizes by using GWP ladder responses to predict source-country life satisfaction. We also extend this analysis beyond the mean to the distribution of SWL. Then, we use Gallup data on migration intentions to help show that our results are not importantly due to differences in the pre-migration happiness of migrants relative to other residents of their source countries.

10 The results in the remainder of this paper would be qualitatively unchanged if we had used the relationship in figure 1(c). The resulting coefficient of 1.08 in fact includes 1.16 in its 95% confidence interval.

11 Results comparing GWP migration intentions with United Nations migration data are available in the online appendix.

4.1. Convergence of immigrant satisfaction with life (SWL)

Our core approach is simple. We compare mean life satisfaction of immigrants in Canada or the United Kingdom to observed or predicted SWL in their source countries and to that of the native-born by pooling the data from the domestic and source-country surveys and running the following regression separately for each destination country and for Canada and the United Kingdom:

$$SWL_i = \Sigma_{(k=1)}^{K} \delta_k C_k^I + \Sigma_{(k=1)}^{K} \lambda_k C_k^S + \epsilon_i, \tag{2}$$

where C_k^I is a binary indicator for immigrants born in country k observed in the destination country and C_k^s is a binary indicator for being observed in source country k. This yields separate constant terms for each group of immigrants (δ_k) and each of the source-country samples (λ_k). In the absence of additional controls, these terms correspond to the average life satisfaction of each subgroup. Unless migrants are self-selected on the basis of their set points, under the set-point hypothesis, the averages for both the immigrants and stayers from the same country should be the same so that $\delta_1 = \lambda_1$, $\delta_2 = \lambda_2$ and so on. Thus, when the δs are plotted against the λs, they should fall on the 45-degree line.

Figures 2(a) and 2(b) test the set-point hypothesis in this way, plotting the average life satisfaction of immigrants to Canada and the United Kingdom against the mean WVS life satisfaction in 64 WVS source countries for Canada and 50 for the United Kingdom. Each figure also shows a 45-degree line on which the points would be expected to fall if the SWL of the migrants was unaffected by moving and if the migrants were randomly drawn from the sampled source populations.

We next extend the analysis to cover the larger set of countries for which the GWP provides data, with the average source-country sample sizes also being larger. Figures 2(c) and 2(d) show the resulting relationships for the SWL of migrants who have arrived within the previous 40 years, from a total of 100 source countries for Canada and 71 for the United Kingdom. In both cases, there is a clear pattern of convergence towards the life satisfaction of the native-born. Since average SWL is lower in the United Kingdom, the solid horizontal line giving average SWL of the native-born is one third of a point lower in panels 2(b) and 2(d) than in panels 2(a) and 2(c), and this lower value is matched by the SWL of the immigrants.[12]

This striking convergence is not restricted to the mean. In figure 3, we aggregate the source countries into nine source regions and show the distribution of SWL in those regions in panels (a) and (b) and for immigrants

12 Since the majority of immigrants in both samples are several years past their initial arrival, these patterns should not result from short term fluctuations occurring around the migration event itself, which would not violate the set-point hypothesis. Similar results when we restrict the sample according to the number of years since arrival are provided in the online appendix.

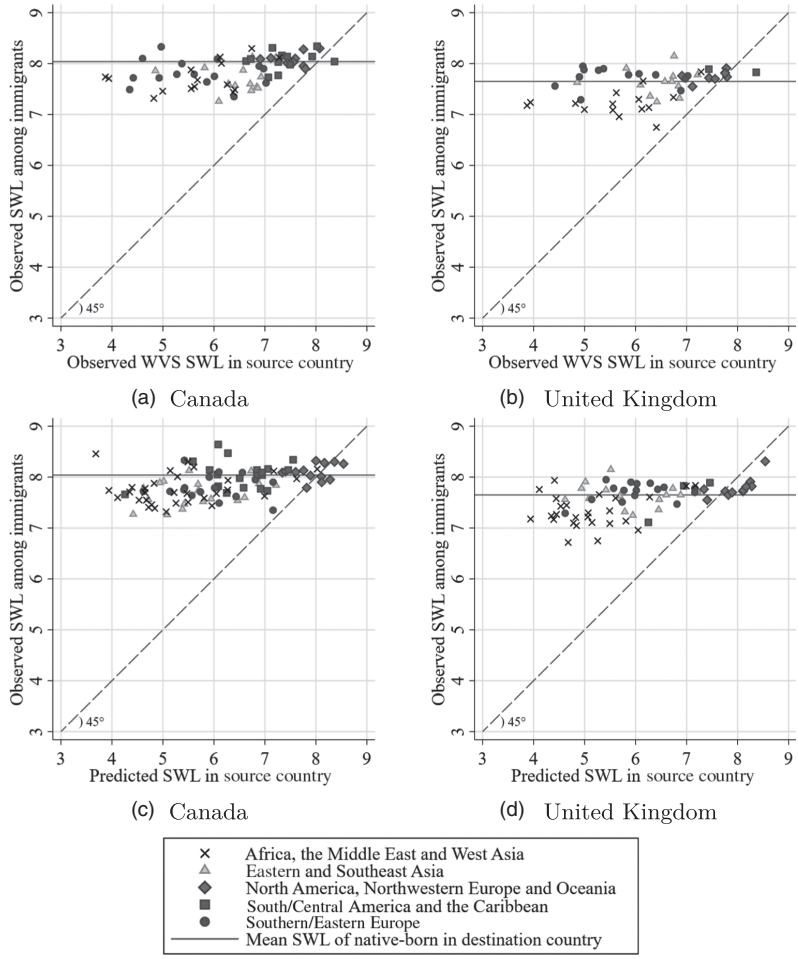
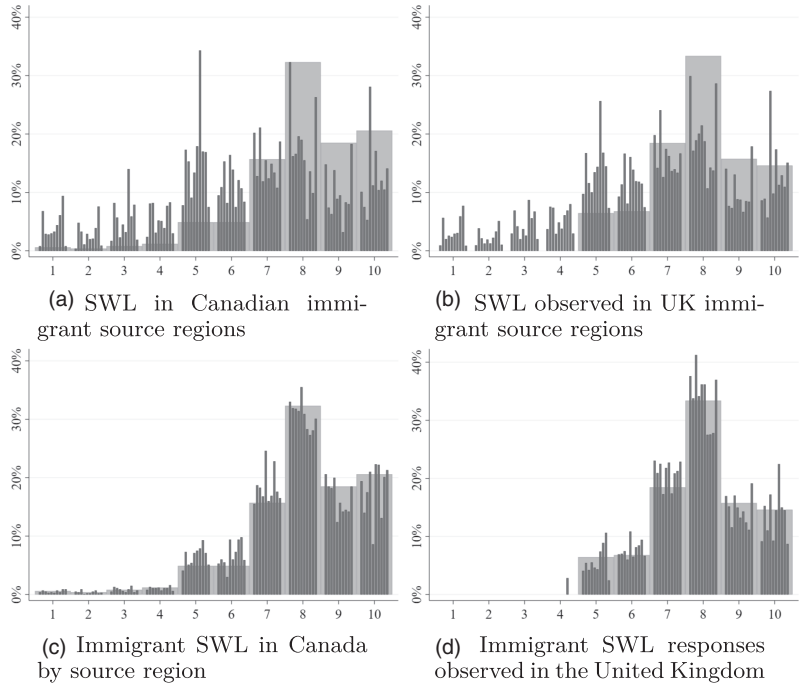


FIGURE 2 Observed life satisfaction among immigrants, compared with life satisfaction in their source countries

NOTES: Source country mean SWL observed in WVS in panels (a) and (b) and predicted using equation (2) from GWP ladder responses in panels (c) and (d). Includes immigrants arriving within 40 years prior to their time of interview for all countries with at least 50 immigrants observed in the destination country sample. The destination samples are the CCHS/GSS for panels (a) and (c) and the APS for panels (b) and (d). Sample sizes can be found in table A.1 of the online appendix.

from those source regions observed in the destination countries in panels (c) and (d), overlain on the distribution of SWL responses of those born in the destination countries.[13] Although there are marked differences in the shapes, and not just the averages, of the distributions of SWL in the source regions, the distributions are remarkably similar across the immigrant groups and closely

13 The distributions for each region are also displayed separately in the online appendix.



(a) SWL in Canadian immigrant source regions

(b) SWL observed in UK immigrant source regions

(c) Immigrant SWL in Canada by source region

(d) Immigrant SWL responses observed in the United Kingdom

FIGURE 3 Distributions of life-satisfaction responses by source region
NOTES: Country distributions are weighted by the proportion of immigrants in the destination country born in each country within that region (panels (a) and (b)) and among immigrants observed in the destination country from the same source regions (panels (c) and (d)). Country distributions (dark bars) are overlain on the distribution of life-satisfaction responses of those born in the destination country (light bars). Bars in each cluster represent the following regions, from left to right: Northwestern Europe, Eastern Europe, Southern Europe, Latin America, Eastern Asia, Southeast Asia, Southern Asia, West-Central Asia, Africa and, in panels (a) and (c), the United States and, in panels (b) and (d), North America and ANZ. All distributions are also displayed individually in the online appendix. Source-region data in panels (a) and (b) are from the WVS. Data in panels (c) and (d) include immigrants arriving within the past 40 years at time of interview in the GSS/CCHS for Canada and in the APS for the United Kingdom. In the GSS/CCHS samples, "0" responses are re-coded as "1" for comparability to the WVS. Response rates below 2% in the APS, corresponding to the background series in panel (b) and all series in panel (d), have been censored.

match those of the native-born. All immigrants are not equally satisfied with their lives, but the shape of the distribution tends to mimic that of others in the destination countries over the same period of time, rather than that in the global regions in which they were born. Among those observed in the destination countries, whether or not they are foreign-born and regardless of their source region, life-satisfaction responses are concentrated at values of 7 and higher, with a mode of 8, with 10% or less reporting values of 5 or 6 and with almost no evaluations lower than 5.[14]

14 Cells with response rates below 2% in the APS were censored.

We reject the null hypothesis of equality of distributions of satisfaction with life among immigrants in Canada and distributions in their source regions at conventional significance levels using the Epps–Singleton test. Because of the large sample sizes, we also reject the null hypothesis of equality of distributions in most pair-wise tests comparing immigrants from different regions to one another and to the Canadian-born. Nonetheless, it is visually clear in figure 3 that the distribution of SWL for immigrants matches that of the native-born much more closely than those in the regions in which they were born. The slight over-representation of values below 8 is consistent with the slightly lower life-satisfaction levels observed in figure 2. Nonetheless, the degree of convergence is striking.

4.2. Accounting for selection effects

We now test whether differences between the immigrant and source country samples are due to differences in observable characteristics that render the immigrant samples unrepresentative of the source populations. We certainly expect differences, especially in the case of immigrants coming under the Canadian immigration points system, because the system attaches a high value to higher education and to language skills in English and French, with the result that the immigrant populations have university graduate proportions even higher than those found among the Canadian-born. To see whether these selection effects are likely to distort the average life-satisfaction scores of the immigrant groups, we first pool the source-country and immigrant data and estimate, following Frank et al. (2016), an equation explaining individual satisfaction with life using a number of mainly demographic variables that are likely to be correlated with life satisfaction and that may also take different values for migrants and non-migrants in the source populations:

$$SWL_i = \Sigma_{(k=1)}^{K} \delta_k C_k^I + \Sigma_{(k=1)}^{K} \lambda_k C_k^S + X_i\beta + \tau S^I + \epsilon_i. \quad (3)$$

For both Canada and the United Kingdom, individual characteristics, X_i, include a quadratic in age (the variable included in the regression was actually defined as $(age_{reg} = age - 45)$), a gender dummy, a set of indicators of marital status (common-law, widowed, divorced/separated, single, with married as the reference group), a set of indicators of labour force status (unemployed, not in the labour force, with employed as the reference group) as well as a set of indicators of highest educational attainment (some post secondary, high school, less than high school, with university degree as the reference group) and, for the Canadian sample, self-assessed health status.[15] Finally, survey indicators S^I were included for the Canadian data sources since earlier

15 The APS did not contain a measure of subjective health or a measure of educational attainment directly comparable to that in the WVS. Parameter estimates for both Canada and the United Kingdom can be found in table A.2

research found small but systematic differences in life-satisfaction levels between the GSS and CCHS surveys and across the GSS cycles (Bonikowska et al. 2014). The estimated coefficients δ_k and λ_k represent the average satisfaction with life among immigrants from a given source country and people living in the source countries for a reference person who is a 45-year-old married employed male university graduate in the middle health category. The estimated coefficients can then be used to predict the SWL of anyone with differing characteristics.

Figure 2 made no adjustment for selection effects, effectively assuming that the immigrants are a random sample of the source-country population. Figure 4 plots the adjusted (for differences in socio-demographic characteristics) values using equation (3) to estimate what the life-satisfaction levels would be for someone with the assumed baseline characteristics in both the WVS source-country and immigrant samples.

Although it is indeed true that immigrants to Canada and the United Kingdom from some countries differ considerably from typical residents of their source-country population, what is remarkable about the comparison between figures 2(a) and 4(a) for Canada and 2(b) and 4(b) for the United Kingdom is how similar the figures are. Adjusting for these differences in personal characteristics has little effect on either the country rankings or to the slope of the plot of immigrant SWL relative to source-country SWL. While slightly lower levels of immigrant life satisfaction are more apparent in Canada, the near-flatness of the distribution provides strong counter-evidence to the set-point hypothesis, since that hypothesis requires that the immigrant SWL observations would instead lie along the 45-degree line. This should be the case especially for figure 4, which adjusts for likely selection effects to the extent that they are captured by the main demographic variables. Instead, in both figures, the average immigrant life satisfaction is very close to that of other residents of the destination country, whether the comparison is based on simple averages, as in figure 2, or using scores adjusted for differences in characteristics of the immigrants and the source-country populations, as in figure 4.

Return migration provides one source of possible mismeasurement of the gains from migration that would not be captured by equation (3). Not everyone who immigrates decides to stay, and the chronically dissatisfied may decide to return to their home countries or re-emigrate elsewhere. Since we observe only those who have not left, this could skew the distribution of life satisfaction within our immigrant samples. Although exact figures are not available, analysis based on census and tax records for Canada suggests that this is not a serious problem, because the return migration rate for immigrants is very low, on the order of 1% per year, during the first 10 years after arrival. Turnover may be higher during the first year, up to one in five (Aydemir

of the online appendix, including for a version of the Canadian regression excluding the subjective health measure.

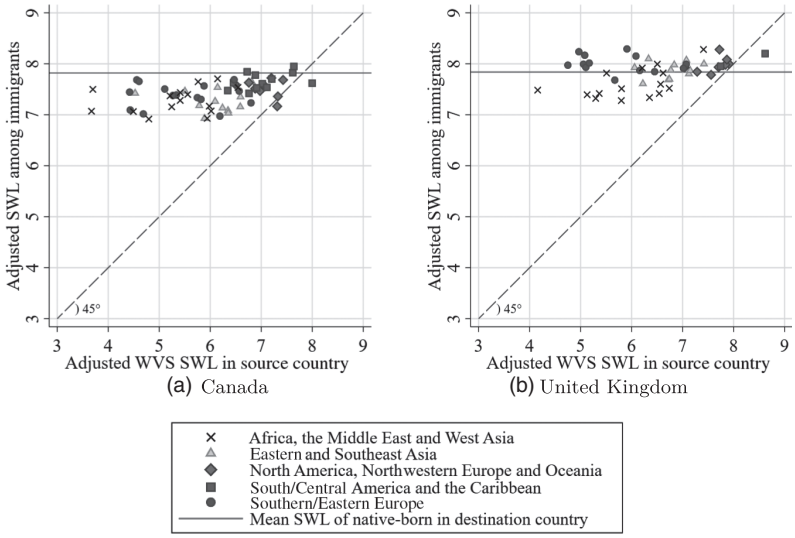


FIGURE 4 Adjusted SWL among immigrants in Canada and the United Kingdom
NOTES: Regression adjustment using equation (3). Controls in panel (a) include a quadratic in age as well as dummies for gender, marital status, educational attainment, labour force status and self-assessed health status. Controls in panel (b) include a quadratic in age as well as dummies for gender, marital status and labour force status. Sample sizes by survey and source country can be found in table A.1 of the online appendix, with descriptive statistics and adjustment regression coefficients found in tables A.2 and A.3, respectively.

and Robinson 2006, Finnie 2006).[16] Replication of figure 2 for immigrants who have resided in Canada for longer or shorter periods of time does not qualitatively change the results, and overall mean immigrant SWL actually drops slightly over the first 10 years since arrival.[17]

A potentially larger concern is whether unobservable characteristics are driving the decision to immigrate in the first place. International migration is often a difficult, lengthy and uncertain process. It may be that those who chose to undertake it have the types of persistent traits that lead them to be better connected, more able or more optimistic than those who do not.

To evaluate this possibility, we re-estimate equations (2) and (3) but replace the foreign-born samples with the subsamples of would-be immigrants

16 These high first-year turnover rates are based on comparisons between administrative data and landing records, and the extent to which this result may be due to imperfect linkages between the two data sources has not been established (Aydemir and Robinson 2006), with 10% to 15% of immigrants never appearing in the tax filing data. Consequently, the first year hazard rate observed within the tax data itself is less than half as high as that implied by the comparison to landing records.

17 Corresponding graphical results are presented in the online appendix.

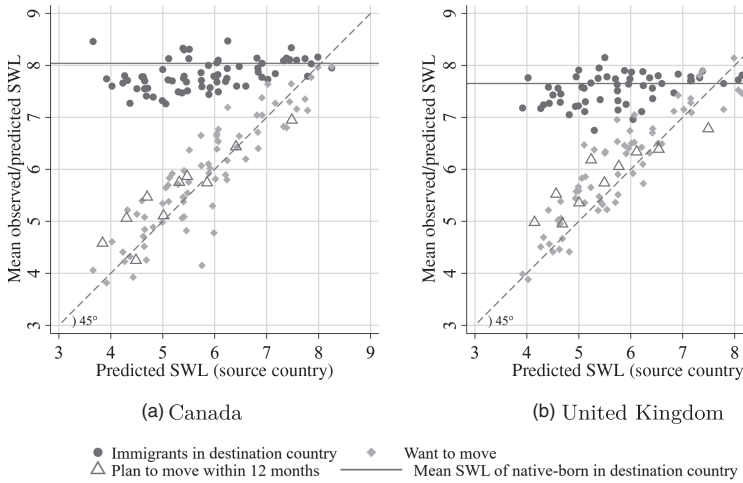
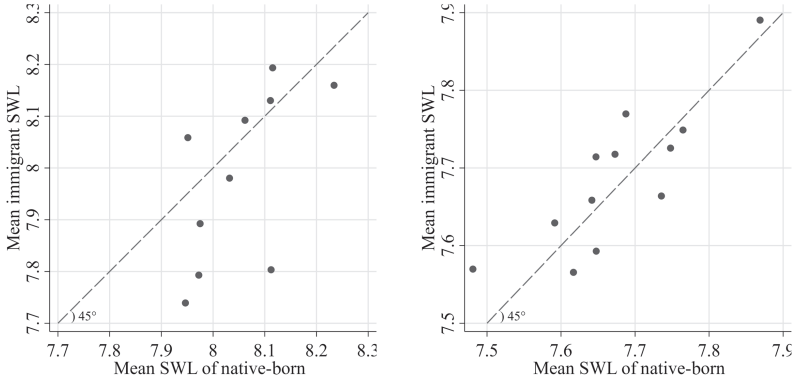


FIGURE 5 Subjective well-being and immigration intentions
NOTES: The solid horizontal line in each panel gives the value for the destination-country sample. Predicted SWL is calculated by adjusting the mean Cantril ladder scores using equation (1). Due to small sample sizes for those planning to move to Canada or the United Kingdom within the next 12 months, source countries are binned according to the deciles of the source country well-being distribution. Deciles are calculated based on the weighted distribution of source-country Cantril ladder averages, where each country's weight is equal to the sum of weights of the intended (12 months) migrants to the destination country in the source-country sample. The same relative weights are used to average the outcome variables within decile bins.

from the GWP. In this latter case, we can present our results both before and after adjusting for age, education, gender, marital status and survey wave, and we are able to do the analysis equivalently for Canada and the United Kingdom. If there are no important selection effects, then the would-be migrants will resemble others in the source country rather than respondents in the destination countries. This is indeed what we find.

Figure 5 displays the results visually, starting from the bottom two panels of figure 2, supplemented by the addition of average life-satisfaction scores for those in each source country who intend to move to Canada or the United Kingdom, respectively.[18] Less than 2% of respondents report a desire to move to either Canada or the United Kingdom, and only one tenth of one percent say that they plan to do so in the next 12 months. The former sample is large enough for the data to be shown separately for each source country. For the much smaller sample of those intending to move in the next 12 months, the average ladder scores are binned by decile according to the mean ladder score

18 We employ an inclusion rule similar to that used in figure 2, including only source countries with at least 40 would-be immigrants (i.e., respondents in the GWP declaring a desire to move permanently to Canada or the United Kingdom, respectively) in our sample.



(a) Canada (b) United Kingdom

FIGURE 6 Comparison of mean life satisfaction of immigrants and the native-born across Canada's 10 provinces (panel (a)) and 12 regions within the United Kingdom (panel (b)).

NOTE: Correlations of 0.60 ($p \leq 0.10$) in panel (a) and 0.84 ($p \leq 0.01$) in panel (b).

among those in their country who do not wish to move to Canada or the United Kingdom.

Figure 5 allows for migrants and intending migrants to be different from others in their source countries, possibly in ways that make their life satisfaction similar to that of other residents in the destination countries. Reassuringly, the patterns in figure 5 show that intending migrants share the well-being patterns of residents of their source countries who do not desire to move to Canada or the United Kingdom (i.e., lying along the 45 degree line) rather than those of their destination countries. Thus, figure 5 supports our hypothesis that the destination-country life satisfaction of migrants reflects the conditions of life in the destination countries rather than something special about the migrants compared with those they leave behind in their source countries.

Finally, the convergence hypothesis is even more strongly supported if immigrants who settle in different parts of the destination country have life-satisfaction levels that match those of native-born residents of the same region.[19] We initially thought that the small size of the interregional differences in SWL would stop us from finding any such relation. Somewhat to our surprise, we found for both the United Kingdom and Canada, as shown in figure 6, that there is significant evidence of immigrant life satisfaction converging to the SWL of the native-born living in that same region. In the Canadian case (as shown in online appendix figure A.6), we were able to do the same test for the sense of community belonging, an important determinant of life satisfaction and also a likely source of local variation in immigrants' integration and subsequent flourishing, and found an even stronger correlation.

19 We thank an anonymous referee for this fruitful suggestion.

We think that selection effects are even less likely to be at play here than in the national results, making this new evidence a strong element of the overall case.

5. Conclusion

Taken individually, the points in figure 2 encompass the range of results from cross-sectional comparisons documented by Hendriks (2015), with immigrants from most, but not all, source countries displaying somewhat lower SWL than native-born, as shown by their position relative to the horizontal line, and immigrants showing changes relative to stayers ranging from small negative effects to large positive effects. When the wide variety of source countries are considered together, however, the key insight is that all of these results are generated by a consistent pattern of convergence to destination-country SWL levels. This result is consistent across both destination countries, and equally so for both source-country surveys.

The flatness of the distributions in figure 2 shows not just that immigrants to Canada and the United Kingdom are happier on average than those in their countries of birth but also that the improvement is much larger for those who immigrated from countries with lower average life satisfaction. Since international differences in average life evaluations are well explained by differences in life circumstances, this implies that immigrants from the much lower SWL countries have had bigger changes in their life circumstances, thus giving rise to greater migration-induced improvements in their life satisfaction.

Perhaps the most powerful evidence that migrant happiness is determined by life circumstances in the destination country is that migrants from the same countries moving to Canada or the United Kingdom converge to life-satisfaction levels that match those of others living in the same region of their destination country. Although both Canada and the United Kingdom have globally high levels of life satisfaction, the Canadian-born sample in figure 2 scores higher by 0.33 points on average. We find a similar gap when comparing immigrants in Canada to immigrants in the United Kingdom who came from the same source countries. Across the 63 countries with more than 50 immigrants in both samples, the average gap between immigrants in Canada and the United Kingdom from the same source country is 0.24.[20]

The small but significant footprint effects, with those coming from lower SWL countries having a residual effect reflecting the circumstances into which they were born, are consistent with the previously established footprint effects for some social norms, including trust and generosity, which help to support SWL at the individual and national levels. As a result, it is important to note that levels of persistence may appear larger in cases where other fundamental differences in underlying circumstances are small.

While we are not able to fully rule out the selection of migrants on unobservable characteristics, even restricting the comparison to the 0.01% of

20 Both gap estimates are significant at all standard confidence levels.

GWP respondents who say they plan to move to either Canada or the United Kingdom in the next 12 months does little to close the happiness gap between immigrant and source-country happiness.

Ultimately, the general pattern indicates that the gains or losses in average SWL of immigrants closely match the underlying differences in the levels of life satisfaction between source and destination countries. Furthermore, these international differences in source-country SWL can largely be explained by the same life circumstances, living conditions, institutions and social contexts as those that explain within-country differences in SWL (Helliwell et al. 2010, Helliwell et al. 2013, Helliwell et al. 2015). And at the global level, individual differences among migrants in their life evaluations are determined by the same circumstances as those of the locally born (Helliwell et al. 2018, statistical appendix 2, table 10).

All of this evidence combines to support our conclusion that the SWL differences between migrants and non-migrants relate to the features of life in the countries and communities where they live and not to psychological set points determined at birth or early in their lives.

Supporting information

Additional supporting information can be found in the online version of this article.

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