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LLAKES Research Paper 54

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Intergenerational and inter-ethnic well-being: an analysis for the UK[†]

Richard Dorsett, Cinzia Rienzo[‡] and Martin Weale

National Institute of Economic and Social Research
2 Dean Trench Street, London SW1P 3HE

[†] We are grateful to the ESRC for supporting this research through the LLAKES research centre at UCL Institute of Education and the National Institute of Economic and Social Research. The analysis of based on the UK household Longitudinal Study (UKHLS), or "Understanding Society". This is an initiative by the Economic and Social Research Council, with scientific leadership by the Institute for Social and Economic Research, University of Essex, and survey delivery by the National Centre for Social Research and TNS BRMB. We are grateful to Alita Nandi for advice on the UKHLS.

[‡] Corresponding author: c.rienzo@niesr.ac.uk.

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Abstract

This paper uses a UK nationally representative data set to examine the extent to which family migration history helps explains inter-ethnic variations in subjective well-being. We confirm that there is significant variation in well-being across ethnic group and across migrant generations. On average, recent migrants appear to have higher levels of well-being. We also find that, while language difficulties are associated with lower well-being, retaining cultural links is important: living in areas where one's own ethnic group is well represented and having friends from the same ethnic group is associated with a higher level of well-being. Individuals' choice to retain cultural ties and identity may alleviate feelings of cultural distance and difficulties with integration.

Key words: Subjective well-being, ethnic group, immigration
JEL Codes: O15, R23, J61

1. Introduction

Poor mental health is a widespread problem. At least one third of all families in England include someone who is currently mentally ill (Centre for Economic Performance's Mental Health Policy Report, 2012). In addition to personal costs, poor mental health has a negative impact on public finances and on the economy (Layard, 2013). According to a report prepared for the Mental Health Foundation by Cyhlarova et al (2010), in England alone mental illness costs over £105.2 billion a year, through the costs of medical care, human costs and production output losses.

A large literature has grown to examine various determinants of mental health, focusing on economic, social and personal adult outcomes that can affect well-being (Layard et al, 2014). Age and income have received particular attention (Gardner and Oswald, 2007), but the increased richness of data has more recently allowed a focus on the dynamics of well-being (Clark and Georgellis, 2013; Clark, 2014), as well as life-cycle (Berner et al, 2012), and childhood experience effects (Powdthavee, 2012; Frijters et al, 2014; Layard et al, 2014). The conclusion from these studies is that well-being is determined by a combination of adult outcomes, family background and childhood development. For this reason, the decision for policy makers about how much to spend, on which services and at what point in the life-cycle to intervene depends on the size of different influences on well-being (Layard et al, 2014).

Relatively little attention has been given to understanding mental health variation across ethnic groups or among migrants compared to non-migrants. In recent decades, the UK population has been characterized by increasing immigration and, partially as a result of this, has become more ethnically diverse. In view of this, the ethnic and migrant dimensions of well-being are very relevant. Hauck and Rice (2004) examined mental health mobility across socio-economic groups. Non-white individuals were found to experience worse mental health status but greater mobility over time compared to whites. With regard to migration, Bhugra and Ayonrinde (2004) explained that the migration process, along with the process of adaptation and integration that it involves, can be traumatic, causing stress and feeling of alienation and can therefore be associated with an increase in mental illness.

Increasingly, migration and ethnicity are important dimensions of mental health in the UK. Understanding their relationship to subjective well-being is important for policy if preventative health strategies are to target population groups most in need. Moreover, since mental health can be associated with severe limitation of economic and social functioning

(Johnston et al, 2011), being able to intervene effectively has the potential to improve social and economic integration of ethnic groups of different migrant generations.

Existing evidence is lacking on how subjective well-being varies across these two dimensions. In this paper, we explore this. We use the UK Household Longitudinal Survey (UKHLS), which has an ethnic minority booster sample and can therefore provide a sufficient number of observations to allow these dimensions to be considered. Our analysis distinguishes between first generation migrants, second generation migrants and "natives", a shorthand for those born in the UK and with both parents also born in the UK. We further distinguish between "recent" and "established" migrants, according to whether or not they arrived in the UK within the last 10 years. With regard to ethnicity, the data are sufficiently rich to identify seven broadly defined minority groups. We use the term "subjective well-being" to refer to both mental health and life satisfaction. Our analysis, unlike previous studies, focuses on three aspects of mental health constructed from the General Health Questionnaire (GHQ). These are: Anxiety and Depression; Social Dysfunction; and Loss of Confidence. Alongside this, we also consider life satisfaction (identified by Layard et al. (2013) as strongly influenced by mental health).

Our descriptive analysis examines ethnic and migrant variations in well-being, controlling only for individuals' age and sex (in order to avoid confounding results by including potentially endogenous variables). We assess whether significant ethnic variation exists after controlling for migrant generation and, likewise, whether significant variation by migrant generation exists after controlling for ethnic group. Lastly, we introduce additional variables into our regression analysis and examine the extent to which factors relating to integration appear to be related to individuals' subjective well-being.

The results reported in this paper document heterogeneity in mental health status and life satisfaction across ethnic group and migrant generation. We find that recent migrants experience better mental health and higher life satisfaction, on average, than white natives. However, some of this variation decreases/changes when controlling for integration variables as well as neighbourhood ethnic composition. We also find that, while language difficulties are associated with worse mental health, individuals whose own ethnic group is strongly represented in their local area tend to have higher well-being.

This paper is organized as follows. Section 2 reviews the relevant existing literature. Section 3 describes the data. Section 4 presents some descriptive statistics and regression results. Section 6 concludes.

2. Evidence on how well-being varies across ethnic groups and by migrant status

Mental health status and life satisfaction of minority groups can be considered as an indicator of integration, as well as an indicator of the way different ethnic groups assimilate and adjust into the cultural and social life of the largest ethnic group of the UK population: white[1].

Research has shown that mental health varies by ethnicity (Shaw et al, 2012), with individuals from a minority ethnic group experiencing worse mental health (Hauck and Rice, 2004). Comparing the prevalence of the most Common Mental Disorders[2] (CMD) Weich et al (2004) provide evidence that although ethnic differences in the prevalence of CMD were modest, compared to whites, the prevalence of CMD was significantly higher among Irish and Pakistani men aged 35–54 years and among Indian and Pakistani women aged 55–74 years. The prevalence of CMD among Bangladeshi women was lower than among white women, while no differences were found between black Caribbean and whites.

In psychiatry, the relationship between mental health and neighbourhood ethnic density has been explored. Under the "ethnic density hypothesis", suggests individuals may have better mental health when living in areas with higher proportion of people of the same ethnicity (Shaw et al, 2012). Usually a "protective" (positive) effect of ethnic density on mental health captures the potential benefits of psychosocial influences derived, in part, from better social integration. There is no consensus on the whether this is in fact a positive effect of ethnic density; the evidence depends on the specific group considered as well as on the measure of health considered (Shaw et al, 2012). However, some consistent ethnic density effects have been found for suicide-related outcomes for Black people in the UK (Bécares et al, 2012a). Similarly, a

[1] Figure based on the UK Census shows that in 2011 White represented 87% of the UK population.

[2] The terminology of mental health problems adopted by Weich et al (2004) is slightly different from the one adopted in the current paper, although in most of the cases they capture the same underlying symptom. In Weich et al (2004), the disorders assessed the presence and severity of 14 non-psychotic psychiatric symptoms namely: somatic complaints associated with low mood or anxiety, fatigue, problems with memory and/or concentration, sleep disturbance, irritability, worry about physical health, depressed mood, depressive thoughts, non-health-related worry, generalized anxiety, phobic anxiety, panic attacks, compulsive behaviours, and obsessional thoughts.

study of Black Caribbeans in the UK shows that increased black ethnic density was associated with improved health (Bécares et al. 2012b). As suggested by Bécares et al. (2012b) some of the discrepancies in existing studies of ethnic density effects may be due to the reasons and length of stay of migration, along with the socioeconomic profiles of ethnic groups and the places where they live.

Another strand of research has analyzed the relationship between migration and mental health. This has found migration to be associated with deteriorating mental health status, relative to individuals in the receiving countries. The integration of minority groups is a complex and long-term process that, across generations, can be complicated or facilitated depending, for example, on personal traits and the motivation of individuals, and on the characteristics and (dis)similarities of the country of origin with the hosting one. Carrying out a study of foreign students, Babiker et al (1980) show that increased rates of medical consultations and symptoms of depression were associated with greater distance from country/culture of origin.

Bhugra and Ayonrinde (2004) find that migrants are more likely to have personality disorders due, amongst other factors, to social isolation, culture shock, weather changes, distance from home and difficulty integrating and adapting. However, it has been also highlighted that individuals respond in different ways to the process of migration (Dein and Bhui, 2013). While there is some evidence that personality disorder is associated with migration, epidemiological studies among migrant groups appear to be equivocal (Bhugra and Ayonrinde, 2004). Similarly, studies investigating the relationship between happiness and migration show mixed evidence (Bartram, 2013), and have not proven that migration as a means of gaining an increased income will necessarily lead to higher happiness.

Analysing different aspects of mental health and life satisfaction of migrants is crucial for several reasons. Even when they are from the same ethnic background, migrants may differ from natives, as well as from other migrants of different cohorts. Migrants are a sub-group of their original population with characteristics, culture, tradition and preferences that differ from those of natives and can vary significantly across different countries. In addition, more variation is likely to be found between migrants that arrived in the UK recently and those who have been in the country for longer. In fact, migrants who have been in the UK for a shorter period are on average more educated and younger than those who have been resident in the country for longer (Rienzo, 2014a; Wadsworth, 2010). Johnson (2006) provides evidence that many migrants are

also relatively healthy upon arrival. As the time spent in the country increases, some migrants may prosper, but all may be more liable to suffer from mental distress and depression due to separation from family and friends. If the time spent in the country is not associated with social integration or assimilation to the new culture, system, and social convention, then their feelings of alienation and isolation may increase, resulting in higher mental health problems and lower life satisfaction.

Using the European Social Survey, Bartram (2013) compares Eastern European migrants to Western European countries with Eastern Europeans who did not migrate. He finds that, after controlling for individual characteristics, migrants are happier than non-migrants. However, this difference disappears when correcting for the possibility that happiness causes migration rather than vice versa.

As pointed out by Bartram (2013) a simply comparison between migrants and natives does not fully inform on the consequences of migration for the migrants, as it does not account for differences in well-being levels between origin and destination countries. This has been indeed shown by Lovo (2014) who, investigating the determinants of destination choice for potential migrants in Europe, provides evidence that they are attracted by countries where average life satisfaction is higher.

Few researchers have considered both the ethnic and migrant dimensions in the analysis of health status. Jayaweera and Quigley (2010) have shown the existence of ethnic variation in health indicators by examining indicators of health status, behaviour and healthcare use among mothers of infants according to whether they were born in the UK and, for those who were not, their length of residence. They show that birth abroad, ethnicity and length of stay are associated with both positive and negative health indicators, and should be considered simultaneously. Mothers in minority groups are more likely than white British/Irish mothers to perceive their health as poor and to feel depressed. On the other hand, migrant mothers are also less likely to smoke or consume alcohol. When accounting for ethnicity, association with birth abroad disappears for most health outcomes implying that there may be a dependent migrant penalty in health.

Recently, researchers have analysed variations in life satisfaction across minority ethnic groups. Longhi (2014) provides evidence that, in England, white British people living in diverse areas have lower average life satisfaction than those living in less diverse areas. However, no

such relationship is found for non-White British and foreign-born. Similarly, Knies et al (2014) report that life satisfaction is lower among minorities as a whole but is particularly low among those born in the UK. Migrants are more likely to experience alienation. The authors also consider how this varies with the ethnic composition of the local area. Foreign-born Pakistanis are shown to have lower levels of life satisfaction the higher the representation of Pakistanis in their neighbourhood. Angelini et al (2015) drawing data form ten waves of the German Socio-Economic Panel, document a positive and significant association between (perceived) assimilation with the host culture and immigrants' subjective well-being in Germany. The authors provide evidence that the strength of the association varies with time since migration, with assimilation with German culture emerging as significantly associated with the level of life satisfaction only for the established and second generation immigrants, but vanishing for recent immigrants.

The aim of this paper is to provide a fuller understanding of how subjective well-being in the UK varies with ethnic group and migrant generation. In this way, we extend and complement the studies of Longhi (2014) and Knies et al (2014) by jointly analyzing both the ethnic and generation dimension.

3. Data

The UKHLS is a longitudinal survey of households living in the UK, in which each adult member of the household is interviewed annually. It has been running since 2009 and is a nationally-representative sample of around 30,000 households living in the UK. It is particularly suited to our use since it incorporates a booster sample of approximately 4,000 households where at least one member (or their parents or grandparents) is from an ethnic minority group, with the intention of achieving at least 1,000 adult interviews from Black African, Bangladeshi, Caribbean, Indian and Pakistani ethnic groups.[3]

[3] After reduction of the sample, due to the exclusion of non white natives, as well as those having one parent who was not UK born, this reduces the current numbers to 1,027 African, 895 Bangladeshi, 849 Caribbean, 1,406 Indian and 1,172 Pakistani.

In line with this, ethnic groups are defined in the following eight categories: White, Mixed, Indian, Pakistani, Bangladeshi, Caribbean, African, and Other. [4] We use wave three of the UKHLS, with respondents interviewed in 2012.

All respondents are asked whether they were born in the UK and, if not, when they moved to the country. They are also asked about their parents' country of birth. Using this, we categorise each respondent as follows:

- recent (first generation) immigrant - born outside the UK, parents both born outside the UK, lived in the UK for less than 10 years
- established (first generation) immigrant - born outside the UK, parents both born outside the UK, lived in the UK for 10 years or more
- second generation immigrant - born in the UK, parents both born outside the UK
- native – whites only, born in the UK, parents both born in the UK.

We use a measure of well-being derived from the 12-item GHQ, a self-administered screening test aimed at detecting psychiatric disorders that require clinical attention among respondents in community and non-psychiatric clinical settings. The GHQ is used to detect disorders of a temporary nature, such as depression or anxiety, but also permanent conditions such as psychotic depression and schizophrenia. The main advantage of the GHQ is that it does not require a subjective assessment by a specialised clinician (Hauck and Rice, 2004) and allows identification of individuals at higher risk of mental illness. It has been used in a number of studies of subjective well-being (see, for example, Hauck and Rice, 2004, Clark and Georgellis, 2013; Dustmann and Fasani, 2014).

There are 12 GHQ questions in the UKHLS. All require a response on a scale ranging from 1 to 4, 1 being the best score. We recode all these indices to range between 0 (least distressed) and 3 (most distressed). Like Dustmann and Fasani (2014) and following Graetz (1991), we aggregate the 12 GHQ measures into three broader categories: Anxiety and Depression, Social Dysfunction, and Loss of Confidence.[5] Each measure is expressed as the average score across the corresponding GHQ measures.

[4]Details of the eight categories are presented in Table A2 of the appendix.

[5] See Table A1 for details.

We also consider life satisfaction. Respondents are asked to report how satisfied or dissatisfied they are with their life overall on a scale from 1 (completely dissatisfied) to 7 (completely satisfied). For ease of comparison with the GHQ aggregated measures, the measure of life satisfaction has been reversed to range from 0 (completely satisfied) to 6 (completely dissatisfied). Again, measures of life satisfaction are commonly used in studies of subjective well-being (see, for example, Longhi, 2014; Knies et al, 2014; Powdthavee, 2010).

In addition to the measures of well-being, the UKHLS contains rich demographic information. We use these as control variables in the regression analysis: age; gender; a dummy for working (as employed or self-employed); a dummy for partnership; number of own children in the household (None; 1 child; 2 or more children); a dummy for living in London. We also include logged household income, equivalised using the modified OECD equivalence scale to take account of household composition.

Moreover, UKLHS contains variables that capture social integration of individuals as well as variables that can enhance it. Specifically we also include as controls: English as first language (dummy variable); difficulty speaking day-to-day English (dummy variable); proportion of friends of the same race (all the same; more than half; about half or less).

Variables capturing English proficiency are important in helping us explaining subjective well-being across migrant generations and ethnic groups. As explained by McAreavey (2010) language proficiency is considered a vital component of any migrant's integration process since it facilitates mobility, helps to develop social networks, provides a sense of cohesion and unlocks access to social connection, enhancing assimilation and integration. Therefore, we would expect limited language communication skills to be more associated with worse mental health as a result of distress caused by lack of social integration.

The variable capturing the proportion of friends with same race is particular relevant in this context as it can be considered as an index of social integration of individuals. As pointed out by Cappellari and Tatsiramos (2011), networks are assumed to operate along similar observable dimensions (e.g. race). We would expect individuals who are more socially integrated into the mainstream to have a lower proportion of friends of the same race – and therefore a higher proportion of friends of different races – while the opposite is true for less socially integrated individuals. In this context, we consider individuals reporting a lower percentage of

friends of the same race to be more integrated, and those reporting a higher percentage of friends of the same race to be less integrated.

Following the existing literature (Manacorda, Manning and Wadsworth, 2012; Rienzo, 2014b), we also include as a control the level of education, based on the age at which the person left full-time education. Specifically, individuals are regarded as having a 'lower' level of education if they left full-time education at 16 years of age or earlier; 'intermediate' if they left education between 17 to 20 years old, and 'higher' if they left full time education when 21 or older.

UKHLS also provides details on where the individual lives. This is at the Local Authority District (LAS-NUTS3) level and allows the data to be linked to the 2011 Census in order to derive two local area measures of ethnic composition.

The first measure is the proportion of the local population who are from a minority ethnic group. Following the terminology in Dorsett (1998), we refer to this as the 'density'. The second measure is the proportion of the population who are from the respondent's own ethnic group. [6] We refer to this as the 'concentration'.

We exclude from the sample UK-born individuals who report having only one parent born abroad (2,061 observations); any non-white natives (187 observations), as well as 10 respondents who are Gypsies or Irish travellers. These groups have been excluded since it is difficult to classify them into one of the categories considered.

4. Results

4.1 Descriptive Statistics

We start by providing descriptive statistics of the sample. The resulting sample is summarized in Table 1a and 1b. As documented in Table 1a, with the exception of Caribbeans, minority groups tend to be younger than whites, with slightly more than half being female. Across all ethnic groups, the majority of respondents are in a partnership, with the percentage being particularly high for Indians, Pakistanis and Bangladeshis. On average, between 52 and 62 percent are either employed or self employed, but fewer than 50 percent of Pakistani and

[6] The concentration index has been derived for all ethnic groups except for Mixed and Other. For these groups it is not possible to derive a meaningful measure of concentration. In the regression equations we set the concentration index to zero but include a missing variables indicator for individuals in these groups.

Bangladeshi are working. Those of mixed race have on average the highest household income, while Pakistanis have the lowest. Only about 6% of whites live in London. For all minority groups, the level is much higher; at least half for all except Pakistanis (21%).

Looking at the distribution of each ethnic group across generation, the vast majority of whites are natives. Between 12 and 37 percent of minority groups are second generation immigrants, with most being first generation immigrants who have been in the country for ten years or more. The presence of recent immigrants is particularly high amongst Caribbean, African and Other. Minority groups tend to be relatively highly educated and are on average better educated than white people. The only exception is among Pakistanis who appear to be the least educated. More than fifty percent of Pakistani and Bangladeshi have at least one child, while 70 percent or more of Caribbean and white respondents do not have any children living with them.

About 57% of whites have only white friends. Among minority groups, the proportion having only friends of the same ethnic group is much lower, ranging from 10 to 35%. Ethnic minorities also tend to live in much more diverse neighbourhoods than whites. However, this is not driven by specific ethnic groups being concentrated in particular areas. Whereas whites live in predominantly white areas on average, individuals from other ethnic groups appear to live in areas that, ethnically, are much more mixed.

Table 1b, presenting similar statistics by migrant generation, documents that recent first generation immigrants tend to be younger, slightly more than fifty percent are female and the majority are in a partnership. A higher percentage of second generation and recent first generation immigrants are either employed or self employed, compared to natives and established first generation immigrants. Natives are more distributed across the UK, while at least 40% of immigrants live in London. Consistent with existing evidence, the table shows that first generation immigrants, especially recent, are on average better educated than natives. More variation can be observed for the number of children, since 74% of natives have no children. This percentage decreases to 61% for second generation immigrants, to 58 and 48 percent for established and recent first generation immigrants respectively. The majority of natives (59%) have no friends who are not of the same ethnic group, while both second and first generation immigrants have more friends of a different race.

Table 1a: Characteristics of individuals by ethnic group

Variable	White	Mixed	Indian	Pakistani	Bangladeshi	Caribbean	African	Other
Age	50	45	43	38	36	51	39	40
Female (%)	56	54	51	56	53	61	61	57
Partner (%)	80	85	92	91	92	74	84	88
Working (%)	55	60	62	44	42	52	55	58
Household Income (£)	2074	2133	2040	1348	1463	1791	1646	2012
London (%)	6	49	42	21	73	62	67	53
Generation (col %)								
Natives	95							
2nd generation	1	27	29	37	31	12	12.	15
1st generation, established	3	51	51	48	56	61	58	55
1st generation, recent	1	21	20	15	13	27	30	30
Education (col %)								
Lower	45	20	25	40	46	38	23	18
Intermediate	31	34	37	35	36	33	32	37
Higher	25	46	38	25	18	30	46	45
Number of Children (col %)								
None	74	65	59	44	47	70	51	5
1 child	1	16	1	1	15	16	16	19
2 or more children	15	19	24	4	38	1	32	25
Proportion of friends with same race (col %)								
All the same	57	10	25	30	35	12	17	18
More than half	32	26	36	39	38	40	40	32
About half or less	11	64	39	31	27	48	43	50
Concentration Index (%)	91	-	11	9	19	13	13	-
Density Index (%)	9	30	38	32	47	38	38	31
Total N	**26,304**	**228**	**1,175**	**944**	**645**	**643**	**806**	**852**

Notes: Based on Wave 3 of UKHLS and Census 2011.

Table 1b: Characteristics of individuals by migrant generation

Variable	Natives	2nd generation	1st generation established	1st generation recent
Age	50	36	49	34
Female (%)	56	58	57	54
Partner (%)	80	90	81	94
Working (%)	54	60	50	63
Household Income (Equivalised) (£)	2061	1956	1839	1859
London (%)	5	43	48	40
Ethnic Group (col %)				
White	100	19	19	27
Mixed		4	3	4
Indian		19	17	17
Pakistani		20	13	11
Bangladeshi		11	10	6
Caribbean		16	10	1
African		6	14	16
Other		7	13	19
Education (col %)				
Lower	46	29	33	18
Intermediate	30	38	32	36
Higher	24	33	35	46
Number of Children (col %)				
None	74	61	58	48
1 child	12	13	15	24
2 or more children	14	26	27	28
Proportion of friends with same race (col %)				
All the same	59	16	29	27
More than half	31	38	36	37
About half or less	10	46	35	36
Total	**24,921**	**1,791**	**3,525**	**1,360**

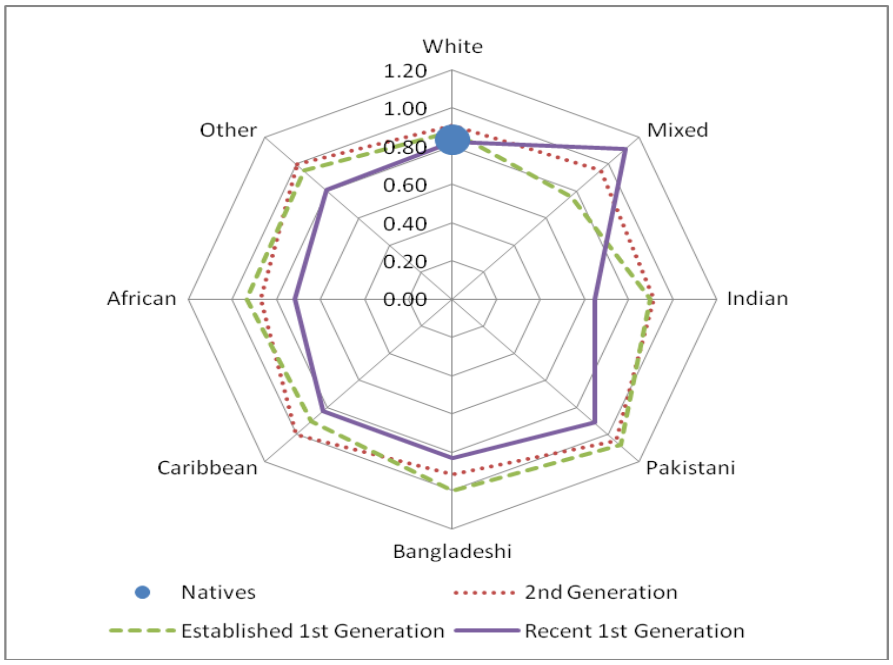
Notes: Based on Wave 3 of UKHLS and Census 2011.

Figures 1 to 4 graphically represent the mean scores for the three GHQ measures (Anxiety and Depression, Social Dysfunction, Loss of Confidence) and Life Satisfaction by ethnicity and by migrant generation. The score of the three GHQ measures varies from 0 to 3,

while life satisfaction can range from 0 to 6. Lines closer to the centre indicate higher levels of well-being. However, as can be seen from the charts, the mean levels observed are always closer to zero than they are to their possible maximum.

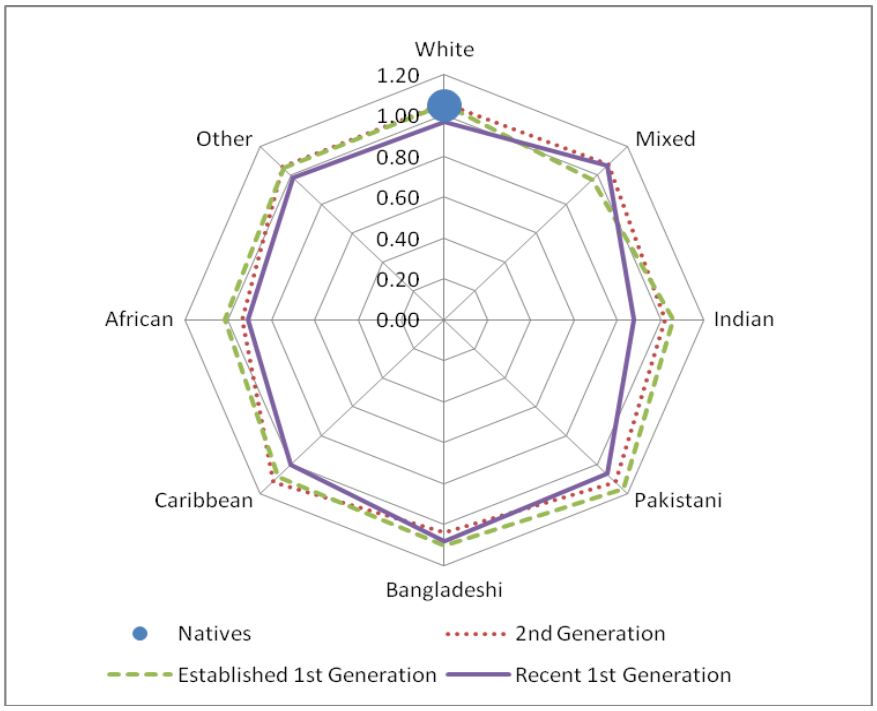
Looking across Figures 1-4, two points are apparent. First, those of mixed ethnicity appear quite different from other ethnic groups across all measures. The number of individuals reporting themselves as being of mixed ethnicity is much smaller than for any single ethnic group. We consider later the significance of observed variation. Second, recent migrants appear to have a higher level of well-being. This varies by outcome measure and by ethnic group but, as a broad point, it holds true.

Figure 1: Average Anxiety and Depression of ethnic group, by generation



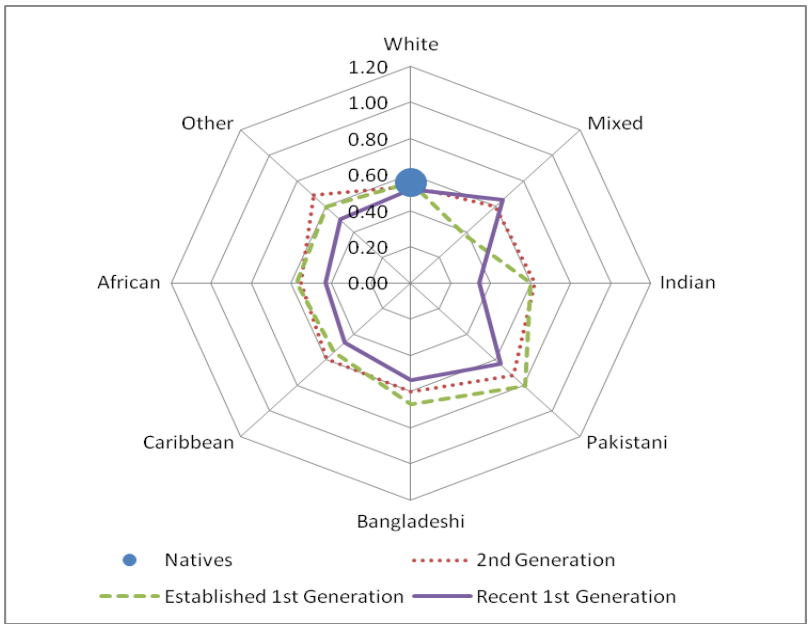
Notes: The figure plots the average score of Anxiety and Depression of Ethnicity by generation. The lower scores correspond to a better mental health and are represented by the lines closer to the centre. The score ranges between 0 and 3.

Figure 2: Average Social Dysfunction of ethnic group, by generation



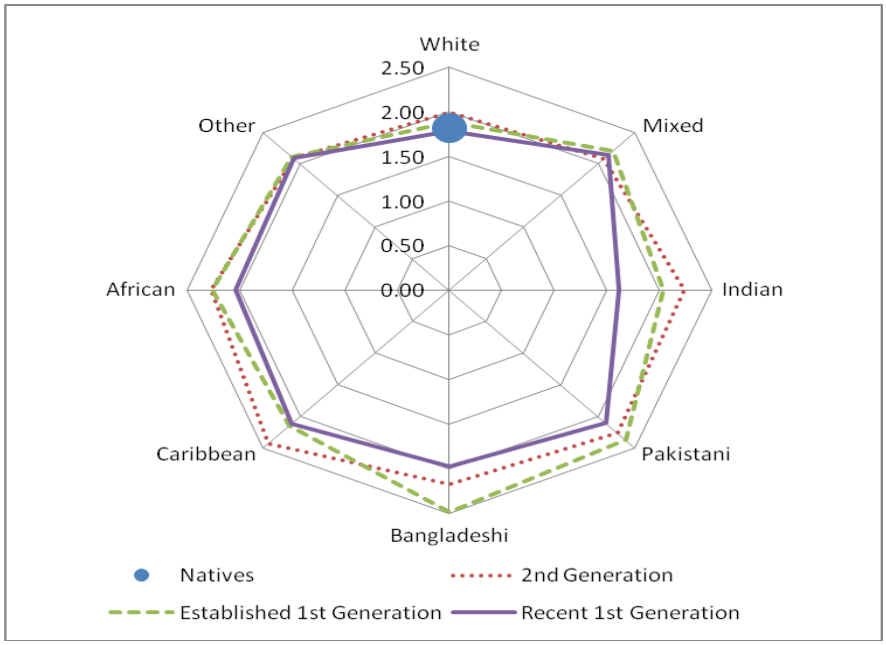
Notes: The figure plots the average score of Social Dysfunction of Ethnicity by generation. The lower scores correspond to a better mental health and are represented by the lines closer to the centre. The score ranges between 0 and 3.

Figure 3: Average Loss of Confidence of ethnic group, by generation



Notes: The figure plots the average score of Loss of Confidence of Ethnicity by generation. The lower scores correspond to a better mental health and are represented by the lines closer to the centre. The score ranges between 0 and 3.

Figure 4: Average Life Satisfaction of ethnic group, by generation



Notes: The figure plots the average score of Life Satisfaction of Ethnicity by generation. The lower scores correspond to a higher life satisfaction, and are represented by the lines closer to the centre. Life Satisfaction rages from 0 (mostly satisfied) to 6 (mostly unsatisfied).

4.2 Regression results

To look deeper into these descriptive findings we use regression analysis to explore the statistical significance of the differences. Furthermore, including both ethnic group and migrant generation indicators among the regressors allows us to see whether the dimensions have separate independent associations with well-being.

We begin with a simple linear regression model as follows:

$$(1) \qquad y_i = \alpha + \sum_e \beta_e E_{ei} + \sum_g \lambda_g G_{gi} + \gamma X_i + \varepsilon_i$$

where y_i are the scores of the measures of well-being, E_{ei} is an indicator variable taking value 1 when the respondent is a member of ethnic group *e* (0 otherwise), G_{gi} is an indicator variable taking value 1 when the respondent is categorised as being of migrant generation g (0 otherwise), and X_i includes both individual characteristics and local characteristics.

Since the dependent variables are coded on a point scale, it is common practice to estimate equation (1) using an ordered probit. However, given that the marginal effects of the

ordered probit are qualitatively similar to the OLS results, in order to facilitate the interpretation of the results we focus on the OLS estimates.[7] For ease of interpretation, and to provide a better sense of the magnitude of the effects, Tables 2 to 4 also report for regressors that are dummy variables, the standard deviation increase in the dependent variable associated with a unit change in the regressor or, for continuous regressors, the standard deviation change in the dependent variable associated with a 1 standard deviation increase in the regressor.

When estimating well-being equations of the type considered here, it is important to recognize the potential for regressors to be endogenous or even dependent on the outcome variable (reverse causality). We are careful to include only exogenous regressors among the X_i (age and sex) in order to avoid this source of bias. However, we relax this with our final estimates in order to allow some speculation as to the factors that might contribute to differences in well-being.

Table 2 reports the regression results with only exogenous regressors. Before discussing the pattern of results, we note that there is significant variation in well-being across ethnic group and across migrant generation. This is shown by the test results reported in the table and is true of all well-being measures.

The results confirm the impression from Figures 1 to 4 that recent immigrants have the highest levels of well-being, even after controlling for age and sex differences. Specifically, being a recent immigrant rather than a native is associated with having lower levels of: anxiety and depression; social dysfunction; loss of confidence (decreases of 0.184, 0.182 and 0.199 standard deviations, respectively) and having a higher level of life satisfaction (0.090 standard deviations). On the other hand, established first generation immigrants experience more anxiety and depression relative to natives (by 0.091 standard deviations) and have a lower level of life satisfaction (0.063 standard deviations). Second generation immigrants also display lower life satisfaction (0.079 standard deviations).

With regard to ethnic variation, all the measures indicate a low level of well-being among Pakistanis. Their well-being ranges between 0.189 and 0.250 standard deviations below that of whites. In fact, all ethnic groups, except Indian, have lower life satisfaction than whites. Bangladeshis and Caribbean report higher levels of social dysfunction than natives, while

[7] Marginal effects of the ordered probits are reported in Appendix A3.

Africans report a lower level. For Bangladeshis, social dysfunction is 0.125 standard deviations higher and life satisfaction is 0.236 standard deviations lower, respectively. Effects of similar size are seen for Caribbeans (0.111 and 0.225 standard deviations respectively). Africans, on the other hand, report lower levels of social dysfunction relative to whites (by 1.30 standard deviations) and higher life satisfaction (0.190 standard deviations).

Table 2. OLS regressions of mental health and life satisfaction on ethnicity and generation.

	(1)	(2)	(3)	(4)
	Anxiety Depression	***Social Dysfunction***	***Loss of Confidence***	***Life Satisfaction***
Ethnic Group (Reference =White)				
Mixed	0.007	-0.014	-0.045	0.240**
	[0.052]	[0.032]	[0.050]	[0.118]
	(0.010)	(-0.035)	(-0.065)	(0.159)
Indian	-0.038	-0.020	0.007	0.084
	[0.028]	[0.019]	[0.029]	[0.065]
	(-0.059)	(-0.049)	(0.011)	(0.056)
Pakistani	0.124***	0.100***	0.173***	0.333***
	[0.034]	[0.023]	[0.036]	[0.076]
	(0.189)	(0.241)	(0.250)	(0.221)
Bangladeshi	0.024	0.052**	0.047	0.355***
	[0.037]	[0.025]	[0.040]	[0.087]
	(0.036)	(0.125)	(0.067)	(0.236)
Caribbean	0.049	0.046**	0.008	0.339***
	[0.035]	[0.024]	[0.035]	[0.082]
	(0.075)	(0.111)	(0.012)	(0.225)
African	-0.037	-0.054**	-0.034	0.286***
	[0.033]	[0.022]	[0.034]	[0.077]
	(-0.056)	(-0.130)	(-0.050)	(0.190)
Other	0.026	0.007	0.029	0.199***
	[0.031]	[0.021]	[0.032]	[0.072]
	(0.039)	(0.017)	(0.042)	(0.132)

Generation (Reference=Natives)				
2nd Generation	0.032	-0.003	-0.022	0.120**
	[0.025]	[0.016]	[0.026]	[0.057]
	(0.049)	(-0.008)	(-0.032)	(0.079)
Established 1st Generation	0.060***	0.003	0.013	0.096*
	[0.021]	[0.014]	[0.022]	[0.049]
	(0.091)	(0.008)	(0.019)	(0.063)
Recent 1st Generation	-0.121***	-0.076***	-0.138***	-0.136**
	[0.024]	[0.016]	[0.025]	[0.057]
	(-0.184)	(-0.182)	(-0.199)	(-0.090)
P-values from hypothesis tests:				
No variation by ethnic group				
H_0: $\beta_e = 0, \forall e$	0.0003	0.0000	0.0000	0.0000
No variation by generations				
H_0: $\lambda_g = 0, \forall g$	0.0000	0.0000	0.0000	0.0001
No variation by ethnic group or generation				
H_0: $\beta_e = 0, \forall e$, $\lambda_g = 0, \forall g$	0.0000	0.0000	0.0000	0.0000
Other Coefficients				
Age	0.010***	0.006***	-0.001	0.033***
	[0.001]	[0.001]	[0.001]	[0.003]
	(0.265)	(0.241)	(-0.019)	(0.375)
Age^2	-0.015***	-0.006***	-0.003**	-0.039***
	[0.001]	[0.001]	[0.001]	[0.003]
	(-0.400)	(-0.232)	(-0.065)	(-0.448)
Female	0.131***	0.062***	0.135***	-0.021
	[0.008]	[0.005]	[0.008]	[0.018]
	(0.200)	(0.149)	(0.196)	(-0.014)
Constant	0.683***	0.880***	0.588***	1.277***
	[0.029]	[0.019]	[0.032]	[0.068]
R-squared	0.037	0.011	0.019	0.020
N	27,829	27,811	27,831	27,829

Notes: Based on Wave 3 of UKHLS. Robust standard errors in brackets. The term in parentheses shows, for regressors that are dummy variables, the standard deviation increase in the dependent variable associated with a unit change in the regressor or, for continuous regressors, the standard deviation change in the dependent variable associated with a 1 standard deviation increase in the regressor.
* Significant at 10%, ** Significant at 5%, *** Significant at 1%.

While these results confirm that there is significant variation, by ethnic group and by migrant generation, they do not address the possibility that the variation by ethnic group differs across generations nor that the variation by generation varies across ethnic group. To explore this, our regression model is re-specified to take the following form:

$$(2) \qquad y_i = \alpha + \sum_e \sum_g \delta_{eg} E_{ei} G_{gi} + \gamma X_i + \varepsilon_i \,.$$

The test results presented in Table 3 show significant variation by migrant generation for Indians, Pakistanis and Africans, across all measures. On the other hand there is no significant variation by generation for some ethnic groups and measures (Anxiety and depression for Mixed; social dysfunction for Bangladeshis, Caribbean, and Other; loss of confidence for Bangladeshis and Caribbean; life satisfaction for Whites). The tests results also point to significant variation by ethnic group that is evident for all migrant generations (except loss of confidence for second generation immigrants).[8]

The finding that this variation is statistically significant justifies examining the estimated coefficients in Table 3 more closely. Considering variation by migrant generation, recent Indian migrants have higher levels of well-being for all measures than Indians who have been in the UK longer. For mental health (i.e. GHQ-based) outcomes, their level of well-being is between 0.364 and 0.396 standard deviations higher than that for white natives. For life satisfaction, the difference in smaller (0.190 standard deviations) but still significant. For Whites, Africans and Other, recent migrants also have the highest levels of well-being for the GHQ measures, but this does not hold for life satisfaction. The association is highest for the mental health of recent African migrants at between 0.263 and 0.314 standard deviations higher than that for white natives (depending on the outcome) and lowest for recent white migrants (between 0.131 and 0.176 standard deviations). However, this does not carry across to life satisfaction. This shows no significant association for recent white or African migrants. This highlights the importance of considering multiple indicators of subjective well-being. To make this point even more, we note that recent migrants from other ethnic groups experience better mental health but lower life satisfaction.

[8]Since the sample of Natives only includes Whites, there is no test result for ethnic variation among natives.

For Pakistanis, established migrants and those born in the UK have much lower levels of well-being across the board. Well-being among second generation Pakistanis ranges from 0.151 to 0.258 standard deviations, depending on the outcome. For established first generation Pakistani immigrants, well-being is lower still; between 0.274 and 0.338 standard deviations. For Bangladeshis, life satisfaction is similarly low among established and second generation immigrants. However, mental health appears better than for Pakistanis, particularly for second generation immigrants. The pattern for Caribbeans and Africans is more mixed, but in both cases life satisfaction is significantly lower for all except recent immigrants. For instance, second generation Caribbeans have a level of life satisfaction 0.346 standard deviations lower than that of white natives.

Another way to analyse the results is to consider the extent to which well-being varies across ethnic groups within a migrant generation. Among the second generation, it is Pakistanis and Caribbeans who have the lowest GHQ well-being. Whites and Mixed have the highest levels of life satisfaction among the second generation. Among the established first generation, Pakistanis and Bangladeshis have low well-being across all GHQ outcomes, and all minority ethnic groups (this time including those of mixed ethnicity) have lower life satisfaction than white natives. Lastly, among recent migrants, it is Indians that stand out as having the highest well-being across all measures. Whites and Africans have high levels of GHQ well-being, but not life satisfaction.

Table 3. OLS regressions of mental health and life satisfaction on interacted ethnicity and generation.

	(1)	(2)	(3)	(4)
	Anxiety Depression	***Social Dysfunction***	***Loss of Confidence***	***Life Satisfaction***
Ethnic Group x Generation (reference = white natives)				
White				
2nd generation	0.050	0.007	-0.028	0.128
	[0.040]	[0.025]	[0.040]	[0.087]
	(0.070)	(0.017)	(-0.041)	(0.085)
1st generation, established	0.033	-0.004	-0.009	0.078
	[0.027]	[0.018]	[0.028]	[0.062]
	(0.051)	(-0.009)	(-0.013)	(0.052)
1st generation, recent	-0.090***	-0.073***	-0.091**	-0.110
	[0.033]	[0.021]	[0.035]	[0.080]
	(-0.136)	(-0.176)	(-0.131)	(-0.073)
Mixed				
2nd generation	0.067	0.029	0.021	0.169
	[0.102]	[0.060]	[0.087]	[0.209]
	(0.101)	(0.070)	(0.030)	(0.112)
1st generation, established	-0.077	-0.081***	-0.169***	0.373**
	[0.061]	[0.032]	[0.057]	[0.157]
	(-0.117)	(-0.196)	(-0.245)	(0.247)
1st generation, recent	0.190*	0.017	0.031	0.255
	[0.099]	[0.083]	[0.118]	[0.233]
	(0.289)	(0.041)	(0.044)	(0.169)

Indian				
2nd generation	0.004	-0.019	0.015	0.348***
	[0.039]	[0.027]	[0.042]	[0.088]
	(0.006)	(-0.045)	(0.022)	(0.231)
1st generation, established	0.057*	0.008	0.052	0.183**
	[0.031]	[0.021]	[0.033]	[0.072]
	(0.086)	(0.020)	(0.075)	(0.122)
1st generation, recent	-0.259***	-0.164***	-0.252***	-0.287***
	[0.043]	[0.026]	[0.040]	[0.100]
	(-0.394)	(-0.396)	(-0.364)	(-0.190)
Pakistani				
2nd generation	0.135***	0.084***	0.105**	0.389***
	[0.044]	[0.031]	[0.047]	[0.093]
	(0.205)	(0.202)	(0.151)	(0.258)
1st generation, established	0.201***	0.114***	0.233***	0.489***
	[0.044]	[0.030]	[0.048]	[0.100]
	(0.306)	(0.274)	(0.338)	(0.324)
1st generation, recent	0.017	0.030	0.041	0.219
	[0.064]	[0.044]	[0.065]	[0.156]
	(0.026)	(0.073)	(0.059)	(0.145)
Bangladeshi				
2nd generation	0.005	0.013	-0.034	0.355***
	[0.051]	[0.033]	[0.054]	[0.118]
	(0.007)	(0.030)	(-0.049)	(0.236)
1st generation, established	0.117**	0.062**	0.099**	0.584***
	[0.046]	[0.030]	[0.049]	[0.107]
	(0.179)	(0.150)	(0.144)	(0.388)
1st generation, recent	-0.067	0.055	-0.061	0.095
	[0.087]	[0.056]	[0.093]	[0.202]
	(-0.101)	(0.132)	(-0.088)	(0.063)

Caribbean				
2nd generation	0.092**	0.059*	0.002	0.521***
	[0.044]	[0.032]	[0.044]	[0.100]
	(0.140)	(0.143)	(0.003)	(0.346)
1st generation, established	0.101**	0.035	0.009	0.373***
	[0.040]	[0.026]	[0.040]	[0.097]
	(0.153)	(0.084)	(0.013)	(0.247)
1st generation, recent	-0.093	-0.042	-0.160	0.268
	[0.142]	[0.079]	[0.143]	[0.400]
	(-0.142)	(-0.102)	(-0.232)	(0.178)
African				
2nd generation	-0.037	-0.106**	-0.065	0.403**
	[0.076]	[0.044]	[0.079]	[0.188]
	(-0.057)	(-0.255)	(-0.094)	(0.267)
1st generation, established	0.042	-0.041*	-0.015	0.379***
	[0.037]	[0.023]	[0.038]	[0.082]
	(0.065)	(-0.098)	(-0.022)	(0.251)
1st generation, recent	-0.188***	-0.130***	-0.182***	0.161
	[0.050]	[0.039]	[0.053]	[0.125]
	(-0.286)	(-0.314)	(-0.263)	(0.107)
Other				
2nd generation	0.097	0.019	0.085	0.217*
	[0.061]	[0.043]	[0.070]	[0.130]
	(0.148)	(0.046)	(0.124)	(0.144)
1st generation, established	0.081**	-0.002	0.022	0.240***
	[0.035]	[0.022]	[0.037]	[0.081]
	(0.123)	(-0.005)	(0.032)	(0.159)
1st generation, recent	-0.108**	-0.057*	-0.116***	0.204*
	[0.042]	[0.031]	[0.044]	[0.107]
	(-0.164)	(-0.137)	(-0.168)	(0.136)

P-values from hypothesis tests:				
No variation by generation for each ethnic group, H_0: $\delta_{eg} = 0, \forall g$				
-Whites	0.0129	0.054	0.0677	0.1294
-Mixed	0.1249	0.0736	0.0291	0.0580
-Indian	0.0000	0.0000	0.0000	0.0000
-Pakistani	0.0000	0.0001	0.0000	0.0000
-Bangladeshi	0.0644	0.1164	0.2023	0.0000
-Caribbean	0.0116	0.1381	0.7254	0.0000
-African	0.0014	0.0002	0.0053	0.0000
-Other	0.0021	0.2980	0.0303	0.0019
No variation by ethnic group for each generation, H_0: $\delta_{eg} = 0, \forall e$				
- 2nd generation	0.0199	0.0213	0.4082	0.0000
- 1st generation, established	0.0000	0.0001	0.0000	0.0000
- 1st generation, recent	0.0000	0.0000	0.0000	0.0118
No variation by ethnic group or generation H_0: $\delta_{eg} = 0, \forall e, g$	0.0000	0.0000	0.0000	0.0000
Other Coefficients				
Age	0.010***	0.006***	-0.001	0.032***
	[0.001]	[0.001]	[0.001]	[0.003]
	(0.259)	(0.234)	(-0.025)	(0.371)
Age^2	-0.015***	-0.005***	-0.002*	-0.038***
	[0.001]	[0.001]	[0.001]	[0.003]
	(-0.394)	(-0.226)	(-0.059)	(-0.443)
Female	0.131***	0.062***	0.135***	-0.021
	[0.008]	[0.005]	[0.008]	[0.018]
	(0.200)	(0.149)	(-0.196)	(-0.014)
Constant	0.688***	0.884***	0.592***	1.285***
	[0.029]	[0.019]	[0.032]	[0.068]
R-squared	0.037	0.012	0.020	0.020
N	27,829	27,811	27,831	27,829

Notes: Based on Wave 3 of UKHLS. Robust standard errors in brackets. The term in parentheses shows, for regressors that are dummy variables, the standard deviation increase in the dependent variable associated with a unit change in the regressor or, for continuous regressors, the standard deviation change in the dependent variable associated with a 1 standard deviation increase in the regressor.
* Significant at 10%, ** Significant at 5%, *** Significant at 1%.

Because mental health and life satisfaction could be explained by factors other than ethnicity and migrant generation, we augment Equation 2 to include additional variables Z_i:

$$(3) \qquad y_i = \alpha + \sum_e \sum_g \delta_{eg} E_{ei} G_{gi} + \gamma X_i + \phi Z_i + \varepsilon_i \ .$$

The Z_i variables include several characteristics that are often thought to influence well-being (partnership status, number of children, employment status, household income) and several variables that may capture the extent of social isolation and/or integration. These include the following area characteristics: whether the respondent lives in London, the proportion of ethnic minorities in their local area (density) and the proportion of the local population of the respondent's own ethnic group (concentration). Variables indicating whether English is the respondent's first language, whether the respondent reports difficulty speaking day-to-day English[9], and the proportion of the respondent's friends who are from the same ethnic group are included as a means of capturing integration. Given the increasing diversity of the UK, a lower proportion of friends of the same race could be interpreted as a measure of integration, as argued earlier.

The test results reported in Table 4 show that, after introducing these variables, the variation by migrant generation is less emphatic for some groups (Caribbeans, for example) but remains strongly significant for Indians and (except for life satisfaction) Africans. The variation by migrant generation has weakened somewhat for Pakistanis but strengthened for Bangladeshis. Variation by ethnic group remains significant for each generation, although when considering life satisfaction, this only holds for recent migrants.

The changes in the test results compared to those shown in Table 3 suggest that the additional controls are explaining some of the variation, and this is the case particularly for life satisfaction. These additional variables also change, in some cases, the direction and significance of the estimated coefficients. This reflects the fact that there are compositional differences across ethnic groups and generations in the characteristics newly controlled for in Table 4. Many of these are characteristics that it is common to include in happiness equations, despite their potential endogeneity. The results capture the usual u-shaped age profile of both mental health

[9] This variable is only recorded in Wave 1 of the UKHLS.

and life satisfaction and also suggest that women have worse mental health but are more satisfied with life. Being in a partnership, having more children, being more educated, working and having a higher income are all statistically significantly associated with higher well-being. This is true for all measures.

Our particular focus is on those variables that capture aspects of integration. We see that there is no strong London effect (relevant since minority ethnic groups are disproportionately located in the capital) nor is there any significant association with living in a more ethnically diverse area. This result is in line with Longhi's findings (2014) that life satisfaction of non-white British and foreign born does not seem to be affected by the level of diversity in their neighbourhood.

In fact, while the level of diversity of an area is not important, the presence of individuals of the same ethnic group is. The coefficients for the concentration index suggest that individuals are happier when living in an area where their own ethnic group is well-represented. Increasing the concentration index by one standard deviation is associated with an increase in life satisfaction (the outcome showing the strongest correlation) of 0.06 standard deviations. This is consistent with Knies et al (2014) conclusion that while satisfaction is lower among minorities, area concentration is associated with higher life satisfaction for certain groups. Similarly, the effect of concentration on mental health is in line with psychiatry studies (Shaw et al, 2012) documenting that living in areas with more people of the same ethnicity has a "protective" i.e. positive effect on mental health of ethnic minority, due to the enhanced social support, as well as positive identity and higher self-evaluation. Living in areas with people having similar cultural or religious background, may give more opportunities to have social interactions, to speak in one's native language, to create a sense of belonging, recreating a social and cultural context similar to that of the origin country.

It is intriguing to note that not having English as a first language is with higher Anxiety and Depression (an increase of 0.163 standard deviations) and lower life satisfaction (by 0.158 standard deviations). However, we note that this is not the same as fluency in English; it may instead be a proxy for a stronger attachment to the origin country. More directly interpretable is the variable "Difficulty in day to day English". Among those who have such a difficulty, mental health is significantly lower, by 0.146 to 0.170 standard deviations. Life satisfaction, on the other hand, appears unaffected. This is consistent with language and communication difficulties

representing a barrier to social integration, resulting in mental distress. The importance of language for migrants' positive integration was highlighted by McAreavey (2010). The results are also consistent with the study of Angelini et al (2015) who, investigating the association between cultural assimilation and immigrants' life satisfaction for Germany, pointed out the importance of language proficiency for being able to interact with local citizens, and find a strong, significant and positive effect of German language proficiency on immigrants' well-being.

Lastly, the results show that both mental health and life satisfaction are worse among those whose friends are mostly of a different race (by between 0.043 and 0.030 standard deviations, depending on the outcome). Having a lower proportion of friends of the same race suggests a higher level of integration. However, our findings perhaps point to the importance of retaining cultural ties, as well as of belonging to a social network of individuals with similar characteristics. Indeed, Cappellari and Tatsiramos (2011) suggest that social interactions are more likely to emerge among individuals that share some relevant traits – such as education or ethnicity – or are characterized by similar tastes or constraints. These results may also suggest that retaining cultural and ethnic links act as a "cushion" that reduces the cultural distance from the hosting country. Again, these results are consistent with the effect of the concentration index that suggest the importance of living with people of similar ethnic group (Bécares et al., 2012b). Where integration is difficult, belonging to a social network of similar race/culture/ethnicity may offer an attractive alternative, allowing one's own identity and culture to be preserved, as well as help creating a sense of community, mutual support and social cohesion. In other words, social interaction with friends of the same race, as well as living in areas with individuals of same ethnic group may lower the costs associated with the migration process, mitigating the difficulties around adapting and integrating into the host country, and attenuating the distress caused by the distance from one's own families and country.

Table 4: OLS regressions of mental health and life satisfaction on interacted ethnicity and generation, with additional controls.

	(1)	(2)	(3)	(4)
	Anxiety Depression	***Social Dysfunction***	***Loss of Confidence***	***Life Satisfaction***
Ethnic Group x Generation				
(Reference = white natives)				
White				
2nd generation	0.036	0.003	-0.029	0.097
	[0.039]	[0.024]	[0.041]	[0.085]
	(0.054)	(0.008)	(-0.043)	(0.065)
1st generation, established	0.019	-0.007	-0.011	0.078
	[0.030]	[0.019]	[0.031]	[0.071]
	(0.028)	(-0.018)	(-0.017)	(0.052)
1st generation, recent	-0.107***	-0.080***	-0.101**	-0.095
	[0.036]	[0.024]	[0.041]	[0.087]
	(-0.163)	(-0.192)	(-0.147)	(-0.063)
Mixed				
2nd generation	-0.094	0.110	0.189**	-0.015
	[0.122]	[0.073]	[0.093]	[0.225]
	(-0.143)	(-0.146)	(-0.157)	(-0.121)
1st generation, established	-0.232***	0.004	-0.001	0.190
	[0.087]	[0.044]	[0.077]	[0.169]
	(-0.353)	(-0.403)	(-0.432)	(0.015)
1st generation, recent	0.014	0.086	0.173	0.056
	[0.115]	[0.075]	[0.133]	[0.240]
	(0.021)	(-0.205)	(-0.181)	(-0.074)
Indian				
2nd generation	-0.125*	-0.092**	-0.088	0.061
	[0.071]	[0.043]	[0.066]	[0.130]
	(-0.190)	(-0.222)	(-0.127)	(0.041)
1st generation, established	-0.074	-0.070	-0.067	-0.118
	[0.067]	[0.044]	[0.064]	[0.124]
	(-0.113)	(-0.169)	(-0.097)	(-0.079)
1st generation, recent	-0.375***	-0.232***	-0.349***	-0.517***
	[0.088]	[0.045]	[0.072]	[0.114]
	(-0.570)	(-0.559)	(-0.505)	(-0.343)

Pakistani				
2nd generation	-0.041	-0.029	-0.075	-0.019
	[0.073]	[0.047]	[0.069]	[0.124]
	(-0.063)	(-0.071)	(-0.109)	(-0.013)
1st generation, established	-0.000	-0.021	0.012	0.030
	[0.075]	[0.047]	[0.070]	[0.148]
	(-0.001)	(-0.051)	(0.018)	(0.020)
1st generation, recent	-0.192**	-0.110**	-0.185**	-0.231
	[0.082]	[0.053]	[0.077]	[0.180]
	(-0.292)	(-0.264)	(-0.268)	(-0.153)
Bangladeshi				
2nd generation	-0.129***	-0.070**	-0.158**	-0.024
	[0.039]	[0.031]	[0.062]	[0.140]
	(-0.197)	(-0.169)	(-0.229)	(-0.016)
1st generation, established	-0.055	-0.055*	-0.087	0.177
	[0.054]	[0.032]	[0.056]	[0.140]
	(-0.083)	(-0.132)	(-0.125)	(0.117)
1st generation, recent	-0.215**	-0.047	-0.213*	-0.264*
	[0.105]	[0.070]	[0.124]	[0.153]
	(-0.328)	(-0.113)	(-0.308)	(-0.175)
Caribbean				
2nd generation	-0.055	-0.023	-0.114**	0.164
	[0.058]	[0.041]	[0.058]	[0.116]
	(-0.084)	(-0.055)	(-0.165)	(0.109)
1st generation, established	-0.072	-0.064	-0.141**	-0.055
	[0.071]	[0.044]	[0.069]	[0.137]
	(-0.109)	(-0.154)	(-0.204)	(-0.037)
1st generation, recent	-0.213	-0.109	-0.255	-0.044
	[0.155]	[0.080]	[0.163]	[0.388]
	(-0.324)	(-0.262)	(-0.369)	(-0.029)

African				
2nd generation	-0.189*	-0.193***	-0.192*	0.032
	[0.101]	[0.054]	[0.099]	[0.261]
	(-0.288)	(-0.464)	(-0.278)	(0.021)
1st generation, established	-0.106	-0.128***	-0.152**	0.029
	[0.073]	[0.041]	[0.069]	[0.149]
	(-0.161)	(-0.308)	(-0.219)	(0.020)
1st generation, recent	-0.370***	-0.244***	-0.363***	-0.264
	[0.069]	[0.048]	[0.071]	[0.165]
	(-0.563)	(-0.587)	(-0.525)	(-0.175)
Other				
2nd generation	-0.053	0.106*	0.261***	0.044
	[0.093]	[0.060]	[0.088]	[0.167]
	(-0.081)	(-0.157)	(-0.053)	(-0.082)
1st generation, established	-0.072	0.081**	0.187***	0.074
	[0.078]	[0.038]	[0.061]	[0.142]
	(-0.110)	(-0.217)	(-0.160)	(-0.062)
1st generation, recent	-0.293***	0.000	0.000	0.000
	[0.082]	[0.000]	[0.000]	[0.000]
	(-0.446)	(-0.412)	(-0.431)	(-0.111)
P-values from hypothesis tests				
H_0: No variation by generation for each ethnic group, $\delta_{eg} = 0, \forall g$				
-Whites	0.0155	0.0098	0.0854	0.2416
-Mixed	0.0374	0.3557	0.1025	0.6745
-Indian	0.0000	0.0000	0.0000	0.0000
-Pakistani	0.0809	0.1856	0.0502	0.4962
-Bangladeshi	0.0024	0.0890	0.0026	0.0502
-Caribbean	0.5122	0.3665	0.0583	0.3463
-African	0.0000	0.0000	0.0000	0.2648
-Other	0.0000	0.0678	0.0036	0.8722
H_0: No variation by ethnic group for each generation. $\delta_{eg} = 0, \forall e$				
- 2nd generation	0.0322	0.0019	0.0221	0.8193
- 1st generation, established	0.0755	0.0026	0.0001	0.2799
- 1st generation, recent	0.0000	0.0000	0.0000	0.0038

H_0: No variation by ethnic group or generation, $\delta_{eg} = 0, \forall e, g$	0.0000	0.0000	0.0000	0.0000
Other Coefficients				
Age	0.019***	0.013***	0.013***	0.053***
	[0.002]	[0.001]	[0.002]	[0.004]
	(0.498)	(0.539)	(0.325)	(0.606)
Age^2	-0.027***	-0.015***	-0.020***	-0.066***
	[0.002]	[0.001]	[0.002]	[0.004]
	(-0.707)	(-0.628)	(-0.509)	(-0.761)
Female	0.106***	0.043***	0.102***	-0.075***
	[0.008]	[0.005]	[0.008]	[0.018]
	(0.161)	(0.103)	(0.148)	(-0.050)
In partnership	-0.113***	-0.063***	-0.111***	-0.272***
	[0.011]	[0.007]	[0.012]	[0.026]
	(-0.173)	(-0.152)	(-0.161)	(-0.180)
Num of children (Reference=none)				
- 1 Child	0.020	0.006	0.011	-0.036
	[0.013]	[0.008]	[0.014]	[0.030]
	(0.030)	(0.015)	(0.015)	(-0.024)
- 2 or more Children	-0.042***	-0.023***	-0.049***	-0.173***
	[0.012]	[0.008]	[0.013]	[0.025]
	(-0.063)	(-0.057)	(-0.071)	(-0.115)
Level of Education (Reference=Lower)				
- Intermediate	-0.022**	-0.026***	-0.046***	-0.107***
	[0.009]	[0.006]	[0.009]	[0.021]
	(-0.034)	(-0.062)	(-0.066)	(-0.071)
- Higher	-0.027***	-0.030***	-0.056***	-0.194***
	[0.010]	[0.006]	[0.010]	[0.023]
	(-0.040)	(-0.072)	(-0.081)	(-0.129)
Working	-0.138***	-0.117***	-0.210***	-0.189***
	[0.012]	[0.008]	[0.012]	[0.026]
	(-0.210)	(-0.283)	(-0.304)	(-0.126)
Log Household Income (Equivalised)	-0.060***	-0.037***	-0.074***	-0.218***
	[0.009]	[0.005]	[0.009]	[0.019]
	(-0.069)	(-0.067)	(-0.081)	(-0.109)
London	-0.019	-0.023	-0.037*	0.004
	[0.021]	[0.015]	[0.021]	[0.045]
	(-0.029)	(-0.055)	(-0.053)	(0.003)

Density Index	0.022	0.040	0.028	0.149
	[0.085]	[0.047]	[0.076]	[0.131]
	(0.005)	(0.015)	(0.006)	(0.016)
Concentration Index	-0.133*	-0.078*	-0.119*	-0.302**
	[0.081]	[0.046]	[0.072]	[0.140]
	(-0.063)	(-0.058)	(-0.053)	(-0.062)
English as First Language	0.107***	0.006	0.042	0.238**
	[0.041]	[0.027]	[0.046]	[0.103]
	(0.163)	(0.015)	(0.061)	(0.158)
Difficulty in day to day English	0.096***	0.070**	0.105**	-0.004
	[0.036]	[0.028]	[0.044]	[0.094]
	(0.146)	(0.170)	(0.151)	(-0.003)
Proportion of same-race friends (ref: all)				
- More than half	0.035***	-0.000	0.008	0.029
	[0.009]	[0.006]	[0.009]	[0.021]
	(0.025)	(-0.000)	(0.006)	(0.009)
- About half or less	0.079***	0.034***	0.057***	0.127***
	[0.012]	[0.008]	[0.013]	[0.029]
	(0.043)	(0.030)	(0.030)	(0.030)
Constant	1.306***	1.273***	1.310***	3.365***
	[0.109]	[0.065]	[0.099]	[0.221]
R-squared	0.064	0.049	0.061	0.055
N	27,829	27,811	27,831	27,829

Notes: Based on Wave 3 of UKHLS and 2011 Census for the UK (Office for National Statistics). Concentration is defined as the proportion of population who are from the same ethnicity. Mixed and Other ethnic groups are excluded from the analysis. The Ethnic Concentration for Caribbean and African is based on the proportion of Caribbean, African and Black living in the same district. Density is defined as the proportion of population who are from an ethnic minority group.
Additional control includes missing variables indicators. Standard errors in brackets are clustered by district. The term in parentheses shows, for regressors that are dummy variables, the standard deviation increase in the dependent variable associated with a unit change in the regressor or, for continuous regressors, the standard deviation change in the dependent variable associated with a 1 standard deviation increase in the regressor. * Significant at 10%, ** Significant at 5%, *** Significant at 1%.

5. Conclusion

In this paper we use a large and nationally representative survey to examine how well-being varies with ethnicity and among migrants of different generations.

We find significant variation across both dimensions. Our findings provide an insight into how generational progress, as captured through well-being, varies across ethnic groups. For some ethnic groups (including whites, Indians, Africans and other), recent migrants have higher levels of well-being than established migrants and those who were born in the UK. There are two obvious interpretations of this. One possibility is that the higher well-being among the more recent migrants will persist such that, over time, the nature of generational differences will change. The opposite possibility is that individual well-being is dynamic and, over time, will decline among those who are currently recent migrants, leaving the generational profile unchanged.

In attempting to understand the reason behind the observed differences, our results control for a range of additional characteristics. There is a well-established literature on the influences on subjective well-being and it is possible that the ethnic and generational variations can be accounted for by controlling for these factors. In fact, while doing so does change the findings, it does not account for the variation. But these new results allow us to probe the question of whether integration is an important influence.

The results are mixed. Individuals appear to benefit from living in areas where their own ethnic group is well-represented and also from mixing socially with individuals mostly from their own ethnic group. Living in areas with people having similar cultural or religious background, give more opportunities to have social interactions, to create a sense of belonging, that act as a "cushion" attenuating social difficulties, as well as cultural distance from the host country. Similarly, friends of the same race can reinforce one's own identity and culture, lowering the costs associated with the migration process.

On the other hand, language difficulties are associated with poorer mental health and lower life satisfaction. Language and communication difficulties can represent a barrier to social integration, and lead to isolation, resulting in mental distress.

Taken together, one interpretation of these findings is that individuals reveal their choice to retain cultural ties and identity but, in some cases, inability to communicate might make this a constrained choice, and one that prevents fuller integration.

The extent to which the lack of integration is due to the fact that it is easier to create social interactions with others sharing the same ethnic and/or cultural origin, or it is indeed due

to social and/or cultural barriers found in the hosting country, is difficult to say. While beyond the scope of this paper, it remains an important question for future research.

Appendix

The following table reports the three sub-measures and the corresponding GHQ. The number of the GHQ corresponds to the order of the standard GHQ, as they appear in the UKHLS. The three sub-measures have been created by adding up the corresponding GHQ variables and taking the average.

Table A1: Sub measures of GHQ

Anxiety and Depression	2) Have you recently lost much sleep over worry? 5) Have you recently felt constantly under strain? 6) Have you recently felt you couldn't overcome your difficulties? 9) Have you recently been feeling unhappy or depressed?
Social Dysfunction	1) Have you recently been able to concentrate on whatever you're doing? 3) Have you recently felt that you were playing a useful part in things? 4) Have you recently felt capable of making decisions about things? 7) Have you recently been able to enjoy your normal day-to- day activities? 8) Have you recently been able to face up to problems? 12) Been feeling reasonably happy, all things considered?
Loss of Confidence	10) Have you recently been losing confidence in yourself? 11) Have you recently been thinking of yourself as a worthless person?

Table A2: Ethnic group

Ethnic group as recorded in the interview	Categorisation used
White	
British/English/Scottish/welsh/Northern Irish	White
Irish	White
Gypsy or Irish travellers	Other
Other	White
Mixed	
White and Black Caribbean	Mixed
White and Black African	Mixed
White and Asian	Mixed
White and Black African	Mixed
Asian and Asian British	
Indian	Indian
Pakistani	Pakistani
Bangladeshi	Bangladeshi
Chinese	Other
Any other Asian background	Other
Black/African/Caribbean/Black British	
Caribbean	Caribbean
African	African
Any other Black background	Other
Other	
Arab	Other
Any other ethnic group	Other

Table A3a. Mental Health and Life Satisfaction on Ethnicity and Generation: Ordered Probit Marginal Effects

	(1)	(2)	(3)	(4)
	Anxiety Depression	***Social Dysfunction***	***Loss of Confidence***	***Life Satisfaction***
Ethnic Group				
(Reference =White)				
Mixed	-0.001	0.001	0.043	-0.028**
	[0.018]	[0.002]	[0.034]	[0.012]
Indian	0.018*	0.001	0.004	-0.009
	[0.011]	[0.001]	[0.019]	[0.008]
Pakistani	-0.034***	-0.003***	-0.089***	-0.033***
	[0.010]	[0.001]	[0.020]	[0.008]
Bangladeshi	-0.005	-0.002***	-0.029	-0.041***
	[0.013]	[0.001]	[0.024]	[0.008]
Caribbean	-0.015	-0.001*	-0.004	-0.035***
	[0.011]	[0.001]	[0.022]	[0.008]
African	0.022*	0.004***	0.043*	-0.028***
	[0.013]	[0.001]	[0.022]	[0.008]
Other	-0.009	-0.000	-0.018	-0.024***
	[0.010]	[0.001]	[0.020]	[0.008]
Generation				
(Reference=Natives)				
2nd Generation	-0.011	0.000	0.010	-0.018***
	[0.008]	[0.001]	[0.016]	[0.006]
Established 1st Generation	-0.023***	-0.000	-0.015	-0.015***
	[0.007]	[0.001]	[0.014]	[0.006]
Recent 1st Generation	0.046***	0.004***	0.081***	0.017**
	[0.010]	[0.001]	[0.017]	[0.008]
Other Coefficients				
Age	-0.004***	-0.000***	0.000	-0.005***
	[0.000]	[0.000]	[0.001]	[0.000]
Age^2	0.006***	0.000***	0.002**	0.006***
	[0.000]	[0.000]	[0.001]	[0.000]
Female	-0.046***	-0.002***	-0.091***	0.005**
	[0.003]	[0.000]	[0.005]	[0.002]
N	**27,829**	**27,811**	**27,831**	**27,829**

Table A3b. Mental Health and Life Satisfaction on interacted Ethnicity and Generation: Ordered Probit Marginal Effects.

	(1)	(2)	(3)	(4)
	Anxiety Depression	***Social Dysfunction***	***Loss of Confidence***	***Life Satisfaction***
Ethnic Group x Generation				
(reference = white natives)				
White				
2nd generation	-0.015	-0.000	0.025	-0.019*
	[0.014]	[0.001]	[0.026]	[0.011]
1st generation, established	-0.014	0.000	-0.002	-0.013*
	[0.009]	[0.001]	[0.017]	[0.008]
1st generation, recent	0.027**	0.002***	0.041*	0.011
	[0.012]	[0.001]	[0.023]	[0.010]
Mixed				
2nd generation	-0.016	-0.000	-0.025	-0.017
	[0.035]	[0.002]	[0.053]	[0.027]
1st generation, established	0.024	0.003*	0.137***	-0.053***
	[0.022]	[0.001]	[0.047]	[0.019]
1st generation, recent	-0.067**	0.001	-0.009	-0.039
	[0.031]	[0.003]	[0.070]	[0.028]
Indian				
2nd generation	0.000	0.001	-0.009	-0.048***
	[0.014]	[0.001]	[0.025]	[0.010]
1st generation, established	-0.020*	-0.000	-0.033	-0.024***
	[0.011]	[0.001]	[0.021]	[0.009]
1st generation, recent	0.104***	0.007***	0.184***	0.036**
	[0.018]	[0.001]	[0.035]	[0.014]
Pakistani				
2nd generation	-0.039***	-0.002**	-0.049*	-0.045***
	[0.014]	[0.001]	[0.027]	[0.011]
1st generation, established	-0.068***	-0.005***	-0.131***	-0.061***
	[0.014]	[0.001]	[0.026]	[0.012]
1st generation, recent	0.000	-0.001	-0.031	-0.023
	[0.023]	[0.002]	[0.040]	[0.020]

Bangladeshi				
2nd generation	0.002	-0.000	0.018	-0.055***
	[0.019]	[0.001]	[0.034]	[0.014]
1st generation, established	-0.040**	-0.003***	-0.070**	-0.074***
	[0.017]	[0.001]	[0.030]	[0.014]
1st generation, recent	0.021	-0.002	0.039	-0.027
	[0.029]	[0.002]	[0.057]	[0.021]
Caribbean				
2nd generation	-0.029*	-0.002	-0.008	-0.066***
	[0.015]	[0.001]	[0.026]	[0.011]
1st generation, established	-0.037***	-0.001	-0.008	-0.048***
	[0.014]	[0.001]	[0.026]	[0.012]
1st generation, recent	0.026	0.001	0.092	-0.016
	[0.047]	[0.004]	[0.104]	[0.053]
African				
2nd generation	0.014	0.004**	0.046	-0.048**
	[0.026]	[0.002]	[0.050]	[0.023]
1st generation, established	-0.009	0.002**	0.022	-0.046***
	[0.013]	[0.001]	[0.024]	[0.010]
1st generation, recent	0.073***	0.007***	0.141***	-0.015
	[0.019]	[0.002]	[0.039]	[0.016]
Other				
2nd generation	-0.038**	-0.001	-0.054	-0.037**
	[0.019]	[0.002]	[0.040]	[0.016]
1st generation, established	-0.030**	-0.000	-0.024	-0.035***
	[0.012]	[0.001]	[0.022]	[0.010]
1st generation, recent	0.037**	0.003**	0.071**	-0.024*
	[0.015]	[0.001]	[0.030]	[0.014]
	-0.004***	-0.000***	0.000	-0.005***
Age				
	[0.000]	[0.000]	[0.001]	[0.000]
Age²	0.006***	0.000***	0.002**	0.006***
	[0.000]	[0.000]	[0.001]	[0.000]
Female	-0.046***	-0.002***	-0.091***	0.005**
	[0.003]	[0.000]	[0.005]	[0.002]
N	**27,829**	**27,811**	**27,831**	**27,829**

Table A3c. Mental Health and Life Satisfaction on interacted Ethnicity and Generation, with additional controls: Ordered Probit Marginal Effects.

	(1)	(2)	(3)	(4)
	Anxiety Depression	***Social Dysfunction***	***Loss of Confidence***	***Life Satisfaction***
Ethnic Group x Generation				
(Reference = white natives)				
White				
2nd generation	-0.009	-0.000	0.026	-0.015
	[0.014]	[0.001]	[0.027]	[0.011]
1st generation, established	-0.009	0.001	-0.001	-0.012
	[0.011]	[0.001]	[0.019]	[0.009]
1st generation, recent	0.034***	0.003***	0.047*	0.012
	[0.013]	[0.001]	[0.026]	[0.011]
Mixed				
2nd generation	0.044	0.003	0.052	0.027
	[0.041]	[0.003]	[0.055]	[0.030]
1st generation, established	0.082***	0.007***	0.213***	-0.009
	[0.031]	[0.002]	[0.060]	[0.023]
1st generation, recent	-0.001	0.005	0.081	0.007
	[0.037]	[0.003]	[0.083]	[0.030]
Indian				
2nd generation	0.049**	0.004**	0.052	-0.012
	[0.024]	[0.002]	[0.040]	[0.017]
1st generation, established	0.029	0.003*	0.037	0.014
	[0.024]	[0.002]	[0.041]	[0.016]
1st generation, recent	0.148***	0.010***	0.239***	0.067***
	[0.035]	[0.002]	[0.053]	[0.016]
Pakistani				
2nd generation	0.025	0.002	0.055	0.005
	[0.025]	[0.002]	[0.042]	[0.016]
1st generation, established	0.005	0.001	0.001	-0.003
	[0.026]	[0.002]	[0.043]	[0.021]
1st generation, recent	0.076***	0.005**	0.104**	0.036
	[0.029]	[0.002]	[0.049]	[0.023]

Bangladeshi				
2nd generation	0.050***	0.003**	0.090**	-0.010
	[0.015]	[0.001]	[0.037]	[0.016]
1st generation, established	0.021	0.002	0.038	-0.023
	[0.019]	[0.001]	[0.033]	[0.017]
1st generation, recent	0.075*	0.002	0.130	0.019
	[0.039]	[0.003]	[0.085]	[0.023]
Caribbean				
2nd generation	0.025	0.002	0.061*	-0.021
	[0.020]	[0.002]	[0.035]	[0.014]
1st generation, established	0.026	0.003	0.082*	0.006
	[0.025]	[0.002]	[0.045]	[0.018]
1st generation, recent	0.071	0.004	0.144	0.021
	[0.053]	[0.004]	[0.122]	[0.053]
African				
2nd generation	0.069**	0.008***	0.122**	-0.002
	[0.034]	[0.003]	[0.060]	[0.034]
1st generation, established	0.045*	0.006***	0.103**	-0.002
	[0.025]	[0.002]	[0.044]	[0.020]
1st generation, recent	0.139***	0.012***	0.248***	0.038*
	[0.026]	[0.002]	[0.051]	[0.021]
Other				
2nd generation	0.018	0.003	0.017	0.005
	[0.032]	[0.003]	[0.055]	[0.020]
1st generation, established	0.027	0.004*	0.054	0.007
	[0.027]	[0.002]	[0.041]	[0.017]
1st generation, recent	0.107***	0.008***	0.178***	0.023
	[0.030]	[0.002]	[0.043]	[0.021]
Other coefficients				
Age	-0.007***	-0.001***	-0.007***	-0.007***
	[0.001]	[0.000]	[0.001]	[0.000]
Age^2	0.009***	0.001***	0.012***	0.009***
	[0.001]	[0.000]	[0.001]	[0.001]
Female	-0.038***	-0.002***	-0.072***	0.012***
	[0.003]	[0.000]	[0.005]	[0.002]
In partnership	0.039***	0.002***	0.065***	0.037***
	[0.004]	[0.000]	[0.007]	[0.003]

Num of children (reference: none)				
- 1 Child	-0.007*	-0.000	-0.006	0.000
	[0.004]	[0.000]	[0.008]	[0.004]
- 2 or more Children	0.012***	0.001	0.027***	0.019***
	[0.004]	[0.000]	[0.008]	[0.003]
Level of Education (Reference=Lower)				
- Intermediate	0.006*	0.001***	0.027***	0.009***
	[0.003]	[0.000]	[0.006]	[0.003]
- Higher	0.008**	0.001***	0.031***	0.021***
	[0.004]	[0.000]	[0.007]	[0.003]
Working	0.042***	0.004***	0.116***	0.015***
	[0.004]	[0.000]	[0.007]	[0.003]
Log Household Income (Equivalised)	0.020***	0.001***	0.046***	0.028***
	[0.003]	[0.000]	[0.005]	[0.002]
London	0.007	0.001	0.023	0.001
	[0.008]	[0.001]	[0.014]	[0.006]
Density Index	-0.000	-0.001	-0.019	-0.021
	[0.031]	[0.002]	[0.051]	[0.017]
Concentration Index	0.054*	0.004*	0.070	0.038**
	[0.028]	[0.002]	[0.046]	[0.018]
English as First Language	-0.023	0.005***	0.071**	0.022
	[0.015]	[0.001]	[0.029]	[0.014]
Difficulty in day to day English	-0.039***	-0.003***	-0.075***	-0.011
	[0.013]	[0.001]	[0.024]	[0.011]
Proportion of same-race friends (ref: all)				
- More than half	-0.015***	-0.000	-0.009	-0.008***
	[0.003]	[0.000]	[0.006]	[0.003]
- About half or less	-0.027***	-0.001***	-0.033***	-0.016***
	[0.004]	[0.000]	[0.008]	[0.003]
Constant	1.306***	1.273***	1.310***	3.365***
	[0.109]	[0.065]	[0.099]	[0.221]
R-squared	0.064	0.049	0.061	0.055
N	27,829	27,811	27,831	27,829

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For more information, please contact
llakescentre@ioe.ac.uk
LLAKES Centre
UCL Institute of Education
University College London
20 Bedford Way
London WC1H 0AL
U.K.


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