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Life satisfaction, ethnicity and neighbourhoods: Is there an effect of neighbourhood ethnic composition on life satisfaction?

Gundi Knies [a, *], Alita Nandi [a], Lucinda Platt [b]

[a] Institute for Social and Economic Research, University of Essex, UK
[b] Department of Social Policy, London School of Economics and Political Sciences, UK

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ABSTRACT

Immigrants and ethnic minorities tend to have lower life satisfaction than majority populations. However, current understanding of the drivers of these gaps is limited. Using a rich, nationally representative data set with a large sample of ethnic minorities and matched neighbourhood characteristics, we test whether first and second generation minorities experience lower life satisfaction once accounting for compositional differences and whether, specifically, neighbourhood deprivation impacts their wellbeing. We further investigate whether a larger proportion of own ethnic group in the neighbourhood improves satisfaction. We find life satisfaction is lower among ethnic minorities, and especially for the second generation, even controlling for individual and area characteristics. Neighbourhood concentration of own ethnic group is, however, associated with higher life satisfaction for Black Africans and UK born Indians and Pakistanis. The effect for Black Africans may stem from selection into areas, but findings for Indians and Pakistanis are robust to sensitivity tests.

1. Introduction

Life satisfaction is increasingly recognised as an important dimension of wellbeing (Stiglitz et al., 2009). It not only captures very immediate aspects of positive and negative life experience, but is also linked to subsequent outcomes including differences in morbidity and mortality risks (Kahneman and Krueger, 2006). The measurement of life satisfaction is now regarded as a legitimate policy aim as well as a source of extensive academic investigation (e.g., Layard, 2005). Life satisfaction is, therefore, an important outcome and potential source of inequalities across ethnic groups.

There is a growing body of evidence that immigrants and ethnic minorities typically have lower life satisfaction than majority populations in countries of destination (Bartram, 2011; de Vroome and Hooghe, 2014; Kirmanoğlu and Başlevent, 2014; Koczan, 2013; Safi, 2010; Sirgy and Cornwell, 2002; Verkuyten, 2008; Bobowik et al., 2015), though with some variation according to country of origin (Nesterko et al., 2013; Frank et al., 2015). Given the extent of ethnic inequalities in characteristics that are correlated with life satisfaction, such as income, employment, health, and social resources, such disadvantage is likely to contribute to minorities' evaluations of their wellbeing. However, even controlling to a greater or

* Corresponding author.
E-mail address: gknies@essex.ac.uk (G. Knies).

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lesser extent for such relevant aspects of disadvantage, extant research has tended to find that ethnic deficits in 'happiness' relative to the majority persist. The picture is not, however, entirely consistent: Bobowik et al. (2015), for example, found net immigrant satisfaction in Spain was higher than that of the majority for the specific groups considered, once relevant factors were controlled; Frank et al. (2015) found rather mixed results for Canada with clear net deficits in life satisfaction for only four of the 43 immigrant groups considered. Nesterko et al. (2013) found persistent gaps, but these were rather small. In general, though, attempts to account for lower life satisfaction of immigrants through individual and neighbourhood characteristics have failed to fully account for this life satisfaction gap (e.g., Bartram, 2011; Bobowik et al., 2011; Safi, 2010; Bălţătescu, 2007).

Studies have also identified substantial differences in patterns of life satisfaction across immigrant origin groups in both the immigrant (e.g., Amit, 2010) and the second (e.g., Neto, 2001) generations, though few have compared across generations. In this paper, we provide the first evidence for England on differences in life satisfaction across diverse ethnic groups and immigrant generations.

Neighbourhood deprivation is a likely – and, to date, untested – candidate for further accounting for at least some of the gap in life satisfaction between minorities and majority. This is because it is both an important independent driver of wellbeing (Graham and Felton, 2005; Clark et al., 2009; Knies, 2012) and minorities are typically over-represented in deprived areas. However, neighbourhood deprivation has not previously been incorporated into models of ethnic differences in life satisfaction. Our first main contribution is to identify the impact of neighbourhood deprivation and neighbourhood 'type' on life satisfaction across ethnic groups and for both first and second generations.

The failure to include neighbourhood deprivation in models of ethnic differentials in life satisfaction partly stems from small, geographically specific or dispersed samples that characterise this field. For example, Verkuyten (2008), Michalos and Zumbo (2001), and Vohra and Adair (2000) sampled from single cities; while Safi (2010) and Kirmanoğlu and Başlevent (2014) use combined national samples from across Europe. But including neighbourhood deprivation is further complicated by the fact that it is hard to disentangle deprivation from ethnic group concentration.

Minority group neighbourhood concentration is a highly politicised and contested subject. The vehemence of the debates around UK trends in minority group segregation, with claims of both increasing and decreasing segregation among Pakistanis and Bangladeshis in particular, has reflected concerns that concentration is negative for both society as a whole and for individual group members (Johnston et al., 2002; Carling, 2008; Finney and Simpson, 2009). Ethnic group concentration has been represented as 'self-segregation', whereby those with 'oppositional identities' resist integration (Battu and Zenou, 2010), with potentially alienating consequences. And such perceptions permeate political discourse particularly in relation to Muslim minorities (e.g., Cameron, 2011). At the same time, the theoretical and empirical literature points to both positive (Andersson et al., 2014; Portes and Jensen, 1989), negative (Xie and Gough, 2011; Clark and Drinkwater, 2002; Galster et al., 1999; Urban, 2009) and differentiated (Borjas, 1992) influences of ethnic group clustering – at least on economic outcomes.

Popular and political anxiety about the geographical clustering of ethnic groups has been fostered by work such as that of Putnam (2007) that has emphasised the negative aspects of ethnic diversity for a range of social and attitudinal outcomes; but these findings have been challenged for the UK on a number of counts. Ethnic diversity has been shown to be positively associated with positive intergroup relations in line with contact theory (Hewstone and Schmid, 2014; Schmid et al., 2013, 2014). While Schmid et al. (2014) find that, for the majority, diversity can impact majority trust negatively, this is largely compensated for by the positive indirect effect on trust via contact. In addition, a number of analyses argue that the apparent negative consequences of diversity are driven by the deprivation with which it is associated rather than by diversity *per se* (e.g., Letki, 2008; Laurence, 2011). Instead, for minorities, diversity may have negligible (Longhi, 2014) or even positive (Bécares et al., 2012) consequences.

Theoretically, it is not diversity, but the share of own group members that is likely to drive such positive effects. This is because concentration may provide group resources and solidarity (Breton, 1964; Phillips, 1998) and provide protection against discrimination (Bécares et al., 2009). The potentially positive role of own-group neighbourhood ethnic concentration has been studied for (mental) health outcomes (e.g., Fagg et al., 2006; Shields and Wailoo, 2002; Bécares et al., 2012), but its impact on life satisfaction itself has rarely been addressed. Our second and main contribution is, therefore, systematically to explore the contribution of own group neighbourhood concentration to life satisfaction, across both immigrant and second generation minorities.

In sum, in this paper we investigate the association of neighbourhood composition with minority ethnic groups' life satisfaction in England for a diverse set of ethnic groups. By using small area data and a large nationally representative study, we are able to distinguish neighbourhood deprivation and neighbourhood 'type' from ethnic group concentration. This enables us to disentangle empirically as well as theoretically the posited negative effects of deprivation from the expected positive effects of own-group concentration on life satisfaction. We are moreover able to ascertain whether these effects differ for UK born minorities compared to immigrants. To our knowledge, ours is the first paper to address these issues concurrently. We thus contribute to the literature on life satisfaction research by elucidating patterns across detailed categorisations of ethnicity and migration status and identifying the role of neighbourhood context. We contribute to ethnicity and migration research by illuminating inequalities in subjective evaluations of wellbeing and the extent to which they are accounted for by existing structural and geographical inequalities, focussing in particular on the consequences of ethnic concentration – across generations as well as for immigrants.

The UK – or specifically in this case England – provides a valuable case to consider ethnic differences in life satisfaction for a number of reasons. First, it has a large and growing population of ethnic minorities comprising both immigrants and UK

born: at the 2011 Census the share of minorities (including White minorities) in England and Wales was around 20 percent, and among the under-16s this rises to around 25 percent. The current and future wellbeing of these groups is therefore a significant matter for national wellbeing. Second, England demonstrates considerable diversity among both its well-established and more recent ethnic groups in terms of labour market outcomes, income, family formation and geographical distribution (Modood et al., 1997; Platt, 2007). England's minority groups include, for example, both the 'successful' Indian group, who are performing well in employment, income and pay, but who nevertheless continue to face 'ethnic penalties' in the labour market; as well as more disadvantaged Pakistanis (Heath and Cheung, 2007; Longhi et al., 2013). Third, like many other Western countries, minorities are often relatively concentrated in deprived areas (Simpson et al., 2009). However, area deprivation and ethnic minority concentration are not coterminous: there are very deprived areas that have low proportions of minority groups; while, as some minorities follow patterns of selective suburbanisation, there are areas of ethnic minority concentration that are more affluent (Simpson and Finney, 2009). Our data enable us to capitalise on this ethnic and geographical diversity to provide a systematic analysis of neighbourhood effects on minority groups' life satisfaction.

We discuss the data in Section 2. Section 3 provides the results of our analysis, while Section 4 offers conclusions and reflections. First, however, we elucidate the structure of and expectations associated with our analysis.

1.1. Structure and hypotheses

Our investigation proceeds in stages. First, we establish whether there are differences in life satisfaction for different ethnic groups living in England relative to the majority and to each other. Our paper forms the first explicit discussion of ethnic differences in life satisfaction for England: we are therefore able to replicate and re-inforce the research base on ethnic differences in life satisfaction, doing so systematically across both the immigrant and second generation of the same ethnic groups. We expect, in line with a number of other studies of European countries (e.g., Bălţătescu, 2007; Kirmanoğlu and Başlevent, 2014; Safi, 2010), that life satisfaction will be lower for both generations of minorities relative to the majority, but that the mechanisms will differ across the generations and that there will be variation between groups. The first generation are likely to be positively selected on a number of dimensions, and this could be expected to include life satisfaction, though empirical investigations have contested (Graham and Markowitz, 2011) as well as supported (Bartram, 2013; Ivlevs, 2015) this theoretical contention. At the same time, even if they are happier relative to non-migrants in their countries of origin, those countries of origin tend to have lower average levels of life satisfaction (see, e.g., Roser, 2015; Gelatt, 2013), and we would expect to see some continuity in these regional patterns, particularly among more recent migrants.

In addition, as Bartram (2010) argues in his discussion of potential gains and losses in life satisfaction contingent on labour migration, the destination country presents migrants with many characteristics other than increased income potential that may impact negatively on life satisfaction, including inequality, and higher rates of psychological ill-health and social isolation than origin countries. Similarly, experiences of dislocation following immigration, challenges of acculturation and feelings of being the outsider can be expected to have an adverse impact on migrants' life satisfaction (Berry, 1997). Moreover, migration often brings a loss of social position and ruptures social networks, as well as placing the immigrant at risk of discrimination, harassment and marginalisation (Phillips, 1998; Guveli et al., 2015). Poor or adverse contexts of settlement and reception (Portes and Borocz, 1989) and actual or perceived discrimination have been shown to be associated with lower life satisfaction of immigrants (Amit, 2010; Vohra and Adair, 2000; Neto, 2001; Verkuyten, 2008; Safi, 2010; Simpson, 2013; Kirmanoğlu and Başlevent, 2014). Value and cultural dissonance between origin and destination societies may also affect immigrants' satisfaction with their lives. For example, Bobowik et al. (2011) have shown that those with more collectivist values experience lower satisfaction in a Western European context. Hence, overall we would expect that immigrants have lower life satisfaction than the native majority (*Hypothesis 1a*). We would also expect that there is variation across groups, stemming both from diversity in origin culture and characteristics and from the extent to which their position and characteristics in the destination country put them at risk of lower life satisfaction, as we discuss further below.

In relation to the second generation, the mechanisms can be expected to be a little different. The second generation is not expected to be selected on life satisfaction as the first generation may be. On the other hand, they also do not face the disruptions of immigration; and they also can be expected to adapt to prevailing norms (Angelini et al., 2015), which would tend to suggest higher levels of life satisfaction than their first generation forebears. Issues of marginalisation and discrimination, however, persist into the second generation (Heath et al., 2008; Midtbøen, 2014). Moreover, as Bartram (2010) has stressed, reference groups are key (see also Vohra and Adair, 2000; Gelatt, 2013). The second generation are therefore likely to compare their circumstances with their majority group counterparts, rather than those in their parents' country of origin. To the extent that mismatch between their expectations of equality and the reality of differential life chances introduces issues of alienation (Heath and Demireva, 2014), we would expect the second generation to be more dissatisfied. There is more limited empirical evidence for the second generation's life satisfaction than there is for immigrants, but it tends to suggest raw differences from the majority population that are smaller than those experienced by the immigrant generation (Safi, 2010; Kirmanoğlu and Başlevent, 2014). On balance, we would expect the second generation to be less satisfied than the UK majority population but more satisfied than their immigrant counterparts (*Hypothesis 1b*). Again, we would expect levels of satisfaction to vary across groups in line with known differences in labour market outcomes (Heath and Cheung, 2007) and in other characteristics associated with life satisfaction. We turn to this issue next.

In the second stage, we explore how much of the raw gaps in life satisfaction can be explained by structural inequalities and compositional differences in factors linked to life satisfaction. Life satisfaction research suggests that people consider seven key aspects of their life when reporting their life satisfaction: their family-living context, health, financial situation, work-life, community and friends, personal values and personal freedom (for reviews, see e.g., Dolan et al., 2008; Layard, 2005). More specifically, studies have identified a number of consistent relationships between individual characteristics and life satisfaction. First, life satisfaction is U-shaped in age with satisfaction typically being at its lowest in mid-life (e.g., Blanchflower and Oswald, 2008). Second, unemployment (Clark and Oswald, 1994) and a lower level of financial wellbeing (e.g., Easterlin, 1974; Frijters et al., 2004) are associated with lower life satisfaction. Third, poor health lowers life satisfaction (Diener et al., 1999) and happier people go on to live healthier and longer lives (Diener and Chan, 2011). Fourth, people who are married are more satisfied than never-married singles, divorcees and widowers (see, e.g., Shapiro and Keyes, 2008). Lastly, people who belong to a religion are more satisfied (Lim and Putnam, 2010). Findings with respect to other individual characteristics typically included in micro-economic life satisfaction models, such as gender, education and number of children in the household, are more mixed (See Frijters et al., 2004.).

We know that some of these factors such as employment, wages, deprivation, age and health are unequally distributed across ethnic groups (Heath and Cheung, 2007; Platt, 2007; Bécares et al., 2009). Extant research has shown that differences in life satisfaction across ethnic groups are influenced by such individual-level variations (Kirmanoğlu and Başlevent, 2014; Neto, 2001; Michalos and Zumbo, 2001; Evans and Kelley, 2002; Verkuyten, 2008; Safi, 2010; Amit, 2010; Koczan, 2013; Bartram, 2011). We would therefore expect gaps in life satisfaction between minorities and majority to be attenuated by the inclusion of relevant compositional variables (*Hypothesis 2*), and differences between ethnic groups to become smaller. We expect this to be the case across generations, but with those gaps experienced by the more disadvantaged and older immigrants attenuating more than those for the second generation. We would not, though, expect the gaps to disappear, especially since some characteristics, such as being more youthful, favour minorities. The remaining gaps, we would argue, can partly be attributed to differences in neighbourhood factors.

Therefore, in the third part of our analysis, we investigate whether taking account of neighbourhood deprivation and neighbourhood 'type' can help to explain both lower life satisfaction among minorities relative to the majority, and differences between groups and across generations. There are clear theoretical reasons why neighbourhood deprivation might be expected to impact negatively on life satisfaction (Sharkey and Faber, 2014). At the same time, minorities tend to be geographically concentrated and particularly likely to be concentrated in deprived neighbourhoods (Zuccotti, 2015). This makes neighbourhood deprivation a good candidate for helping to explain the puzzle of minorities' lower life satisfaction. The degree of concentration in deprived neighbourhoods in the UK shows some variation by group with more advantaged Indians, for example, less likely to live in deprived areas than less advantaged Pakistanis. There is also variation across generations, with minorities tending to move to more affluent suburbs over time (Simpson and Finney, 2009), but there remains an over-representation even of second generation minorities in deprived areas. Empirically, the neighbourhood effects literature (Galster, 2008; Sharkey and Faber, 2014) attests to the role that neighbourhood deprivation can play in individual level outcomes over and above individual and family characteristics; and neighbourhood income has been shown to affect life satisfaction specifically (Graham and Felton, 2005; Clark et al., 2009; Knies, 2012). While we know that minorities' labour market outcomes differ with area level unemployment (Simpson et al., 2009), studies that demonstrate the impact of neighbourhood deprivation on minority groups' life satisfaction are lacking. Overall, we expect that accounting for neighbourhood deprivation will further attenuate the gaps in life satisfaction between minorities and majority (*Hypothesis 3*).

In the final, fourth stage of analysis, we investigate whether co-ethnic concentration, net of deprivation, provides a positive impact on life satisfaction. There has been considerable debate about the (dis)advantages of geographical concentration of ethnic minority groups (Musterd, 2005). On the one hand, discussions relating to the negative impact of 'diversity' have stressed the negative impacts of areas with larger numbers of migrants or minorities (Putnam, 2007). Studies in other countries have not necessarily been able to replicate the negative impact of diversity or of shares of minority group members on majority group outcomes (e.g., Evans and Kelley, 2002 for Australia; Koczan, 2013 for Germany); while in the UK, Letki (2008) has argued that it is not diversity but deprivation that provides the explanation for negative outcomes in areas with higher concentrations of minority groups (cf. Urban, 2009; Laurence, 2011). Longhi (2014) found no impact of diversity on aggregate minorities' life satisfaction, though she did identify a negative impact on the majority.

On the other hand, research on ethnic enclaves has argued that there are positive as well as negative consequences from minority group concentration (Andersson et al., 2014). Theoretically, it is the concentration of own group, rather than diversity itself, that is likely to be linked to such positive outcomes – even if the two are effectively coterminous in the majority group case. For minorities, own-group concentration may provide group resources and solidarity (Breton, 1964; Bolt et al., 2009), ethnic capital (Borjas, 1992), and protection against discrimination (Bécares et al., 2009). Geographical concentrations of own group are also likely to foster (positive) ethnic identity (Phinney and Ong, 2007), which can be expected to have pay-offs in terms of overall satisfaction. Supporting this line of argument, Verkuyten (2008) found that Turkish-Dutch individuals with strong ethnic identity have higher overall life satisfaction. On the other hand, ethnic concentration may undermine assimilation to destination country life satisfaction norms. This may account for why those who express higher satisfaction have been found to be those who identify more with the majority population (Koczan, 2013; Angelini et al., 2015).

Positive ethnic 'enclave' effects have been found in a number of studies of (mental) health outcomes (see, e.g., Fagg et al., 2006; Shields and Wailoo, 2002; Bécares et al., 2012). In addition, a small number of studies have investigated the impact of ethnic concentration on life satisfaction in different country contexts (Amit, 2010; Luttmer, 2005; Neto, 2001; Michalos and

Zumbo, 2001; Akay et al., 2012; Evans and Kelley, 2002; Koczan, 2013). However, most of these studies have explicitly focused on impacts on the majority population, rather than minorities, and even then show inconsistent results. For example, Luttmer (2005) found that proportion Black had a negative impact on the wellbeing of the US American sample overall, but did not test the effect for Black or other minority groups; while Evans and Kelley (2002) found that the proportion of Aborigines or Torres Straits Islanders, immigrants from English speaking countries, and from non-English speaking countries had no net impact on Australians' life satisfaction. Among studies that include or test the effect on minorities specifically, Neto (2001) found that Portuguese ethnic minority youths were more satisfied when living in ethnically homogeneous neighbourhoods, as were Western immigrants in Israel (Amit, 2010). Akay et al. (2012) found that immigrants in Germany were less satisfied living in regions with more immigrants, but the result was not supported by Koczan (2013)'s analysis of the same data.

Existing studies use self-reported measures of co-ethnic population in the neighbourhood (Neto, 2001; Amit, 2010), proportion of specific groups such as immigrants or blacks or aborigines in the neighbourhood (Evans and Kelley, 2002), or in regions (Luttmer, 2005; Akay et al., 2012), or measures of segregation or diversity (Koczan, 2013), rather than direct measures of proportion of co-ethnics in the immediate neighbourhood. Moreover, they do not account for area level characteristics, particularly deprivation, with the result that they cannot isolate the impact of the protective effect of living among one's own ethnic group members from that of other area level characteristics. We are able to calculate small-level own-group density, and expect that, once we have controlled for neighbourhood deprivation in stage 3, there will be clear positive effects of own-group concentration on minority groups' life satisfaction (*Hypothesis 4*).

Theoretical expectations as to how the role of own-group concentration may differ across generations are harder to formulate. The first generation is more likely to experience the benefits of co-ethnic support at a time of dislocation. The second generation, by contrast, may feel few gains from the presence of immigrants from a country with which they have only weak or partial associations (Jacobson, 1997). They will have developed their own networks and be likely to be less dependent on ethnic resources. At the same time, they may be more likely to be positively selected into such areas and may benefit from ongoing institutional resources, ethnic capital (Borjas, 1992), and psychological benefits (including protection from harassment). Moreover, having already been educated in the destination country, they may be less affected by potentially more negative effects of ethnic concentration, such as reinforcement of country of origin cultural practices that may limit opportunities, or more restricted chances to develop majority country language skills. Overall, our expectations about generational differences are somewhat equivocal.

2. Data and methods

2.1. Survey

We use data from the first wave of *Understanding Society*: the UK Household Longitudinal Study (UKHLS) (University of Essex, Institute for Social and Economic Research and National Centre for Social Research, 2013). The annual longitudinal household panel survey started in 2009/10 with a nationally representative stratified, clustered sample of around 30,000 households. The UKHLS incorporates an ethnic minority boost sample of approximately 4000 households which was designed to ensure at least 1000 adult interviews from those of Black African, Bangladeshi, Caribbean, Indian and Pakistani ethnicity, but also covers other ethnic groups in smaller numbers. All minority groups are additionally covered in proportion to their population shares in the main sample. Across the study, all adults (16 years or older) within sampled households are eligible for the main face-to-face interview and self-completion questionnaire, which include questions on income, employment, health, education and a range of wellbeing measures. For further information and questionnaires, see www.understandingsociety.ac.uk.

The UKHLS is particularly suited for our analysis. First, it oversamples members of discrete minority ethnic groups. Existing research has repeatedly shown that ethnic minorities differ widely in migration histories, destination country trajectories and experience and in individual characteristics, and so should not be treated as a homogeneous group (Modood et al., 1997; Platt, 2007). However, small sample sizes have often made it impossible to analyse them separately. Second, observing 30,000 households which were sampled from more than 2640 primary sampling units and stratified by region, the UKHLS provides wide geographical spread. Combined with the possibility of linking the study members' addresses with geo-coded official statistics, this allows us to investigate with greater statistical power how life satisfaction co-varies with neighbourhood contexts.

Given the non-compatibility of area level measures across the four countries of the UK we focus on England, which contains 90 percent of ethnic minorities and around 85 percent of the UK's total population.

2.1.1. Individual characteristics

Our dependent variable, life satisfaction, is collected in the adult self-completion questionnaire, where respondents are asked to report how satisfied they are with their *life overall* on a fully labelled scale running from 1 “completely dissatisfied” to 7 “completely satisfied”.

Our key independent variable is ethnic group, measured using the harmonised Census 2011 question that was asked of all adult respondents. Respondents selected from a list of 18 categories including an “other” category. We collapsed these categories into: White UK, White Other or Irish, Mixed, Indian, Pakistani, Bangladeshi, Caribbean and African (See Online

Appendix: Figure 1 for further details.). White UK provides the majority reference category and for that reason we excluded any respondents self-defining as White UK, but who were born outside the UK.

To stratify the sample by immigrant generation, we use a question on country of birth distinguishing those born in the UK (second and subsequent generations) from those born outside (first generation). For additional analysis, we further distinguish among the first generation by time of arrival.

We include the following individual characteristics, which are expected both to differ across groups and be associated with life satisfaction: age, sex, family context (i.e., marital status, and number of own children in the household), financial situation (i.e., household income and home ownership), work (i.e., employment status), education (i.e., highest qualification), whether belongs to a religion, and health (i.e., whether respondent has a longstanding illness/disability, and whether diagnosed with a health problem). For exact question wording we refer the reader to the study questionnaires which are available on the study homepage, www.understandingsociety.ac.uk. These are standard measures included in (micro-economic) life satisfaction models (Layard, 2005).

2.1.2. Neighbourhood characteristics

Given the focus on life satisfaction of minority ethnic groups and neighbourhoods, we expanded the standard set of controls in life satisfaction models to include a dichotomous indicator for whether or not a person lives in an area with more than 10,000 people (dubbed: 'urban area'). The measure is derived from the Office for National Statistics urban-rural indicator and is provided with the UKHLS and no further recodes were necessary.

Testing our hypotheses regarding the neighbourhood context required measures of neighbourhood deprivation and neighbourhood quality which are not supplied with the UKHLS. To this end, we obtained permission to access a look-up file between household identifiers and Lower Super Output Area (LSOA) codes, allowing us to merge in relevant information from published tables using that area identifier (Rabe, 2011). LSOA are intermediate-level Census output units, and the geography is used to monitor regeneration in England which means there is a wealth of area data that is produced at this scale. LSOAs cover around 1000 to 1500 individuals and therefore provide areas that can represent meaningful 'neighbourhoods' while still allowing for within-area heterogeneity. Overall, there were 32,482 LSOAs in England in 2001 and we observe UKHLS sample members in roughly one-third of them. On average, we only observe four UKHLS sample members in any LSOA, and the household panel design means that neighbourhoods with a larger number of individuals tend to be those that contain larger households, see Knies (2014). In other words, unlike many other studies employed for neighbourhood effects research, the UKHLS sample is not clustered at the neighbourhood level. There is, therefore, no requirement for, or indeed benefit to, applying multilevel models, but we estimated standard errors considering the data to be clustered at the household level.

For measuring neighbourhood deprivation, we use the Townsend Deprivation Index (Townsend et al., 1988). The index combines Census measures of various aspects of deprivation into an overall deprivation score with a mean of zero and where higher values represent greater deprivation. The aspects included are (neighbourhood) proportion of economically active residents aged 16–59/64 who are unemployed (excluding students), proportion private households who do not possess a car or van, proportion private households not in owner occupied housing, and proportion private households which are overcrowded. The index has been obtained for 2001 LSOAs from Public Health England (WMPHO, 2008).

To account for additional area heterogeneity, we use Experian's MOSAIC neighbourhood typology (Experian Limited, 2009). The typology considers demographic profiles, the built environment and economy, alongside consumer values, financial wellbeing and consumption patterns as factors discriminating between 61 types. The (estimated) number of households which fall into each type is aggregated to the spatial scale of LSOA. In our study we use a collapsed 11-category version of the typology and omit the 'rural isolation' category as less than 0.3 percent of households are thus classified (Figure A2 in our Online Appendix describes the typology).

For measuring neighbourhood ethnic composition, we first constructed a widely used measure of ethnic diversity, a type of Herfindahl-Hirschman Index (used for measuring ethnic diversity by Putnam, 2007; Alesina and La Ferrara, 2004). It is defined as the sum of the squares of the group shares and can range from zero when all groups are represented with a small number of people to 1 where only one group is represented. Data from the 2001 and 2011 UK Censuses provided headcounts of the different ethnic groups in the LSOA, and we interpolated the counts to get a contemporaneous estimate for 2009/10.

Our main measure is own-group neighbourhood share. As the ethnic group question in the UKHLS is the same as that in the census, it was straightforward to compute the neighbourhood proportion of own ethnic group members, again using interpolated headcounts. As well as proportion Other White and Chinese, we calculated two broader ethnic group concentrations of proportion South Asian (Indian, Pakistani and Bangladeshi) and proportion Black (Black Caribbean and Black African) to ensure the robustness of our measure across the large number of relatively small LSOAs. We would note that within the aggregated groups there is considerable recognition of some affinity (Muttarak, 2014), and settlement patterns tend to overlap (Peach, 2006). This measure also provided relatively comparable distributions of ethnic group concentration across generations within groups: see Fig. 1.

The distribution of proportion co-ethnic is very different for White UK and all other ethnic groups (see Fig. 2). This means that in a pooled model of all ethnic groups the coefficient of proportion co-ethnic will be dominated by the effect of White UK. Instead of including a single measure of proportion of own ethnic group, therefore, we included each of our measures of minority ethnic group concentration as main effects and interacted them with the appropriate individual level ethnic group.

Placement of the life satisfaction question in the self-completion instrument necessitated our restricting the analysis to all those who completed the adult interview and the self-completion questionnaire. Appropriate weights to account for the

selectivity in responses are provided in the study, and applied in the analysis. As noted, we expect the data to be clustered at the household level and so estimate robust standard errors.

Summary statistics are provided in our Online Appendix: Table A1.

2.2. Methods

We first present univariate population statistics by ethnic group and generation. To investigate differences in life satisfaction, we follow accepted practice in the analysis of life satisfaction and estimate a series of multivariate Ordinary Least Squares (OLS) regression models.

Using OLS implies that our measure of life satisfaction is comparable across individuals, including individuals from different cultural groups, and that it is a cardinal measure. Ferrer-i-Carbonell and Frijters (2004) have shown that cardinal and ordinal measures produce similar results. The assumption that life satisfaction is comparable across cultural groups is potentially a stronger assumption. Nevertheless, studies have found favourable support for interpersonal comparability at an ordinal level within cultural groups (van Praag et al., 2003). In our data, the pattern of correlations between life satisfaction and individual factors are consistent across groups (Online Appendix: Table A4), supporting our assumption of comparability (see also the discussion in Koczan, 2013).

To investigate our first three hypotheses, we investigate correlations between life satisfaction and ethnicity (Model 1). We then add controls to adjust for any effect on satisfaction associated with individual characteristics (Model 2); and, third we evaluate the contribution of neighbourhood deprivation and type to life satisfaction (Model 3). Negative coefficients on ethnic group support our hypothesis that minorities will have lower life satisfaction, while the extent to which they are attenuated in Models 2 and 3 provide support for our second and third hypotheses.

To investigate our fourth hypothesis we then add measures of the neighbourhood ethnic composition (Model 4). Our focus in this model is on the coefficients for the interaction of own ethnic group with the neighbourhood proportion own group. We view any coefficient that is positive and statistically significant as supporting our expectations relating to the positive role of own-group concentration. We provide results for the whole sample and also by immigrant generation, to investigate consistency in effects across generations.

We subjected our results to a number of robustness tests. The first robustness test related to issues of selection into areas, a feature of neighbourhood analysis that is extensively discussed (Galster, 2008). An individual's selection into a

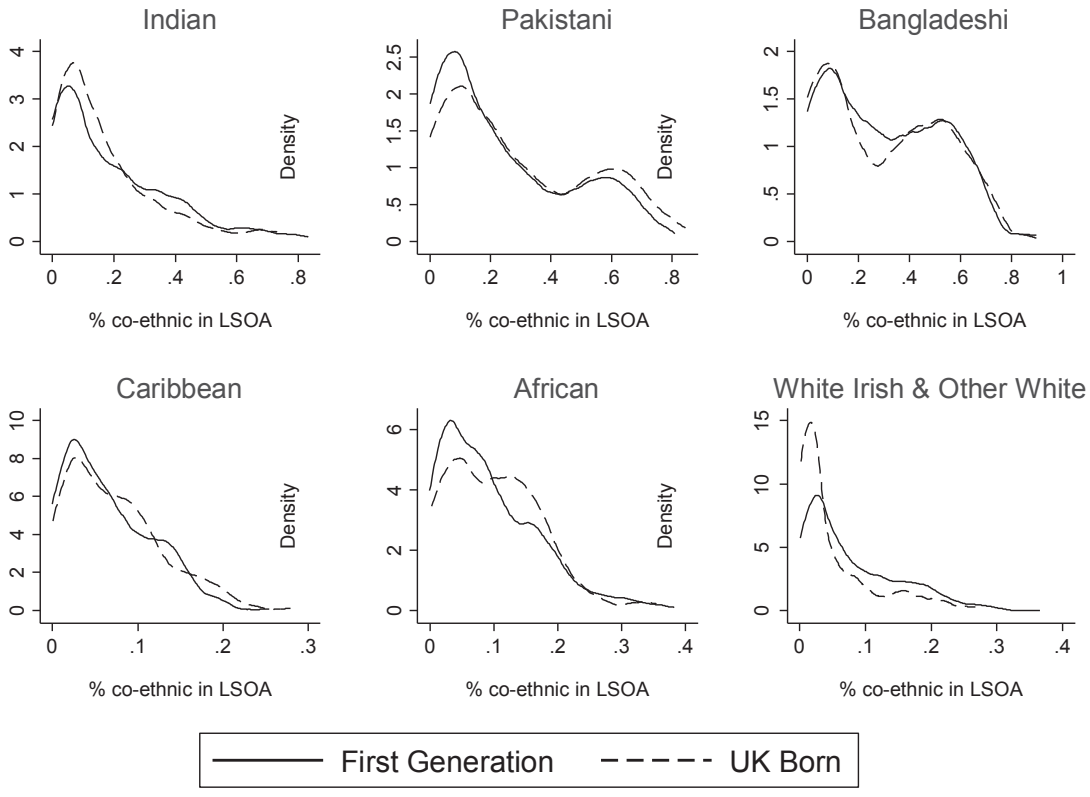

Fig. 1. Distribution of proportion co-ethnic across LSOAs for minority ethnic group and by generation (Kernel-Density plot).
Source: Understanding Society (2013), Wave 1, 2009/10, linked with Census 2001, 2011. Results weighted and adjusted for survey design.

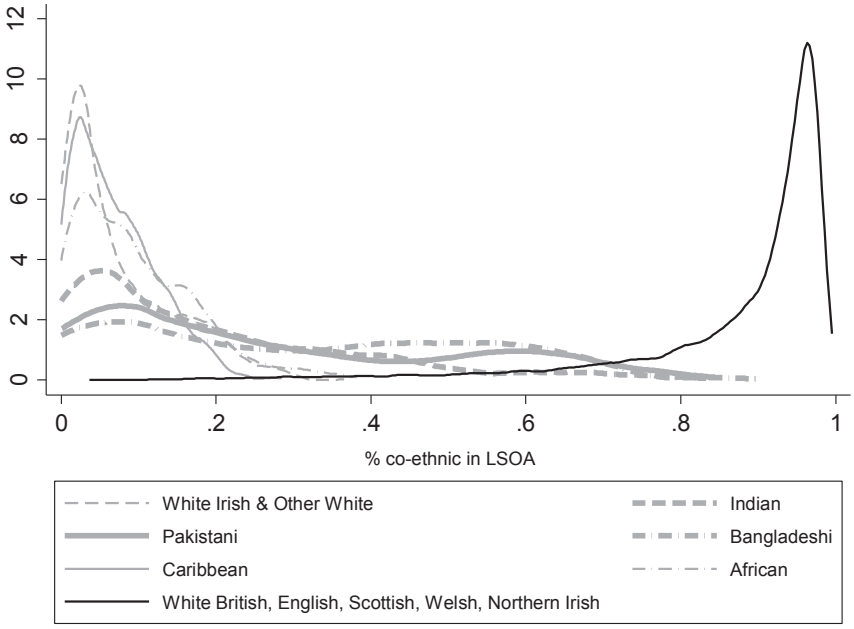

Fig. 2. Distribution of proportion co-ethnic across LSOAs (Kernel-Density plot).
Source: Understanding Society (2013), Wave 1, 2009/10, linked with Census 2001, 2011. Results weighted and adjusted for survey design.

neighbourhood may be considered a choice, even if for some it is less an issue of preferences than constraints (van der Laan Bouma-Doff, 2007). People tend to choose to live in areas that they like, i.e., areas where they (hope) to be satisfied. Hence, if the neighbourhood characteristics that affect life satisfaction are unobserved and correlated with the neighbourhood ethnic composition then any observed positive effect of proportion co-ethnic may reflect the effect of these unobserved characteristics. To check for potential selection we utilise a survey question that asked respondents if they prefer to move from their neighbourhood. If they answered in the affirmative, we can assume that the current neighbourhood is not the preferred choice and the unobserved characteristics that positively affect satisfaction are absent. Compare also Clark and Drinkwater (2002). The relevance of this robustness check to certain of our results is discussed below.

The second robustness test excluded those who had interviews conducted through translated instruments because our measure of life satisfaction may have been sensitive to the precise phrasing and linguistic conventions in the translated version. Note that, since those opting to use a translated questionnaire may be different (in terms of acculturation) from those with higher English language proficiency, the results based on this restricted sample will not be representative of all ethnic minorities.

The third robustness test focused the analysis solely on those living in metropolitan areas. The majority of ethnic minorities live in metropolitan areas and hence we have more limited opportunity to test the comparability of our findings equally across more rural areas. If there are differences in the quality of life in less urban and rural areas which impact on life satisfaction then some of the negative coefficient that we observe for ethnic minorities may be reflecting this unobserved rural quality of life factor. Neither of these two robustness checks affected our main results reported below; and the estimates can be found in the Online Appendix: Table A5.

3. Results

Table 1 provides estimates for the individual and neighbourhood characteristics for the population living in England, by ethnic group and generation. It shows that the factors we expect to be associated with life satisfaction differ by ethnic group: some positively (e.g., age, health status) and some negatively (e.g., income, housing tenure). Variation across groups and generations also exists with respect to neighbourhood characteristics. Whilst 26 percent of White UK live in metropolitan areas, the same is true for more than 50 percent of minorities, and 84 percent of UK born Black groups. All minorities live in relatively more deprived areas but, again, there is considerable variation. Interestingly, the overall more unfavourable neighbourhood contexts faced by ethnic minorities do not straightforwardly translate into expressing a preference for moving: around 40 percent of South Asians say they prefer to move, which is the same as the majority, though around 50 percent of the Other White and Black groups prefer to move.

Table 2 reports the results relating to the association between ethnic group and life satisfaction. We provide only those results relating to ethnic group, first in a pooled model (panel 1) and separately for the first (panel 2) and UK born (panel 3) generations of each group. The (UK born) White UK majority provides the reference group in all cases. Model 1 in Table 2

Table 1
Population characteristics[a] of individuals and their neighbourhoods by ethnic group and generation.

	White UK	Other White		Mixed		Indian		Pakistani		Bangladeshi		Black Caribbean		Black African	
	UK born	1st gen.	UK born	1st gen.	UK born	1st gen.	UK born	1st gen.	UK born	1st gen.	UK born	1st gen.	UK born	1st gen.	UK born
Female	0.51	0.56	0.43	0.55	0.57	0.39	0.49	0.40	0.48	0.36	0.50	0.53	0.60	0.51	0.51
Age group															
16–24 years	0.14	0.14	0.12	0.23	0.40	0.12	0.40	0.13	0.51	0.16	0.47	0.07	0.21	0.19	0.44
25–29 years	0.07	0.17	0.13	0.10	0.15	0.12	0.13	0.15	0.20	0.16	0.17	0.08	0.11	0.13	0.12
30–44 years	0.24	0.39	0.35	0.34	0.29	0.35	0.43	0.39	0.29	0.47	0.17	0.17	0.41	0.45	0.34
45–59 years	0.25	0.16	0.29	0.23	0.13	0.27	0.03	0.24	0.01	0.15	0.12	0.38	0.27	0.18	0.10
60 + years	0.29	0.14	0.11	0.11	0.04	0.14	0.00	0.10	0.00	0.05	0.07	0.30	0.00	0.04	0.00
Highest educational qualification															
Degree	0.20	0.41	0.45	0.33	0.26	0.50	0.39	0.36	0.28	0.28	0.21	0.18	0.23	0.37	0.36
Other higher	0.11	0.15	0.07	0.09	0.13	0.12	0.08	0.07	0.10	0.07	0.05	0.11	0.18	0.17	0.11
A-level or equivalent	0.20	0.14	0.22	0.28	0.26	0.11	0.30	0.13	0.28	0.19	0.36	0.20	0.23	0.20	0.30
GCSE or equivalent	0.23	0.07	0.13	0.15	0.27	0.10	0.19	0.14	0.27	0.17	0.23	0.20	0.26	0.14	0.23
Other or no qualifications	0.26	0.24	0.12	0.14	0.08	0.17	0.04	0.30	0.08	0.30	0.15	0.31	0.11	0.13	0.00
Current activity status															
In paid employment	0.48	0.54	0.53	0.49	0.47	0.56	0.54	0.36	0.36	0.43	0.48	0.40	0.57	0.51	0.44
Self-employed	0.07	0.12	0.07	0.08	0.05	0.08	0.05	0.12	0.05	0.09	0.06	0.09	0.06	0.04	0.08
Retired	0.23	0.11	0.08	0.08	0.02	0.10	0.00	0.07	0.00	0.02	0.05	0.25	0.00	0.03	0.00
Unemployed	0.06	0.06	0.12	0.08	0.12	0.07	0.07	0.10	0.13	0.11	0.06	0.11	0.14	0.12	0.07
Other	0.15	0.18	0.21	0.26	0.34	0.20	0.34	0.36	0.45	0.35	0.34	0.15	0.23	0.30	0.41
Partnership status															
Single or never married	0.22	0.28	0.33	0.29	0.57	0.18	0.56	0.18	0.54	0.20	0.57	0.28	0.58	0.35	0.64
Married or cohabiting	0.64	0.61	0.61	0.60	0.38	0.76	0.41	0.73	0.41	0.74	0.39	0.49	0.35	0.54	0.29
Separated or divorced	0.08	0.07	0.05	0.07	0.05	0.03	0.03	0.06	0.04	0.04	0.03	0.17	0.07	0.09	0.07
Widowed	0.06	0.04	0.01	0.03	0.00	0.03	0.00	0.02	0.00	0.03	0.01	0.06	0.01	0.02	0.01
No. of own kids in household[c]	0.43	0.46	0.40	0.49	0.49	0.64	0.60	1.12	0.83	1.32	0.35	0.38	0.65	0.94	0.68
Total monthly personal income in £1k[c]	1.60	1.84	2.30	1.59	1.38	1.69	1.58	1.23	0.95	1.41	1.07	1.48	1.67	1.37	1.53
Owner of a house or flat	0.73	0.39	0.63	0.46	0.53	0.61	0.84	0.64	0.81	0.44	0.73	0.55	0.50	0.23	0.41
Long standing illness or disability	0.38	0.23	0.38	0.25	0.26	0.23	0.15	0.27	0.16	0.24	0.14	0.37	0.27	0.14	0.14
Has a health problem	0.50	0.29	0.46	0.36	0.40	0.32	0.25	0.35	0.22	0.30	0.26	0.53	0.42	0.22	0.25
Belongs to a religion	0.47	0.63	0.62	0.63	0.43	0.87	0.80	0.95	0.97	0.96	0.85	0.73	0.61	0.93	0.83
Arrived in the UK less than 10 years ago	1.00	0.60	1.00	0.46	1.00	0.47	1.00	0.38	1.00	0.36	1.00	0.19	1.00	0.62	1.00
Lives in an urban area	0.78	0.89	0.89	0.93	0.94	0.97	0.97	1.00	0.98	1.00	0.91	0.99	0.99	0.98	0.98
No. years lived at current residence[c]	13.94	6.39	9.01	7.52	8.89	9.85	11.52	8.92	10.84	8.78	14.32	13.63	10.99	4.54	8.53
Prefers to move	0.39	0.42	0.51	0.55	0.51	0.33	0.40	0.37	0.37	0.41	0.35	0.54	0.55	0.53	0.45
Lives in a metropolitan area	0.26	0.51	0.59	0.48	0.60	0.64	0.64	0.72	0.69	0.83	0.69	0.73	0.76	0.73	0.84
Whether 2011 LSOA changed since 2001	0.03	0.05	0.02	0.03	0.04	0.05	0.03	0.03	0.03	0.05	0.04	0.04	0.03	0.06	0.06
Proportion co-ethnic[c]	0.87	0.09	0.06	0.01	0.01	0.17	0.15	0.21	0.26	0.16	0.12	0.06	0.06	0.08	0.09
Proportion Other White[c]	0.04	0.11	0.11	0.10	0.09	0.08	0.07	0.08	0.07	0.11	0.08	0.12	0.11	0.11	0.12
Proportion South Asian[c]	0.04	0.08	0.08	0.10	0.10	0.29	0.28	0.36	0.40	0.33	0.28	0.17	0.16	0.13	0.11
Proportion Black Caribbean or African[c]	0.02	0.06	0.07	0.08	0.07	0.07	0.07	0.08	0.06	0.11	0.07	0.15	0.16	0.15	0.16
Proportion Chinese[c]	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02
Herfindahl Index[c]	0.79	0.55	0.55	0.53	0.55	0.43	0.43	0.36	0.40	0.31	0.46	0.36	0.34	0.39	0.36
Townsend score[c]	−0.58	1.36	1.11	1.68	1.41	1.71	1.68	3.65	3.52	5.66	3.28	3.16	3.44	4.03	3.34
Proportion of households of type[c]															
Symbol of Success	0.11	0.12	0.13	0.10	0.11	0.08	0.08	0.03	0.04	0.04	0.04	0.05	0.06	0.04	0.05
Happy families	0.12	0.08	0.08	0.09	0.08	0.07	0.08	0.05	0.04	0.05	0.06	0.06	0.05	0.07	0.08
Suburban Comfort	0.18	0.12	0.15	0.12	0.14	0.26	0.27	0.16	0.16	0.08	0.16	0.16	0.15	0.08	0.12
Ties of community	0.16	0.16	0.16	0.20	0.17	0.26	0.27	0.45	0.48	0.33	0.34	0.26	0.25	0.22	0.21
Urban Intelligence	0.06	0.22	0.24	0.18	0.16	0.12	0.08	0.07	0.07	0.14	0.08	0.19	0.16	0.17	0.21
Welfare borderline	0.04	0.09	0.08	0.13	0.11	0.05	0.08	0.10	0.07	0.26	0.15	0.14	0.18	0.23	0.18
Municipal dependency	0.06	0.03	0.02	0.03	0.06	0.03	0.04	0.05	0.05	0.02	0.02	0.04	0.05	0.06	0.03
Blue collar enterprise	0.10	0.07	0.06	0.06	0.08	0.06	0.06	0.06	0.04	0.05	0.06	0.06	0.08	0.09	0.09
Twilight subsistence	0.03	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01
Grey perspectives	0.08	0.07	0.05	0.05	0.06	0.04	0.03	0.02	0.01	0.01	0.04	0.03	0.01	0.02	0.01
Number of observations	24,611	1077	190	222	435	867	438	487	381	380	221	360	414	782	130

[a] Most characteristics are a dichotomy and may therefore be interpreted as proportion. Continuous variables are marked [c].
Source: Understanding Society (2013), Wave 1, 2009/10, linked with LSOA-level national statistics. Results weighted and adjusted for survey design.

Table 2
Multivariate regressions of life satisfaction on ethnicity, individual characteristics and neighbourhood deprivation. Ethnicity related coefficients from nested OLS regressions.

		Ethnic group (comparison group: White UK)								R^2
		Other white	Mixed	Indian	Pakistani	Bangladeshi	Caribbean	African	Other	
All (N = 32,055)										
Model 1	Coeff	−0.04	−0.24**	−0.18**	−0.32**	−0.47**	−0.49**	−0.17**	−0.30**	0.004
	S.E.	*0.05*	*0.06*	*0.05*	*0.07*	*0.11*	*0.07*	*0.06*	*0.06*	
Model 2[a,c] (plus individual characteristics)	Coeff	−0.19**	−0.20**	−0.35**	−0.38**	−0.50**	−0.34**	−0.21**	−0.40**	0.089
	S.E.	*0.06*	*0.07*	*0.06*	*0.08*	*0.11*	*0.07*	*0.08*	*0.07*	
Model 3[a,b,c] (plus neighbourhood type/deprivation)	Coeff	−0.18**	−0.19**	−0.31**	−0.32**	−0.44**	−0.30**	−0.17*	−0.38**	0.091
	S.E.	*0.06*	*0.07*	*0.06*	*0.08*	*0.12*	*0.07*	*0.08*	*0.07*	
First generation (N = 29,653)										
Model 1	Coeff	0.01	−0.09	−0.08	−0.40**	−0.48**	−0.42**	−0.15*	−0.30**	0.002
	S.E.	*0.05*	*0.1*	*0.06*	*0.09*	*0.12*	*0.11*	*0.07*	*0.06*	
Model 2[a,c] (plus individual characteristics)	Coeff	−0.11*	−0.13	−0.21**	−0.41**	−0.43**	−0.30**	−0.14+	−0.37**	0.088
	S.E.	*0.05*	*0.1*	*0.07*	*0.1*	*0.12*	*0.1*	*0.07*	*0.07*	
Model 3[a,b,c] (plus neighbourhood type/deprivation)	Coeff	−0.10+	−0.12	−0.17*	−0.34**	−0.36**	−0.26*	−0.10	−0.35**	0.09
	S.E.	*0.05*	*0.1*	*0.07*	*0.1*	*0.12*	*0.1*	*0.08*	*0.07*	
UK born (N = 27,012)										
Model 1	Coeff	−0.33**	−0.32**	−0.38**	−0.21*	−0.44*	−0.56**	−0.31*	−0.32**	0.003
	S.E.	*0.12*	*0.08*	*0.08*	*0.1*	*0.19*	*0.08*	*0.15*	*0.12*	
Model 2[a,c] (plus individual characteristics)	Coeff	−0.21+	−0.20*	−0.47**	−0.27**	−0.52**	−0.32**	−0.23	−0.23*	0.091
	S.E.	*0.11*	*0.08*	*0.08*	*0.1*	*0.18*	*0.08*	*0.15*	*0.12*	
Model 3[a,b,c] (plus neighbourhood type/deprivation)	Coeff	−0.20+	−0.18*	−0.43**	−0.20*	−0.46*	−0.27**	−0.18	−0.22+	0.093
	S.E.	*0.12*	*0.08*	*0.08*	*0.1*	*0.18*	*0.08*	*0.15*	*0.12*	

Notes: + p < 0.10, *p < 0.05, **p < 0.01. All analyses are adjusted for sample design and non-response.
[a] Individual characteristics included: sex, age, age squared, educational qualifications, marital status, number of children, economic activity status, household income, housing tenure, longstanding illness and health status, whether has a religious affiliation, length of stay in UK, urban-rural indicator.
[b] Neighbourhood characteristics included: 11 Mosaic groups and Townsend Area Deprivation Score. For complete set of results, see Online Appendix: Tables A2A–A2C.
[c] Statistically significant improvement of log likelihood compared to previous model; based on LR-tests [p < 0.001].
Source: Understanding Society (2013), Wave 1, 2009/10, linked with LSOA-level national statistics.

includes only ethnic group dummies; Model 2 adds individual characteristics; and Model 3 additionally includes neighbourhood deprivation and type.

Model 1 supports our first hypothesis. Ethnic minorities are less happy than the White UK majority, though there is substantial variation by group. With an intercept representing unadjusted White UK life satisfaction of around 5.3 (see Online Appendix: Table A2A), the values for the minority groups are estimated at around 4.9 for Bangladeshis and Caribbeans. We see from Model 2, that this finding persists even after we control for compositional effects; and the negative effects increase for some groups. This illustrates the extent to which their individual characteristics are positively related to life satisfaction, for example in terms of age, and is somewhat counter to our expectations that the inclusion of individual level characteristics will attenuate the satisfaction gap (*Hypothesis 2*). Separate inspection of the coefficients for the covariates (provided in Online Appendix: Tables A2A–A2C) show that unemployment, marital separation, number of children in the household, poor health and living in an urban area are all likely to result in reporting lower life satisfaction while higher education, income and wealth, religious belonging, being retired and being married or partnered are likely to increase life satisfaction, in line with expectations.

When we add area effects including area deprivation (Model 3) there is a slight reduction in the negative coefficients on life satisfaction: minorities are more likely to be concentrated in deprived areas and this has a small impact on their well-being. This supports our expectations for the additional contributory role of neighbourhood deprivation (*Hypothesis 3*). There remain, however, clear deficits in the life satisfaction of minority groups relative to the majority, even with this comprehensive set of individual and contextual controls. For example, with an intercept (in Model 3) of 6.4, minority group life satisfaction ranges from 5.9 (Bangladeshis) to 6.2 (Africans); small but by no means negligible differences in life satisfaction. If we compare these ethnic group differences with other effects in the model, we can see that life satisfaction for Bangladeshis compared to White UK, other things being equal, is equivalent to the gap in life satisfaction between disabled and non-disabled people. And the smaller gap between Black African and White UK life satisfaction is still the equivalent of a difference in personal income of around £6000.

Turning to the second and third panels of Table 2, once we separate by generation we find that the UK born ethnic minorities tend to be even less happy compared to the White UK majority than the first generation, somewhat counter to expectations. For example, estimates from Model 3 show first generation Indians to have satisfaction levels of around 6.2, while the UK born have satisfaction of only around 6. Pakistanis, however, show the opposite pattern. UK born Black Caribbeans, on the other hand, are not, contra to discussions of Black British alienation (Heath and Demireva, 2014), the least satisfied, nor do they show any decrease in life satisfaction from the first to the second generation.

The more positive results for the first generation accord with arguments that immigrants are a selected group, that they obtain life satisfaction from migration (Frank et al., 2015), and that the immigrant generation use those in the origin country

rather than – or as well as – the destination country as their reference group (Gelatt, 2013). Consistent with arguments that reference groups change from origin to destination country over time, in additional analysis those who have been settled in the UK for a shorter period were found to be more satisfied than those who have been settled for more than 10 years (Online Appendix: Table A2B). Immigrants may, therefore, be changing their reference group to White UK and also, over time, realising that the expectations informing their move to the UK may not be fulfilled.

Interestingly, the groups who show the lowest rates of satisfaction among the second generation, once controlling for individual and neighbourhood characteristics, are Indians and Bangladeshis. The difference in life satisfaction between each of these two UK born groups and the White UK majority are equivalent to the difference in satisfaction between disabled and non-disabled respondents, other things being equal. These groups represent both the more and the less advantaged of the UK's minority groups, as well as being from somewhat earlier and later migration trajectories (Platt, 2007). Thus, the consistently lower satisfaction of the various ethnic minority groups relative to the White UK majority would seem to transcend straightforward distinctions of social location or origin. Given this, does the evidence suggest that there is nevertheless some mitigating effect of own-group concentration at least for the more marginalised or more concentrated groups?

Table 3 shows the results relating to our fourth hypothesis, that is, whether there is an effect of own-group concentration on life satisfaction net of all other characteristics (Full results are provided in the Online Appendix: Table A3.). Note that the main effects for neighbourhood concentration are largely driven by the effect of the group concentration on the satisfaction of the White UK majority, while own group effects are revealed in the interactions. Given the interaction terms, the main effect for ethnic group now represents relative life satisfaction at approximately zero concentration of own ethnic group. Thus, a positive effect of own-group concentration would lead to a more strongly negative main effect for the ethnic group concerned.

We note first that there is no evidence for a negative effect of diversity as measured by the Herfindahl Index. Consistent with research on the impact of diversity on other outcomes (e.g., Laurence, 2011; Letki, 2008; Schmid et al., 2014), once neighbourhood deprivation is controlled 'diversity' does not impact negatively on life satisfaction. When we consider the role of ethnic group concentration, with the exception of Black Africans the main ethnic group coefficients in the top part of the table do not differ substantially from those found in Model 3 in the top panel of Table 2. For Black Africans the negative main effect increases for the group overall (and across generations); and there is a compensating factor of higher levels of life satisfaction when they live in neighbourhoods with a higher proportion of co-ethnics, lending support to *Hypothesis 4*. The difference is modest: the estimated level of life satisfaction for Black Africans living in an area that has 15 percent Black people (the average for the group: see Table 1) is estimated to be 6.25 while it is only 6.17 if they are living in an area with only 5 percent Black people.[1] This is, nevertheless, equivalent to the estimated difference in life satisfaction for an individual having a degree rather than lower level qualifications, other things being equal. When we tested whether this finding was robust to selection effects, by restricting our sample to only those who expressed a desire to move, we found that the positive effect dissipated (See Online Appendix: Table A5.). While some of this difference may stem from loss of statistical power, it does suggest that there is a selection process at work for Black Africans. That is, that those who live in neighbourhoods with a higher concentration of their own group have selected into those areas for other reasons which they expected would make them happier and are thus inclined to be more satisfied.

For the other groups, co-ethnic density had a positive but statistically non-significant effect on life satisfaction. However, the story becomes more complex when we consider differences across generations. The coefficients for Pakistani first and second generations change substantially when own-group concentration is controlled: the first generation becomes no less satisfied than the White UK majority, and the second generation becomes distinctly less satisfied. This stems from the fact that, contrary to tentative expectations (see formulation of *Hypothesis 4*, above), it is UK born rather than first generation Pakistanis living in areas with a higher proportion of South Asians who report higher levels of life satisfaction. UK born Pakistanis who live in an area that is 40 percent South Asian (the average for the group: see Table 1) have estimated life satisfaction of 6.2 compared to a score of 6.02 for those living in an area that is 20 percent South Asian.[2] The effect is equivalent to a difference in personal income of around £6000. First generation Pakistanis, by contrast, derive lower levels of life satisfaction from living in neighbourhoods that have more of their ethnic group: living in an area that is 40 percent South Asian is estimated to result in a life satisfaction score of 6.06 compared to 6.27 if they live in an area that is only 20 percent South Asian.[3] The positive effect for the second generation is also found for Indians, though it is not in their case paralleled by a negative impact of concentration for the first generation.

Despite the strong positive effects of own-group concentration that have been argued for immigrants (Phillips, 1998), clearly it either is not conducive to their life satisfaction or, alternatively, the effects may be rather short-lived. This would be

[1] These figures are calculated by combining the intercept with the coefficients for the main effects of ethnic group and proportion Black in the neighbourhood as well as the interaction. Since the Herfindahl Index is not independent of neighbourhood group composition, and thus neighbourhood group share, the estimates also include the coefficient for the Herfindahl Index multiplied by the actual Herfindahl score at the relevant level of diversity. In our sample, the Herfindahl scores at 5 percent Black and at 15 percent Black were 0.425 and 0.285, respectively.

[2] The Herfindahl Index scores used in the calculation at 20 and 40 percent South Asian for UK born Pakistanis are 0.189 and 0.152, respectively. Compare footnote 1.

[3] The Herfindahl Index scores used in the calculation at 20 and 40 percent South Asian for first generation Pakistanis are 0.353 and 0.286, respectively. Compare footnote 1.

Table 3
Multivariate regressions of life satisfaction on ethnicity, individual characteristics, neighbourhood deprivation, neighbourhood ethnic diversity and proportion co-ethnic. Ethnicity related coefficients from OLS regressions[a].

	All		First generation		UK born	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Ethnicity (comparison group: White UK)						
Other White	−0.16*	0.08	−0.11	0.08	−0.11	0.17
Mixed	−0.15*	0.07	−0.08	0.1	−0.14+	0.08
Indian	−0.32**	0.08	−0.10	0.11	−0.60**	0.12
Pakistani	−0.30*	0.13	0.05	0.18	−0.62**	0.18
Bangladeshi	−0.47*	0.22	−0.44+	0.25	−0.45	0.32
Caribbean	−0.31**	0.11	−0.36*	0.17	−0.22	0.14
Black African	−0.32**	0.12	−0.24*	0.12	−0.32	0.28
Other	−0.36**	0.07	−0.32**	0.07	−0.19+	0.12
Proportion Chinese	1.67	1.10	1.43	1.17	2.00	1.32
Proportion Other White						
Main effect	−0.86+	0.44	−0.98*	0.48	−0.95+	0.53
Interacted with Other White/Irish	0.21	0.59	0.40	0.63	−0.48	1.39
Proportion South Asian (Indian, Pakistani, Bangladeshi)						
Main effect	−0.15	0.24	−0.14	0.26	−0.19	0.30
Interacted with Indian	0.16	0.24	−0.16	0.28	0.72+	0.37
Interacted with Pakistani	0.05	0.38	−0.94+	0.49	1.07**	0.41
Interacted with Bangladeshi	0.19	0.46	0.29	0.55	0.09	0.65
Proportion Black (Caribbean, Black African)						
Main effect	−0.51	0.42	−0.56	0.48	−0.52	0.48
Interacted with Black Caribbean	0.59	0.55	1.20	0.89	0.24	0.67
Interacted with Black African	1.36*	0.57	1.35*	0.62	1.26	1.32
Herfindahl Index	0.02	0.18	0.00	0.20	−0.01	0.21
Constant	6.44**	0.20	6.44**	0.21	6.47**	0.23
Number of observations	32,055		29,653		27,012	
R^2[b]	0.09		0.091		0.094	

Notes: + $p < 0.10$, *$p < 0.05$, **$p < 0.01$. All analyses are adjusted for sample design and non-response.
[a] Model also includes the following indicators: sex, age, age squared, educational qualifications, marital status, number of children, economic activity status, household income, housing tenure, longstanding illness and health status, whether have a religious affiliation, length of stay in UK, urban-rural indicator, 11 Mosaic groups and Townsend Area Deprivation Score. For complete set of results, see Online Appendix: Table A3.
[b] Statistically significant improvements of the model log likelihood compared to Models 3 in Table 2, based on LR-tests [$p < 0.002$].
Source: Understanding Society (2013), Wave 1, 2009/10, linked with LSOA-level national statistics.

consistent with findings by Musterd et al. (2008) for the economic effects of concentration. For those with somewhat longer time horizons than initial arrivals, the immigrant generation may interpret areas with a higher proportion of co-ethnics as cultural enclaves from which they expected to move soon after they arrived. Instead, since that expectation has not been realised, they have lower levels of life satisfaction. This explanation remains, necessarily somewhat speculative in the absence of further replication of our findings and of the mechanisms involved; and is a potentially important area for future research.

In the second generation, the presence of their own group members may provide them with psychological and social resources which help them to deal with recognised inequalities that persist despite having been born and brought up in the country. Moreover, the second generation has somewhat more control over where they live; and it can be suggested that those who live in more ethnically concentrated areas may have made more of a positive decision to do so, especially if, as discussed in the introduction, it involved breaking the link between deprived and ethnically concentrated neighbourhoods. However, this is not supported by the data as our results are unaffected when we test for positive selection into areas by looking only at those who prefer to move.

4. Conclusions and discussion

In this paper, we set out to expand our understanding of the role of neighbourhood effects by evaluating their consequences for life satisfaction in England. Specifically, we aimed to identify if neighbourhood deprivation could partially account for differences in life satisfaction across groups; and if own-group concentration has a protective effect for minorities in terms of their own subjective evaluation of how well their lives are going. We premised our analysis on the expectation that life satisfaction would be lower across minority groups compared to majority groups for a number of reasons, including the disruption and dislocation presented by migration for the first generation and the persistence of discrimination and disadvantage in the second generation. To achieve this we matched detailed, small area characteristics to survey responses to a large-scale nationally representative survey with a large ethnic minority boost sample.

We explored patterns of life satisfaction across the UK's minority ethnic groups; and we explicitly explored differences by generation, enhancing existing findings in this respect. We found, in line with a number of studies of other countries, that life satisfaction is lower among minorities than the majority. We also identified, however, that it tends to be particularly low among UK born ethnic minorities; and these differences persist even after individual characteristics are controlled.

In addition, we have presented new evidence on the impact of neighbourhood deprivation on life satisfaction of minority groups, showing that its modest effect nevertheless helps to explain the difference in life satisfaction between minorities and majority, particularly among those where the differential is greatest.

We suggest that our findings provide the first evidence on the impact of own-group concentration on life satisfaction of different ethnic groups, net of area deprivation, using appropriate small-scale externally derived measures. We first showed that diversity is not associated with reduced life satisfaction. Our findings thus support the literature (e.g., Laurence, 2011; Schmid et al., 2013) challenging the negative consequences of diversity for attitudes and intergroup relations posited by Putnam (2007). But we provided evidence that greater own-group concentration, controlling for area type, is linked to relatively higher levels of wellbeing among Black Africans and among UK born Indians and Pakistanis. These groups clearly gain utility from being in more ethnically dense areas. On the basis of existing research we suggest that this is likely to stem from both institutional group-specific resources, such as places of worship, shops, community programmes and so on, and from the psychological resources in terms of positive identity and protection against discrimination offered by having more of one's own group nearby. By contrast, for first generation Pakistanis greater levels of own-group concentration are linked to relatively lower levels of satisfaction, suggesting that co-location is rather a constraint than a preference for this group, and that those who have the ability to move to areas of lesser concentration exploit that opportunity. If we are concerned for the future wellbeing of the nation, then the findings for the second generation give cause for concern. Rather than lower life satisfaction representing a 'transitional' state following migration, it is enhanced among those who are born and brought up in the country and who are by a range of measures increasingly economically, attitudinally and geographically 'integrated'. The fact that it is the second generation that finds a resource in own-group concentration complicates our understanding of greater geographical dispersal and 'assimilation' over time and its potential costs for life satisfaction.

We subjected our findings to a range of robustness checks. These included testing for selection as well as a number of additional sample restrictions. By and large, our results are consistent across these specifications, though testing for selection did indicate that the positive effect for Black Africans of relatively higher own-group concentrations could be interpreted as a selection effect.

Like much of the literature on neighbourhood effects, the scale of our findings relating to the impact of neighbourhood composition is modest. Yet we feel that the evaluation in relation to subjective wellbeing provides a potentially more direct test of posited positive 'enclave' effects than other more structural outcomes. Given the wide range of individual characteristics and additional contextual variables that we were able to mobilise in our analysis, and that have been linked in the happiness literature to wellbeing, it is perhaps surprising that we identified such ethnic composition effects at all, particularly given how robust they were to our sensitivity tests. We would argue that we have developed some clear lines for future research in the possibly counterintuitive contrast between the positive concentration effects in the second generation South Asian groups and the more negative or neutral influences on wellbeing for the first generation. In political discourse – and some academic literature – concentration of ethnic minorities has been presented as a challenge to society and a failure of integration into the values and norms of British society (see, e.g., Cameron, 2011; Battu and Zenou, 2010). By contrast, our findings suggest that greater residential integration may come at the cost of lower life satisfaction for second generation minorities. Rather than suggesting that concentration is linked to alienation, as much of the debate on segregation implies, our results indicate that for certain groups, the proximity of own group members may provide cultural, social or emotional resources that are linked to higher levels of wellbeing in a challenging world.

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Appendix A. Supplementary data

Supplementary data related to this article can be found at http://dx.doi.org/10.1016/j.ssresearch.2016.01.010.

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