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To cite this article: Renee Luthra, Alita Nandi & Michaela Benzeval (2018): Unravelling the ‘immigrant health paradox’: ethnic maintenance, discrimination, and health behaviours of the foreign born and their children in England, Journal of Ethnic and Migration Studies, DOI: [10.1080/1369183X.2018.1539287](https://doi.org/10.1080/1369183X.2018.1539287)

To link to this article: <https://doi.org/10.1080/1369183X.2018.1539287>



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Unravelling the ‘immigrant health paradox’: ethnic maintenance, discrimination, and health behaviours of the foreign born and their children in England

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ABSTRACT

This paper uses data from Understanding Society, a large representative survey of UK with an ethnic minority boost sample, to test the association between ethnic maintenance, discrimination and health behaviours, among both foreign born and UK born ethnic minorities. We model the probability of smoking and alcohol consumption on (a) ethnic maintenance measured as a function of friendship composition, religiosity, and ethnic identity; and (b) exposure to discrimination as evidenced by self-reports of ethnic and racial harassment in public places. We find that even after controlling for other structural inequalities in income, education, and geography, there is a positive association between ethnic and racial harassment and smoking for ethnic minority women. We also find that ethnic minority men and women who report stronger ethnic maintenance are less likely to binge drink. While we find similar results for ethnic minority women and smoking, we find no such relationship for ethnic minority men.



KEYWORDS


Acculturation; ethnic maintenance; smoking; binge drinking; discrimination; harassment

Introduction

This paper contributes to a burgeoning literature on the existence of an ‘immigrant health paradox’ which has been well established in many immigrant receiving countries: after adjusting for socioeconomic status, the foreign born generally have lower mortality than the native born, however this initial advantage disappears with increasing time in the receiving country and across generations. This finding is paradoxical because, over time and across generations, the economic conditions of immigrants generally improve and acculturation stress reduces; thus we would expect a *positive* trend in health with lower mortality risk over time.

Specifically we examine two behaviours, smoking and alcohol consumption, to explore two popular theories that might explain this paradox. First, it has been widely suggested that *ethnic maintenance*, or the maintenance of social ties, norms and behaviours prevalent within minority ethnic groups, may prove protective for immigrants and their

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 Supplemental data for this article can be accessed at <https://doi.org/10.1080/1369183X.2018.1539287>.

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children who may be exposed to environmental, social, and economic stressors (Lara et al. 2005). In this account, immigrant communities are generally positively selected on general health and mortality, and similarly maintain or import more positive health behaviours from their origin country. Thus, as immigrants and their descendants loosen their geographic, social, or identificational embeddedness in their origin country ethnic community, they become more at risk of adopting negative health behaviours prevalent in the receiving country and more vulnerable to the psychological and physical stressors in their environment. Second, *racial and ethnic discrimination* is expected to lead to stress which may lead to the adoption of unhealthy behaviours as a coping strategy (Borrell et al. 2007). This discrimination-related stress may derive from greater exposure to physically demanding jobs, residence in poor quality neighbourhoods, exposure to overcrowding, and decreased access to health care – as well as direct experiences of ethnic and racial harassment which are the focus of this paper. The cumulative effect could result in a negative trend in health and increases in mortality over time.

Empirical tests of these theories remain tentative because the majority of research on immigrant health uses only time since arrival and generational status as proxies for ethnic maintenance and exposure to discrimination. While both of the proposed underlying causes of worsening health are positively correlated with time in the receiving country, the correlation is far from perfect. It is also possible that experiences of discrimination and changes in ethnic maintenance do not operate in parallel, or could even be inversely related. In this paper, we use data from a nationally representative UK survey, Understanding Society that includes an ethnic minority boost sample (EMBS) and direct measures of ethnic maintenance and discrimination to test if these are predictive of health behaviours among immigrants and their descendants.

We find a positive association between ethnic and racial harassment and smoking for ethnic minority women, even after controlling for other structural inequalities in income, education, and geography. We also find that ethnic minority men and women who report stronger ethnic maintenance are less likely to binge drink. We find similar results for ethnic minority women and smoking, but no such relationship for ethnic minority men.

In the next section, we discuss previous literature, followed by sections on data and methodology, and results. We conclude with a discussion of our findings in light of the broader debate surrounding ethnic maintenance and immigrant ‘integration’.

Background

The role of health behaviours in the immigrant health paradox

The burgeoning literature on the immigrant health paradox (IHP) began with the discovery of a more specific ‘Latino mortality paradox’ in the USA (Abraído-Lanza, Echeverría, and Flórez 2016; Abraido-Lanza et al. 1999): relative to non-Latino whites, Latinos have a worse socioeconomic profile but a lower mortality rate, representing an epidemiological paradox. However this advantage seemed to decline the longer Latinos resided in the United States and over generations. This phenomenon has increasingly been investigated in other groups (Antecol and Bedard 2006; Gorman, Lariscy, and Kaushik 2014) and is now accepted as generally true for most immigrant origin groups in the USA (Jasso and Massey 2004). Investigating the role of health behaviours in explaining this

phenomenon, researchers have found evidence of an association between time spent in the United States with less healthy dietary practices and higher rates of substance abuse (Lara et al. 2005).

While there is a smaller evidence base on the IHP in the UK, new research with recent data on the health of minorities has led to a growing consensus that an IHP exists in the UK as well. An early study suggested that immigrant minorities in the UK were strongly positively selected on health, documenting lower mortality rates than the native populations in the origin country, as well as lower rates of mortality from several causes than native white British (Marmot, Adelstein, and Bulusu 1984). This finding of lower mortality among immigrants in the UK has been confirmed with more recent data from the mid-2000s (Kennedy et al. 2015; Wallace and Kulu 2014).

Research in the UK has also confirmed the potential role of health behaviours as a mechanism underlying this paradox. For instance, Pakistani minority women and infants display a weaker socioeconomic gradient than white British women for low birth-weight, preterm birth, and health behaviours during pregnancy (Uphoff, Pickett, and Wright 2016), and ethnic minority couples with children are more likely to abstain from smoking and drinking (Graham et al. 2016). A variety of local level studies also report lower rates of smoking and drinking among minority adolescents than among white British adolescents, both before and after socioeconomic controls (Viner et al. 2006). The Office for National Statistics confirms this finding for the general adult population, using smoking and drinking prevalence rates from the nationally representative General Household Survey (Goddard and Green 2008).

A growing literature also suggests a similar decline in this advantage over time and generations. For instance, recent research finds that UK born minorities are more likely to drink than the foreign born, across nearly all ethnic groups; and that UK born black Caribbean and Indian origin groups were also more likely to smoke (Smith, Kelly, and Nazroo 2009). Similarly, while obesity rates are generally lower for the foreign born, the children of immigrants display convergence to the obesity rates of their white British peers, partly accounted for by diet changes (Smith, Kelly, and Nazroo 2012).

Ethnic maintenance

While there is general agreement about a decline in the more advantageous health behaviours of the foreign born over time and generations, whether a corresponding decline in ethnic maintenance explains this change is contested (Riosmena et al. 2014; Ro 2014). A major reason for the continued uncertainty is the lack of direct measures of ethnic maintenance.¹

As defined recently by Schwartz et al. (2010, 237), acculturation is a ‘multidimensional process consisting of the confluence among heritage-cultural and receiving-cultural practices, values, and identifications.’ Ethnic maintenance can be conceived as one half of this conceptualisation: the maintenance of the heritage culture – the culture of one’s ethnic group.

Despite the popularity of the concept of ethnic maintenance, few health-orientated surveys contain measures of specific practices, values or identifications – either towards the heritage or receiving culture. Rather, the multi-dimensional changes which indicate ethnic maintenance are indirectly proxied by mono-dimensional indicators such as time since arrival, place of birth, or language use. This presents several challenges to

accurately estimating the relationship between ethnic maintenance and health behaviours. First, these indirect or proxy measures are not strongly correlated with every dimension of ethnic maintenance and so may not represent every dimension (substantial concept-indicator ‘slippage’). For instance, we know that even as immigrants and their children acquire receiving country language fluency (or, as is increasingly the case, arrive already fluent), many may still retain friendship networks which are primarily comprised of co-ethnics, remain strongly adherent to their original religious affiliation, and continue to identify strongly as members of the sending, rather than the receiving country (Heath 2014). Yet it is these more proximate ethnic maintenance mechanisms or dimensions which we anticipate predicting health behaviours. To take alcohol consumption as an example, friendship network composition will determine exposure to social situations where alcohol is regularly consumed (Urberg, Değirmencioglu, and Pilgrim 1997), religious adherence will determine the acceptability of alcohol consumption (Wallace et al. 2003), and ethnic identity is a determinant of the psychosocial congruence between drinking and one’s sense of self (Gong et al. 2003). It is also unlikely that these more proximate mechanisms operate in parallel. The degree to which they co-vary with a more general mono-dimensional indicator will also differ depending on other sources of variation within immigrant populations: see our discussion of heterogeneity, below.

A second issue with using proxies such as time in the receiving country or receiving country language acquisition is that they conceal a variety of potentially countervailing temporal changes. While time in the receiving country is generally positively associated with contact and identification with receiving country culture and the adoption of receiving country practices, for many immigrants, time in the receiving country is also associated with cumulative exposure to environmental hazards including ethnic and racial discrimination. Thus, it could be the case that cumulative exposure to environmental hazards are driving the negative association between time in the receiving country and unhealthy behaviours – regardless of any parallel trend in declining ethnic maintenance. We need measures of all these factors in order to determine which of them, if any, actually account for changes across time or generation.

Discrimination and weathering

The weathering hypothesis was first introduced by Geronimus (1992) as an explanation for why black women have children at younger ages than white women in the United States. She demonstrated that the risk of low birthweight increased with the age of black women through their twenties, while the risk *decreased* for white women. She attributed this to the cumulative effect of racial inequality on black women which led to a more rapid decline in their health with age. This hypothesis has since been applied in a variety of contexts where minority group members display disadvantaged health trajectories over time. This hypothesis can be understood as encompassing two related channels which could lead to poor health behaviours of immigrants in the UK context. First, racial and ethnic discriminatory practices and historical disadvantage lead to worse socioeconomic positions for minorities and resulting greater negative exposure to poor work and residential environments and unhealthy behaviours (Guintella et al. 2016). Second, racial and ethnic prejudice lead to exposure to overt discrimination, unfair treatment, and harassment of minorities, the stress of which has physiological consequences that lead to ill

health (Geronimus et al. 2006) as well as the adoption of unhealthy coping behaviours (Williams et al. 1997).

The association between perceived discrimination and ill health is well established (Pascoe and Smart Richman 2009). The strongest and most consistent associations between reports of ethnic and racial discrimination and health outcomes are for negative mental health outcomes and health-related behaviours (Paradies 2006). These results are consistently reported by minorities in many countries, including the UK (Nazroo 2003). At the same time, reports of discrimination also tend to rise with increasing time in the receiving country. For instance, in the USA, the children of immigrants are found to be more vulnerable to ‘othering’ and discrimination than the foreign born (Viruell-Fuentes 2007). While not examined in a multivariate framework, there is also descriptive evidence that UK born Bangladeshi and Muslim Indians also report higher levels of harassment than the foreign born (Nandi and Luthra 2016) and discrimination (Platt 2014). Over time and generation as the socioeconomic status of migrants improves, they are more likely to perceive discrimination. Research from the Netherlands finds that it is the most socioeconomically advantaged minorities who perceive the highest levels of discrimination (Verkuyten 2016). Thus, if exposure to and perception of discrimination increases with time spent in the UK and across generations, we may observe worse health behaviours in response to the stress of increased discrimination even in the absence of any changes in ethnic maintenance. It is therefore necessary to examine discrimination and ethnic maintenance directly; and jointly, to unravel the mechanisms behind the immigrant health paradox.

Heterogeneity by gender and culture of origin

The stylized facts of an immigrant health paradox appear to hold in the UK and the USA and many other countries, but these more general findings potentially conceal substantial heterogeneity (Schwartz et al. 2010); see also the Introduction to this Special Issue (Platt and Nandi 2018). Two major sources of heterogeneity are gender and the culture of origin; because cultural norms vary across countries and cultures and within each country and culture group, and proscriptions of behaviour are different for men and women. The smoking prevalence rates in 2015 and the alcohol consumption per capita over 2008–2010 for some of the countries of origin of the ethnic groups studied here clearly show the differences by countries of origin and gender (see Table 1). Specifically, we find that women are less likely to smoke or drink than men in all these countries. Among men, the difference in smoking prevalence rates in these countries vis-à-vis UK is smaller than for drinking. Unhealthy behaviours are not worse in UK vis-à-vis these countries. For example, smoking rates among men are lower in the UK than in almost all countries except for Uganda and Ghana; and per capita alcohol consumption is higher among men in South Africa than in the UK.

Thus, declining ethnic maintenance can only be conceived as negative in instances where the sending country behaviours are more conducive to good health than those prevalent among the majority group in the destination country. But this is often not the case. For instance, incidence of diabetes in India is twice that in the UK, adjusting for differences in the age distribution between the two countries (Shaw, Sicree, and Zimmet 2010: Table 2). It is well known that the South Asian population in the UK has higher rates of diabetes and heart disease, and this is frequently linked to lower levels of

Table 1. Smoking and drinking prevalence rates for men and women in select countries.

	Smoking prevalence rates (15+) ^a		Alcohol per capita (15+) in litres of pure alcohol (2008–2010) ^b	
	2015		Women	Men
	Women	Men	Women	Men
India	1.70%	19.90%	0.5	8
Bangladesh	0.60%	39.50%	0	0.3
Pakistan	2.70%	39.70%	0	0.1
Jamaica	5.90%	29.60%	2.8	7.1
Kenya	1.90%	23.70%	1.7	6.4
Uganda	2.30%	14.90%	5.2	14.4
Ghana	0.40%	12.00%	1.4	5.5
South Africa	6.40%	31.10%	4.2	18.4
UK ^c	20.15%	21.50%	6.9	16.5

Source: ^aWHO global report on trends in prevalence of tobacco smoking 2015.

^bWHO Global status report on alcohol and health 2014.

^cSmoking prevalence rates for UK calculated by authors with *Understanding Society*.

physical activity than among the white British (Williams et al. 2011). In this specific case, we might assume ethnic maintenance to be associated with more negative health behaviours. Similarly, although smoking prevalence is generally lower among minority members than white British, this advantage is primarily concentrated among women, as the cultural attitudes towards smoking intersect with gender. This is also true for physical activity, but in the reverse direction: the lower levels of physical activity recorded among many minority group members in the UK is particularly pronounced among women. Thus any attempt to unpack the immigrant health paradox needs to be sensitive to the considerable heterogeneity among immigrants and their descendants, as was found to be the case in the US (Lopez-Gonzalez, Aravena, and Hummer 2005). Important intersections between gender and specific origins are also noted in general minority-majority comparisons in the UK as well (Jayaweera 2011).

Table 2. Ethnic maintenance and discrimination Indicators, by ethnicity and place of birth.

	Indian		Pakistani/ Bangladeshi		black Caribbean	
	UK born		UK born		UK born	
	No	Yes	No	Yes	No	Yes
Strong ethnic identity	0.76	0.51	0.73	0.54	0.65	0.58
No religious affiliation	0.10	0.23	0.04	0.02	0.25	0.41
Religiosity (scale from 1 to 5)	2.54	2.19	2.88	2.53	2.37	1.67
More than half friends of the same ethnic group	0.88	0.71	0.91	0.85	0.78	0.62
No. of best friends of the same ethnic group	1.96	1.48	1.83	1.66	1.43	1.27
Experienced ethnic and racial discrimination in the past year	0.06	0.12	0.09	0.13	0.11	0.13
	black African		Mixed		Other	
	UK born		UK born		UK born	
	No	Yes	No	Yes	No	Yes
Strong ethnic identity	0.75	0.55	0.38	0.44	0.57	0.68
No religious affiliation	0.07	0.23	0.28	0.61	0.21	0.49
Religiosity (scale from 1 to 5)	3.16	2.66	2.16	1.30	2.04	0.83
More than half friends of the same ethnic group	0.79	0.72	0.56	0.38	0.68	0.44
No. of best friends of the same ethnic group	1.48	1.17	0.51	0.30	1.13	0.28
Experienced ethnic and racial discrimination in the past year	0.08	0.03	0.02	0.08	0.04	0.05

Hypotheses

Drawing from the literature reviewed above, we posit five related hypotheses linking ethnic maintenance, discrimination, and health behaviours. We conceptualise ethnic maintenance as adherence to the behaviours which keep an individual in closer contact to other immigrants and descendants of immigrants from the same origin country. We conceptualise discrimination in narrow terms, measured as ethnic and racial harassment in public spaces. We account for the socioeconomic correlates of harassment via socioeconomic controls (see Section 3). After controlling for socioeconomic status:

Hypothesis 1: UK born minorities will differ significantly from the foreign born. Specifically, we expect they will have lower levels of ethnic maintenance, higher reports of ethnic and racial harassment, and higher rates of smoking and binge drinking than the foreign born.

Hypothesis 2: Minorities with lower levels of ethnic maintenance will be more likely to smoke and binge drink.

Hypothesis 3: Those who experience ethnic and racial harassment will be more likely to smoke and binge drink.

Hypothesis 4: The effect of ethnic maintenance will be more pronounced for drinking than smoking for men, as male smoking prevalence (particularly in Asian countries of origin) are similar or higher to that in the UK.

Hypothesis 5: The effect of ethnic maintenance will be more pronounced for women than for men, as cultural norms for smoking and drinking are more proscriptive of women's behaviour than men's behaviour.

Data and methods

Data

We use data from the first three waves of *Understanding Society*: the UK Longitudinal Household Study (University of Essex 2018), which started in 2009 with a General Population Sample (GPS) of around 26,000 households including an ethnic minority boost sample (EMBS) of 4,000 households with individuals from an ethnic minority background (McFall, Nandi, and Platt 2017). The sample design and coverage, particularly from the perspective of research on ethnicity, is covered in the Introduction of this Special Issue (Platt and Nandi 2018). Questions that are considered to be sensitive and may be answered incorrectly if asked by an interviewer due to social desirability bias are asked in a self-completion questionnaire. This includes questions on drinking, which were asked in the self-completion questionnaires of the 2nd interview wave, that is, during 2010–2011.² Questions on ethnic and racial harassment and ethnic identity were asked in Wave 1 and questions on friendship networks in Wave 3. Additionally, questions on ethnic and racial harassment were only asked of the Extra Five Minute Sample. This sample comprises the EMBS, a 500 household comparison sample from the GPS and all ethnic minorities living in areas of low ethnic minority concentration not covered by the EMBS.

In this analysis we are interested in assessing the five hypotheses described in Section 2. We therefore restrict the analysis to those who report their ethnic group as any group

other than white-British/ English/ Scottish / Welsh/ Northern Irish (refer to as white UK). We also restrict the analysis to adults aged 20 years and older.

The final sample for this analysis was thus non-white British respondents, 20+ years, from the Extra Five Minute Sample (N = 4326) in wave 1. As 97% of minorities in this sample live in England, we exclude 149 respondents residing in Wales and Scotland because our numbers are too few to take into account regional differences. The sample was further limited to those who also completed the self-completion questionnaires and were interviewed in Waves 1, 2 and 3 (N = 3264).

We had complete information on all of the variables used in the analysis for 57% of this final sample. A further 19% (76% of total) of cases had complete data on all variables with the exception of the wave 3 friendship measures. We therefore used multiple imputation (M = 20) with the MI suite in Stata 14 to impute all missing data for the target sample. Our resulting sample size was 2994.

Descriptive statistics from the imputed sample are found in Table S1 in the Supplementary Materials.

Variables

We focus specifically on two health behaviours which are unequivocally detrimental to health: binge drinking (whether drink eight or more units of alcohol in one or more days in the past week for men, or 6 or more units for women) and smoking (whether currently smoke cigarettes). The cut-off for binge drinking is based on UK National Health Service definition as of the time that the data were collected: ‘UK researchers commonly define binge drinking as consuming more than eight units of alcohol in a single session for men, and more than six units for women.’³

Measures of ethnic maintenance

We use a variable that identifies whether the respondent was born in the UK or not to represent generation. While we recognise that this is a crude measure as it does not separate out 1.5, 2 and 2+ generations, our sample size did not allow for these finer distinctions. For similar reasons, we do not control for time since arrival for the UK foreign born. Throughout the paper we refer to the UK born as the second generation and those born outside the UK as the first generation.

We measure ethnic maintenance using five variables – strength of ethnic identity, religious affiliation, religiosity, and the ethnic composition of friends (measured as a total proportion of friendship network and of the three best friends). All five of these variables are intended to capture the amount of exposure and affiliation of the respondent for co-ethnics. We anticipate that respondents who maintain ethnic ties will also maintain drinking and smoking behaviours which more strongly resemble norms in the country of origin.

In the first wave respondents, other than white UK, were asked to report how strongly they identified with their mother and father’s ethnic groups on a scale of 1–10. The highest scoring identity was chosen, and if they report this to be higher than the median (8) then we code that as strong/salient ethnic identification.

Another key measure of identification-orientated ethnic maintenance measured in the first wave is whether the respondents reported that they had a current religion or not, which we coded as 1 = no religious affiliation currently and 0 = has a religious affiliation.

Religiosity was measured by the question ‘How often, if at all, do you attend religious services or meetings?’ Respondents could choose once a week or more, at least once a month, at least once a year, never, and finally only weddings etc.

In the third wave, respondents were asked how many close or best friends they had and if they said at least one, they were asked about the characteristics of up to three best friends including their ethnic group. We identified if one, two or three of their best friends were of the same ethnic group as the respondent. In the third wave, respondents were also asked a more general friendship ethnic composition question: ‘What proportion of your friends are of the same ethnic group as you?’ The possible responses were less than half, more than half, all or none of their friends were of the same ethnic group as them. We use this measure to identify if at least half their friends were of the same ethnic group as them. We assess both measures, using the ethnic composition of close or best friends to represent strong ties, while the ethnic composition of friends, that is without qualifying close or best friends, as representing weak ties.

Ethnic and racial harassment

Ethnic and racial discrimination is a broad concept which includes institutional and covert forms of discrimination as well as direct experiences of interpersonal hostility. In this paper we include only the most direct measure: exposure to ethnic and racial harassment. In wave 1, respondents were asked if they were verbally assaulted in any one of the following places: work, school, college, university, home as well as a host of public places such as the streets, shops, train stations etc. If they said yes, then they were asked to choose a reason from among a list of legally protected categories including age, sex, ethnicity, sexual orientation, disability and others. Respondents were allowed to choose multiple places and multiple reasons. They were also asked a similar series of questions about physical abuse: being physically assaulted, beaten, or kicked. Following Nandi, Luthra, and Benzeval (2016), we have defined ethnic and racial harassment as being physically or verbally attacked in a public place and giving the reason as on account of Ethnicity, Religion or Nationality.

Controls

To examine the relationships between ethnic maintenance, discrimination, and health behaviours, we first report crude differences in smoking and binge drinking between foreign born and UK born minorities, adjusting for demographic differences between immigrant generations including age, sex and ethnic group. As socioeconomic status is associated with ethnic maintenance, discrimination, and health behaviours, in a second specification we further adjust for the highest qualification and main economic activity status of the respondent. We also anticipate that ethnic maintenance and health behaviours will be influenced by both the local and immediate household environment. For instance, respondents who live in a household with more family members are more likely to maintain ethnic behaviours and identities. Similarly, households with lower resources may require stronger intra-familial cohesion and thus greater social pressure for ethnic maintenance. We proxy household resources with the occupational status of the highest status member of the household (NSSEC definition) and the gross household monthly income. We further control for cohabitation with family members: whether the respondent resides with a parent, a child, and/or a spouse or partner.

At the level of the local residential area, we might also expect that minorities who live in a higher concentration of co-ethnics will be more likely to maintain ethnic behaviours and identities. Embeddedness in a local co-ethnic community may also expose respondents to stronger ethnic norms and social sanctions surrounding drinking and smoking than for minorities who live further away from other co-ethnics. Thus, we also control for the proportion co-ethnic at the Lower-layer Super Output Area (LSOA) level. The LSOA is a geographical unit used for statistical purposes and comprises of approximately 600 households surrounding the respondent's residential postcode. To obtain this measure we match the survey data with the census data on the population of ethnic groups in the LSOA of the respondent's residence. As neighbourhoods with a higher proportion of ethnic minorities are also some of the most deprived neighbourhoods, which can independently effect smoking and drinking behaviours (Adams and White 2009), we also control for the LSOA level deprivation index (Index of Multiple Deprivation, IMD) in specifications where we include proportion co-ethnic measure. Finally, living in urban areas may have an independent effect on ethnic maintenance (urban areas are more cosmopolitan) and encourage smoking and drinking behaviour (more opportunities for going to pubs). We therefore also control for whether the respondent was living in an urban area or not.

Methods

All results presented below adjust for clustered survey design (strata and primary sampling unit). Descriptive statistics are further weighted for representativeness using the five minute sample weight provided for wave 2 in Understanding Society.⁴ We estimate the likelihood of binge drinking and (currently) smoking cigarettes using logistic regressions. In every model we include an indicator for UK born with controls for ethnic origins, age and gender. In a second model, we introduce each ethnic maintenance measure, and our ethnic and racial discrimination measure, separately to test for an association with drinking and smoking. The next specification includes controls for socioeconomic status, and the final specification adds measures of the local and household environment: the index of deprivation and proportion co-ethnic in the local area, and whether the respondent lives with a parent, child or partner. We further test for interactions between ethnic maintenance and discrimination with place of birth, gender and ethnic origin and report final results accordingly.

Results

Descriptive results: ethnic maintenance and health behaviours by ethnic group and generational status

To assess our first Hypothesis, we examine whether there is decreased ethnic maintenance and increased harassment among the UK born using the more direct measures described above. The results in Table 2 are very clear: for all ethnic groups, the UK born report lower levels of ethnic maintenance and higher rates of harassment than the foreign born across all indicators, with the single exception that the UK born 'mixed' ethnic group is more likely to report a strong ethnic identity than the foreign born. The UK born who report

their ethnic group as ‘mixed’ are not necessarily of the same ethnic group as the foreign born who report their ethnic group as mixed. So, this difference is less likely to represent a generational change and more likely to represent differences across the two distinct ethnic groups – UK born mixed and foreign born mixed. Also note that the mixed groups are themselves heterogeneous.

Although we are not directly comparing UK born children to their foreign born parents, this evidence is strongly suggestive that generational shifts in religious affiliation and religiosity, ethnic identity and friendship networks are occurring. Generational differences in religious affiliation are particularly strong: with the exception of Pakistanis and Bangladeshis, the proportion of minorities with no religious affiliation increases dramatically from the first to the second generation. While not as stark, we see further evidence of shifts across generations in maintaining a strong ethnic identity, a friendship network that is over half of the same ethnicity, and the number of ‘best’ co-ethnic friends.

We next confirm, in Table 3, what others have found: namely, convergence towards UK norms of smoking and drinking across generations, with higher rates of smoking and drinking among the UK born across all ethnic groups (Hypothesis 1). Indeed, some UK born minority groups have higher rates of smoking and drinking than White British, although this is largely due to their younger age and lower socioeconomic status. Moreover, we also see clear differences in the patterns for smoking and drinking: while the foreign born have much lower rates of binge drinking, the proportion of foreign born men smoking matches or exceeds white British men for most origin groups. Pakistani, Bangladeshi, and Caribbean men ‘import’ the higher smoking prevalence rates from their origin countries (see Table 1).

We also demonstrate heterogeneity in the general cross-generational trend towards worsening health behaviours across ethnic groups and gender (Table 3). For instance, Pakistani and Bangladeshi binge drinking rates remain very low, at less than 3%, for both men and women and for both the first and the second generation. In contrast, although binge drinking rates are very low for Indian women of both the generations, the proportion of Indian men who binge drink doubles from the first to the second generation, from 6 to 13%. Patterns of smoking by place of birth are somewhat more uniform across gender and origin: UK born men and women in essentially every origin group are substantially more likely to smoke than the foreign born. The two exceptions are Pakistani/Bangladeshi and Mixed men, whose high rates of smoking in the first generation fall in the second generation.

Table 3. Binge drinking and smoking prevalence, by ethnicity and place of birth.

	Male				Female			
	Binge drinking prevalence		Smoking prevalence		Binge drinking prevalence		Smoking prevalence	
	UK born		UK born		UK born		UK born	
	No	Yes	No	Yes	No	Yes	No	Yes
Indian	0.06	0.13	0.10	0.23	0.01	0.03	0.04	0.08
Pakistani/ Bangladeshi	0.02	0.03	0.28	0.14	0.01	0.01	0.02	0.08
black Caribbean	0.06	0.21	0.18	0.40	0.04	0.09	0.11	0.32
black African	0.11	0.10	0.11	0.20	0.02	0.17	0.04	0.29
Mixed	0.30	0.27	0.23	0.25	0.02	0.26	0.21	0.17
Other	0.05	0.18	0.13	0.07	0.11	0.07	0.14	0.17
White British		0.31		0.21		0.15		0.20

Next, we turn to multivariate analysis to determine whether these trends – decreasing ethnic maintenance, increasing exposure to harassment, and declining health behaviours – are linked.

Multivariate analysis – logistic regressions

We first estimated smoking and binge drinking models using logistic regressions including sex and ethnic group interactions with place of birth, ethnic maintenance and harassment (full results available on request). For binge drinking, we do not find statistically significant interactions between sex and any ethnic maintenance measure, or between sex and generational status. We therefore present only main effects for this outcome. For the smoking models, interactions between sex, the ethnic maintenance measures, and generational status were statistically significant and are included in the results. Finally, we interact our key variables – place of birth, ethnic maintenance and harassment – with ethnic origins. Interactions between key variables and ethnic origin were not collectively statistically significant, although some effect sizes were large. We therefore do not include these in our discussion of the main findings but do summarise ethnic differences at the end of the results section.

Smoking (See Tables 4 and 5)

We see in the first model that, after controlling for ethnic group, age and sex, UK born ethnic minorities are more likely to smoke than those born outside the UK. When we allow the association between place of birth and smoking to differ by gender, we find as expected from our bivariate results that this generational difference is primarily due to the difference in smoking behaviour of first and second generation women. This provides initial support for Hypothesis 1 and Hypothesis 4: the UK born are more likely to smoke, but this difference is much stronger among women than men.

Next, in a series of specifications we examine association between each of our ethnic maintenance variables and the likelihood of smoking. As expected in Hypothesis 2, those with weaker ethnic ties are more likely to smoke: those with no religious affiliation, who attend religious services less than monthly, who have fewer best friends of the same ethnicity, and who have a friendship circle that is less than half of the same ethnicity, are more likely to smoke than those who maintain stronger ethnic ties. We also assess Hypothesis 3, and find that reporting ethnic and racial harassment is positively associated with smoking. However, we also see, as anticipated in Hypothesis 5, that the association between ethnic maintenance and smoking only holds for women. Interactions between gender and ethnic maintenance are statistically significant for all measures. Although not statistically significant, the large negative coefficient for the interaction of male and ethnic and racial harassment demonstrates that the positive relationship between harassment and smoking primarily holds only for women as well. We think this may be due to an omitted variable – likelihood of being in a public place. In contrast to ethnic minority men, whose smoking behaviours are less likely to be disapproved of at home, we expect that ethnic minority women who smoke are likely to be in public spaces more often, which also puts them at greater risk of harassment as defined in this analysis.

We next test whether these results can be explained by compositional differences between generations and between those with stronger and weaker ethnic maintenance.

Table 5. Predicted probabilities of smoking, by ethnic maintenance, discrimination and gender (Based on estimates shown in Table 4).

	Men	Women
<i>Ethnic Maintenance</i>		
Has current religious affiliation	0.24	0.07
No current religious affiliation	0.22	0.21
<i>Attends religious service</i>		
Weekly or more	0.17	0.06
Less than weekly	0.20	0.07
Less than monthly	0.24	0.16
Never or practically never	0.24	0.19
Only at weddings/funerals	0.30	0.18
Half or more friends of the same ethnic group	0.24	0.09
Less than half of friends are of the same ethnic group	0.19	0.14
Three best friends are of the same ethnic group	0.24	0.06
None of the best friends are of the same ethnic group	0.21	0.12
<i>Discrimination</i>		
Experienced ethnic and racial discrimination in the past year	0.22	0.15
Did not experience ethnic and racial discrimination in the past year	0.23	0.10

In Model 3 we report coefficients controlling for the socioeconomic status of the individual respondent, and Model 4 reports coefficients after controlling for environmental factors such as the ethnic composition and deprivation levels of neighbourhoods, and the presence of a partner, child, or parent in the household. Even after including these controls, which are correlated with ethnic maintenance, women who have no religion and lower religious attendance, who have fewer co-ethnic friends, and who experience ethnic and racial harassment are more likely to smoke than women with stronger ethnic attachment and do not experience harassment.

While these results demonstrate that ethnic maintenance and harassment are both associated with smoking for minority women in England, generational differences in ethnic maintenance and harassment do not seem to *explain* the differences in smoking behaviour between the UK and foreign born. The size of the UK born coefficients remains fairly stable after adding the ethnic maintenance and harassment measures, across all specifications.

The statistically significant results are further summarised in Table 5, where we report the predicted probabilities derived from Model 4 for men and women with different levels of ethnic maintenance and experiences of ethnic and racial harassment, controlling for demographic, socioeconomic, and environmental factors. It is immediately evident that the differences in smoking probabilities between minorities with differing levels of ethnic maintenance are much smaller for men than for women. For men, the differences between those with weaker and stronger levels of ethnic maintenance are negligible with the exception of having half or more friends of the same ethnicity, which actually works in the opposite direction than expected as men whose friendship network is less than half of the same ethnicity show a lower probability of smoking than those with more ethnically homogeneous networks. In contrast, we see that the differences in smoking probability by ethnic maintenance are substantial for women: women who report a religious affiliation are three times less likely to smoke than those who do not, women who have no best friend of the same ethnicity are twice as likely to smoke as those with three same-ethnic best friends. The differences by ethnic and racial harassment and the ethnic composition of close friends are smaller but still pronounced: women who experience ethnic

Table 7. Predicted probabilities of binge drinking, by cultural maintenance.

Strong ethnic identity	0.05
Weak or no ethnic identity	0.07
No cultural participation	0.05
Cultural participation	0.06
Has current religious affiliation	0.08
No current religious affiliation	0.04
Attends religious service	0.04
Weekly or more	
Less than weekly	0.07
Less than monthly	0.10
Never or practically never	0.10
Only at weddings/funerals	0.13
Half or more friends same ethnic group	0.05
Less than half friends of the same ethnic group	0.07

to binge drink. This provides initial support for Hypothesis 4: a wider range of ethnic maintenance factors are associated with binge drinking than smoking, and ethnic maintenance effects *both* men and women when predicting the likelihood of drinking, rather than only women for smoking. This negative association between ethnic maintenance and binge drinking can be understood in light of the lower rates of alcohol consumption in most of the origin countries considered here: behaviours which bring one closer to one's own ethnic group reinforce norms of low or no alcohol consumption. In contrast to the results for smoking, we do not find a significant association between ethnic and racial harassment and binge drinking; thus Hypothesis 3 is not supported for this outcome.

In Model 3 we include controls for socioeconomic characteristics, and all of the statistically significant variables actually increase slightly in size, suggesting that socioeconomic status is acting to suppress the positive association between ethnic maintenance and binge drinking. In Model 4, we also control for the local area deprivation, proportion co-ethnic, and household composition variables. While there is no association between local deprivation and binge drinking, those minorities who reside in areas of higher co-ethnic concentration are less likely to binge drink, showing again more evidence of cultural social control for binge drinking than for smoking. Moreover, once we control for geographic and household composition, the association between binge drinking and ethnic identity become statistically insignificant.

As with smoking, the inclusion of these variables does not substantially reduce the size of the coefficient for UK born, suggesting that although ethnic maintenance matters, it does not account for generational differences in binge drinking.

These results are further displayed as predicted probabilities in Table 7. Because the probability of binge drinking is so much lower than the probability of smoking for minorities in the UK, the differences by ethnic maintenance, though statistically significant, are much smaller in size. We see that those who report a stronger ethnic identity are, on average, nearly 50% more likely to binge drink, for instance, but this is a difference of only 2 percentage points. Similarly, those who do not participate in informal cultural events, and who report half or more of their friends as the same ethnicity, have small but significantly lower probabilities of binge drinking than those who participate culturally and have a more diverse friendship network. The biggest differences lie between those who do and do not report a current religious affiliation: on average, those who do not report a religious affiliation are twice as likely to binge drink.⁵

Sensitivity analysis: variation in the role of ethnic maintenance on smoking and drinking across ethnic groups

As cultural norms vary by country of origin (see, for instance, Berrington 2018), we also test if the association between ethnic maintenance and health behaviours holds for all ethnic groups. If the association of ethnic maintenance and these behaviours are in opposite direction across different groups, then the overall effect will hide these differences. Possibly due to a lack of statistical power, interactions testing for differences in the effect of ethnic maintenance by ethnic origin were statistically insignificant. However, we wish to note a few substantively important variations observed from the interaction models.

Smoking

We noted above that ethnic maintenance appeared to have little effect on the smoking behaviour of minority men. This differs somewhat by ethnic origin. For instance, while ethnic identity and friendship network composition had no association with smoking for the South Asian groups in our sample, we find that black Africans who report a stronger ethnic identity or having more co-ethnic friends are less likely to smoke. Ethnic maintenance thus seems to matter for more for men from this origin, potentially due to the fact that this is the only regional origin group where smoking prevalence is lower for men than in the UK (see Table 1). In contrast, black Caribbean men's smoking appears more responsive to harassment: in the stratified models it appears that those who do not participate socially, and who experience ethnic and racial harassment, are more likely to smoke. Finally, ethnic minorities in all ethnic groups other than Pakistanis and Bangladeshis are less likely to smoke if they report a current religion. Again, Table 1 suggests an explanation for this, as smoking rates in these two countries are particularly high and thus smoking probability may be less influenced by ethnic maintenance measures.

Binge drinking

In our model above we found that nearly all forms of ethnic maintenance reduce the probability of binge drinking, in a more consistent manner than for smoking, which is what we anticipated given the cultural norms present in most origin countries (Hypothesis 4). However there was some origin variation in this general association. For instance, having no religion reduced the probability of binge drinking for every group with the exception of Indians. Moreover, the association between many of the other ethnic maintenance variables and binge drinking, while present, was weaker for those of Indian origin than for other groups. For instance, Pakistanis and Bangladeshis demonstrated a stronger negative association between ethnic identity, friendship network composition and binge drinking than otherwise similar Indians. We take from these findings that ethnic maintenance is potentially less protective for Indians than for the other groups, potentially due to the greater affinities between the highly positively selected Indian immigrants and white British along a variety of dimensions, including greater economic parity, particularly for men (Longhi and Platt 2008), as well as political alignment (Heath et al. 2011).

In sum, while we find a general positive association between ethnic maintenance and smoking and binge drinking, as discussed above, this needs to be tempered with the

knowledge that this relationship is heterogeneous, and sensitive to smoking, drinking, and religious cultural patterns in the origin countries.

Discussion & conclusion

The goal of this paper was to *directly*, and jointly, measure the association between ethnic maintenance, discrimination (as measured by harassment) and health behaviours among ethnic minorities in England. Using new measures from a recent large scale data source on UK minorities, we found minorities who practice stronger ethnic maintenance also exhibit lower likelihoods of negative health behaviours, for both men and women, and for both smoking and drinking. We also found some evidence of an association between poor health behaviours and ethnic and racial harassment, although this was statistically significant for smoking and for women only.

This is the first study to provide direct empirical evidence in support of both the discrimination and the ethnic maintenance hypotheses as applied to the smoking and drinking behaviours of minorities in England. It provides evidence of the role of health behaviours in the immigrant health paradox in a receiving context with nationalised health care provision, the UK, and also among immigrant origin groups for whom the paradox has been less thoroughly studied. However, this paper also demonstrates the importance of a contextualised interpretation of these general findings. Most importantly, we show the gender and ethnic specificity of the relationship between ethnic maintenance and health behaviours. In contrast to Latinos in the United States (Lopez-Gonzalez, Aravena, and Hummer 2005), our findings suggests that for the origin groups we study here, lack of ethnic maintenance is more harmful for women than men, on average, and more strongly associated with binge drinking than smoking. By explicitly considering gendered smoking and drinking prevalence rates in the countries of origin, we are able to offer a more nuanced explanation of why this might be the case. Ethnic maintenance is not a monolithic ‘good’ in this area – rather, it is only for those specific origins, and genders with protective cultural norms that ethnic maintenance is conducive to better health behaviours.

Beyond its implications for the more specific debates surrounding ethnic maintenance and health behaviours, this paper also speaks to emerging debates in migration studies on the *multidimensionality* of the integration experience (Bean, Brown, and Bachmeier 2015; Heath 2014). The underlying assumption behind most theoretical models of immigrant integration is the presence or absence of causal links between social, cultural, and geographic assimilation and a range of societal rewards – most broadly conceived as structural or political integration. At the level of theory much of this work assumes that these links operate in a fairly uniform way across outcomes. In other words, that increased social interaction with the white British population should encourage (or not) higher educational attainment, better jobs, and increased political participation. Yet it is entirely possible that the adoption of receiving country behaviours or social ties can lead to some societal rewards – say, better jobs, while having little impact on other dimensions of social life, for instance political participation. Also, nearly entirely excluded from the broader theoretical debates surrounding immigrant integration is any serious consideration of health and health behaviours.

Although the central aim of this paper is to address a narrower debate about changes in immigrant health, we believe it speaks to broader concerns about the potential beneficial

effects of cultural maintenance for some immigrant origin groups. Most immigrant origin groups are positively selected on health, and indeed, across other dimensions as well, such as educational attainment (Ichou 2014). They may also be ‘importing’ norms, behaviours or identifications which are a source of advantage in the receiving country (Kasinitz, Mollenkopf, and Waters 2008). We believe that this paper suggests that any assessment of the relationship between intergenerational convergence towards receiving country characteristics and ‘better’ or ‘worse’ outcomes should incorporate health behaviours as an indicator as well.

Notes

1. For instance as noted by Jasso and Massey (2004, 261) ‘These new surveys must also incorporate measures of the principal pathways that affect health trajectories. Such measures would include diet, income, and cultural support networks.’
2. Understanding Society has a two year field work period.
3. <http://www.nhs.uk/Livewell/alcohol/Pages/Bingedrinking.aspx>. Moreover, we replicated the binge drinking analysis using the indicator of whether the respondent had a drink in the past 12 months as an additional robustness check. This behaviour is more normative in the UK context and also is more congruent with the smoking measure. We find largely the same results, which are reported in Table S2 in the Supplementary Materials.
4. We use Stata 14 `mi` and `svy` prefixes for all commands.
5. These differences are replicated for a more common outcome, ever drink in past 12 months. Results for this analysis are in Table S2 in the Supplementary Materials.

Acknowledgements

We would like to thank anonymous referees, seminar and conference participants at the 2018 Population Association of America Annual Meeting, 2017 Understanding Society Scientific Conference, Annual Conference of the British Society for Population Studies 2017, for their helpful comments and suggestions. Understanding Society is an initiative funded by the Economic and Social Research Council and various Government Departments, with scientific leadership by the Institute for Social and Economic Research, University of Essex, and survey delivery by NatCen Social Research and Kantar Public. The research data are distributed by the UK Data Service.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This research was supported by funding from the UK Economic and Social Research Council under the Secondary Data Analysis Initiative Phase 3 (ES/N011791/1) and Understanding Society (ES/K005146/1).

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