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Geography, psychology and the 'Big Five' personality traits: Who moves, and over what distances, in the United Kingdom?

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Abstract

Personality, as measured by the 'Big Five' dimensions of agreeableness, openness, extroversion, neuroticism, and conscientiousness, has been explored in the Social Psychological literature as a predictor of migration but so far has received very little attention in the geographical literature, which is surprising given its predictive importance and also evidence that the selectivity of migration shapes area personality profiles. Using the *Understanding Society*¹ dataset, this paper analyses how personality influences whether a respondent moves or not over a five-year period and, if they do, how far they move. After controlling for individual socio-demographic characteristics, it is found (i) that those who score higher on Conscientiousness and Neuroticism are more likely to expect to move in the next year; (ii) that only those who score highly on extroversion actually made at least one move during the five-year period; (iii) that Openness is positively associated with making a long-distance move ($\geq 50\text{km}$), and (iv) that the pattern for (iii) is reversed for short-distance moves ($< 10\text{km}$). These findings are significant for two reasons. Firstly, they show that personality should be more central in migration studies and that Geography can usefully seek disciplinary insights from Psychology. Secondly, they help us take a step towards a better understanding of the relationships between geography, personality, and spatial mobility.

Keywords: Personality; Migration intentions; Migratory behaviour; Longitudinal analysis

¹ Understanding Society, University of Essex, Institute for Social and Economic Research, NatCen Social Research, Kantar Public. (2019). *Understanding Society: Waves 1-9, 2009-2018 and Harmonised BHPS: Waves 1-18, 1991-2009*. [data collection]. 12th Edition. UK Data Service. SN: 6614

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Introduction

Within Population Geography internal migration is normally understood by recourse to such concepts as the life course (Bernard et al 2014), as a response to family change (Mulder and Wagner 1993), or in answer to employment changes (Green 2018). There is a vast literature on the socio-demographic, housing, and labour market factors empirically associated with whether people move or not, and the distances over which they move (see, for example, Thomas et al 2015; Niedomysl 2011; Findlay et al 2015). In the 1960s and 1970s Geography engaged with Psychology as migration patterns and behaviours were viewed through the lenses of individual perceptions, behaviours, and imperfect decision making (Gold 1980). However, until recently the role of personality traits on migration was until largely ignored as ties between the disciplines atrophied. There may, however, be room for interdisciplinary exchanges again especially given the recent emerging interest in Social Psychology in the relationships between personality, migration, and geography (see, for example, Jokela 2009; Lönnqvist et al 2011; Rentfrow et al 2015).

Recent interest in the relationship between personality, migration, and geography. Firstly, there have been explorations of how personality influences decisions to migrate or not (Jokela et al 2008; Tabor et al 2015), something which has not been considered in recent geographical literature on migration. Secondly, within 'Geographical Psychology', there has been an increasing concern with mapping regional differences in personality traits (Rentfrow et al 2015) and their role in influencing political attitudes and voting (Garretsen et al 2018). The common theme linking these two research directions is migration; personality has been shown to increase the propensity for some people to move whereas selective migration might mean that the cautious and risk averse stay put and are left behind as the more adventurous (who are open to the new) move out. More generally, an individual experience of migration seems to be related to a person being more open and trusting of out-groups such as immigrants (Bjarnason et al 2019).

Given the context described above, this paper seeks to make two contributions. First, it aims to reintroduce personality to the analysis of internal migration, showing how the Big Five Personality Traits (hereafter the Big 5) of openness, neuroticism, conscientiousness, agreeableness, and extroversion influence (a) the intention to change address; (b) to change address in actuality; and (c) to shape whether someone is a short- or long-distance migrant. The next section reviews the literature on personality and migration. Following this, the *Understanding Society* dataset used to answer the above questions is described together with

the methods that were used. Then, finally, the key findings are discussed before the paper concludes by setting out the implications of the analysis.

Literature review

The “Big 5” personality traits are a widely accepted measurement in the literature on personality and migration. Openness, Agreeableness, Extroversion, Conscientiousness, and Neuroticism are summaries that suggest “that most individual differences in human personality can be classified into five broad, empirically derived domains.” (Gosling et al 2003, 506). Each of the Big 5 is a continuum that runs between two opposing poles so the trait of extroversion, for example, runs between introversion and extroversion whilst openness scores people on a scale that runs from the opposite pole of being closed. Each are abstractions of more specific constructions such as ‘sociability’, ‘trust’, or ‘curiosity’ which themselves are derived from responses to specific questions asking how individuals see themselves, what they prefer, or how they have behaved in certain situations.

As an individual difference measure, the Big 5 classifies an individual as falling somewhere each trait continuum and ascribes attributes accordingly (Costa and McCrea, 1987). Those scoring high on Openness tend to be intellectually curious, appreciate adventure and variety in their experience. Those classified as high on Conscientiousness are characterised as having a strong sense of duty, self-discipline and control. Extroversion is associated with a breadth of activities and engagement with the external world, while Neuroticism is characterised by the experience of a range of negative emotions and a low tolerance for stress. Those high in Agreeableness tend to value social harmony and place cooperation above self-interest. All traits are orthogonal, so that scoring highly on one does not necessarily predict a score on another.

The number and type of questions used to measure the traits vary according to the specific framework that is being used (see Gosling et al 2003), but nevertheless seek to capture the same generic information for the same purposes of constructing the Big 5. The full literature on personality is, of course, vast and the Big 5 have been criticised (see, for instance, Block 1995) so this very brief review cannot do it justice. It is, nevertheless, worthwhile to comment on the further question of whether personality is fixed or mutable (Hudson and Fraley 2015). Within the psychology literature there appear to be two broad positions. The first is that personality is fixed and possibly biologically determined. The second is that personality traits are to some degree mutable, and are shaped by ageing and maturation, and social experiences over the lifecycle. We cannot adjudicate between these two positions but raise this debate as an issue that influences the interpretation of the later findings.

The main contributions to the literature on personality and migration have been made by social psychologists. Much of it has used data from Finland, the United States and New Zealand, with an example from Australia; there appear to have been few studies using UK data. In a prospective study of young people aged 15 to 30 in Finland, movement to urban areas and longer distance migration were found to be related to higher levels of sociability and high emotionality scores were positively related to leaving the home municipality and also to shorter distance moves. It was concluded that temperament influenced whether people migrated (or not) and was important in the selection of destination (Jokela et al 2008). In the United States, Jokela (2009) found that high openness and low agreeableness were related to higher within and between state migration whilst high extroversion scores increased within-state migration. Neuroticism and conscientiousness, in contrast, seemed to have no impact on migratory behaviour. Campbell (2019), in an analysis of the Household Income and Dynamics in Australia study (HILDA) examines how personality influences migration intentions, certainty around these intentions, actual outcomes, and how strongly intentions relate to outcomes. The migration intentions and outcomes are particularly pertinent for our analysis with Openness, Extroversion being positively related to intentions to move (and Conscientiousness negatively), and Extroversion being positively related to making a move in reality. These three contributions have concentrated on internal migration within countries.

Personality has also been investigated in relation to international migration. Silventoinen et al (2008) used a large-scale study of twins born in Finland to examine the factors associated with emigrating to Sweden. They found that those who were dissatisfied at an early stage with life were more likely to leave Finland as were those who poor health behaviours such as smoking and drinking alcohol. For men, they also noted that neuroticism extroversion and unemployment also increased the probability of emigration, and they concluded that the self-selection of migrants extended to health and personality. It is interesting that, neuroticism and unemployment were significant in this analysis (unlike Jokela (2009)), perhaps reflecting that, among this cohort, neurotic individuals are more sensitive to the economic stressors predicting cross-border movement. Using a modified version of the Big 5, Tabor et al (2015) found intentions to emigrate from New Zealand were positively related to openness (and previous overseas experience) but negatively related to agreeableness and conscientiousness with individuals scoring highly on these dimensions more likely to intend to remain within New Zealand.

There is thus some evidence that personality traits have some impact on the intention to migrate whether internally, within countries, or internationally, between countries. It is

interesting to note that Openness seems to be consistent as a predictor of migration and agreeableness and conscientiousness with either non-migration or shorter-distance moves with inconsistencies about the role played by an individual's neuroticism level. However, the role of personality in influencing migration is far from straightforward. There is a growing evidence for geographical differences in personality, for example in Britain (Rentfrow et al 2015), and also reason to suspect that personality, whilst to a large extent fixed, is also framed by life experience and lifecycle stage (Hudson and Fraley 2015). This indicates that any in-depth exploration of the relationship between personality and migration should make controls for age and geographical region at least but would ideally control for the socio-demographic correlates of migration more commonly used by population geographers such as educational qualifications, economic activity, and housing tenure.

There are several gaps in the literature on personality and migration. The most obvious concerns internal migration and whether it has been possible to deal effectively with types and distances of moves. This has been done to some degree with an exploration of move type (eg within or between state in the USA, Jokela (2009)) or the qualitative nature of migration (eg to/from an urban municipality, Jokela et al (2008)). There does not seem to be, however, an analysis of personality and its relationship to migration distance (as a direct measure rather than a transition between administrative units). In addition, previous research has typically conflated attitudes towards mobility (which might be expected to be related to personality disposition) and actual mobility (which is more likely to be a behavioural outcome and also more attributable to external circumstances), something which could be usefully dissociated when considering the psychological predictors of moving.

Following this brief discussion, four questions have been identified as the focus for the paper: (1) How do the Big 5 personality traits influence whether someone moves in the UK? (2) Which of the Big 5 are associated with someone either being a short- or a long-distance mover? (3) Which of the Big 5 remain significant after individual socio-demographic and geographical controls are made? (4) Are the results of the analyses with regard to the Big 5 comparable to those noted in the review?

Data and methods

Very few secondary data sources include information on individual personality, migration, and socio-demographic characteristics. To our knowledge, the only suitable UK data source for the analysis is *Understanding Society*, a longitudinal survey that follows on from the British Household Panel Survey (BHPS). It covers all age groups and parts of the UK, and repeatedly contacts the same people to trace them over a long duration, thereby providing in-depth data

over the life course. This not only collects information on all of these topic areas but also has the advantage of being longitudinal which allows relationships between variables at time T and events recorded by time T+1 to be explored prospectively. This frees analyses from the constraints imposed by cross-sectional or retrospective analysis and allows stronger inferences to be made about causality. The data used in this analysis is taken from the General Population Sample and uses the individual files from Wave 3 (2011-13) to Wave 8 (2016-18). Wave 3 was selected as the starting point because data on the Big 5 were collected then. Wave 8 was chosen because there was a question on Brexit voting intention (see Alabrese et al 2019) and this is relevant to our wider project.

This therefore gives approximately five years during which migration events can occur. *Understanding Society*, in common with all longitudinal surveys, experiences attrition between waves. This arises from non-response which occurs for various reasons. It means that some demographic groups can be overrepresented relative to the initial sample whereas others are underrepresented. There are various ways to cope with these biases but one of the simplest approaches is to use weighting and therefore the individual survey dataset Wave 8 weight (*h_indinus_lw*) was used. All tables henceforth use this weight although it should be noted that models were also run using the unweighted data to check the robustness of results.

The explanatory variables were all selected from Wave 3 and so the analysis focussed on migration events captured between Wave 3 and Wave 8 in relationship to the starting conditions observed at Wave 3. The explanatory variables selected were the Big Five personality traits; geographic region as measured by standard government region; urban/rural residence; sex; economic activity; educational qualification; age; housing tenure; and whether the respondent felt their neighbourhood was agreeable, cohesive, and if they felt they were similar to the people who lived there and they trusted them. For these four neighbourhood variables of agreeableness, cohesion, similarity, and trust, the 'strongly agree' and 'agree' categories were coded together to create a dummy that could be compared with the remainder (unsure, disagree, and strongly disagree). Educational qualifications were collapsed into university-level, school-level, and no qualifications, housing tenure into owner occupied, social rented, and private rented, and economic activity in self-employment, paid employment, unemployment, and economic inactivity. Partnership at Wave 3 (whether or not a sample member was in a partnership) was also included as was partnership change (whether a respondent entered or left a partnership between Waves 3 and 8) since these variables have been recognised as being associated with migration decisions. Age was treated as a continuous variable centred around its mean. The socio-demographic characteristics that were included have often been used in migration modelling (see, for example, Boyle et al 2008;

Cooke and Mulder 2009; McCollum et al 2020; Shuttleworth et al 2020; Green 2018) with ample empirical evidence that they are related to whether migratory moves are made or not and also the distance of move. The variable 'expect to move' was used as an explanatory variable and as an outcome variable but in different models.

The first outcome variable to be used to was whether a respondent expected to move in the next year, coded as one if they expected to move, zero if not. Address changes from the previous wave were recorded in each *Understanding Society* wave and these were then used to compute other outcome variables for later models. These permitted (a) whether at least one address change was made between Wave 3 and Wave 8 to be computed. Additionally, in 2019, data became available for all waves on the distance of move when an address change was made. This was measured in kilometres as the distance between the postcode centroid recorded at time T and time T-1. This was used to calculate whether (b) only short-distance moves less than 10km had been made; (c) whether a move of 50km or more had ever been made; and (d) the total distance moved summed for an individual overall their moves. The distance cut offs are to some degree arbitrary but they do reflect usage elsewhere in the literature (Champion et al 2017; McCollum et al 2020) where housing moves of equal to or greater than 50km, for instance, are argued to be associated with fundamental changes in workplace or education. The variable counts and rates (and where appropriate maxima, minima, and means) are presented in Tables 1a, 1b, and 1c.

The modelling strategy was incremental. Firstly, on the base of all respondents, the personality and socio-demographic characteristics associated with expressing an expectation to move next year or not are explored. Secondly, on the same population base, whether someone actually changed address or not between Wave 3 and Wave 8 is considered with the addition of 'expectation of moving in the next year' as an explanatory variable. Thirdly, only on the base of those who made at least one address change, analyses are presented of (a) those who made only moves of less than 10km and (b) those who made at least one move of 50km or more. Finally, the correlates of total distance moved are analysed on the population base of address changers. This variable was log 10 transformed to normalise it to meet the assumptions for regression modelling.

Standard multivariate analytical techniques are used to undertake the relevant analyses. Where outcome variables are binary, logistic regression is used. When the outcome variable is continuous linear regression is appropriate. The models are all multilevel, estimated using the MIXED procedure in SPSS. This is because there is the possibility of multiple respondents nested within the same household. Including the partnership variables allows for migration

decisions being co-determined; a multilevel approach goes further by recognising the hierarchical structure of the data and thus providing more robust results. The central focus of the paper is on the estimation of fixed effects with the random part of the models being of far less interest. We therefore present only the fixed effects. The modelling strategy adopted was to estimate incrementally a series of models for each outcome variable to understand how the association between the Big 5 and the outcome changed as different socio-demographic control variables were added in blocks. The analysis starts with (1) only the Big 5 being used. It then (2) adds centred age and sex before adding (3) region and urban/rural location. Following that (4) educational qualifications, partnership status, economic activity, housing tenure and expect to move (in the later models) are added before the full model which (5) includes all the above plus the neighbourhood variables is estimated. The rationale for this was that personality might have a direct effect on migration intentions and behaviour but could also have an indirect effect via other variables such as partnership status, educational qualification, and age. In proceeding incrementally, and examining how far the effects of the Big 5 are 'mopped up' as each variable block is entered, it is possible to judge how personality is related to migration intentions and outcomes.

Results

Table 2 presents five models for each of the outcome variables according to the schema set out above where Model 1 is the Big 5 only, Model 2 the Big 5 plus age and sex, Model 3 the Big 5, age, sex, region, and urban/rural, Model 4 is Model 3 with the addition of education, housing, economic activity, expect to move, and partnership, and Model 5 is the full model (Model 4 with the addition of the neighbourhood variables). The results from the full models are tabulated only in Appendix A but will be referred to in the text. All coefficients marked in **bold** are statistically significant at the 5% level. For the 'expect to move' outcome, the Big 5 only model (Model 1) shows that Openness has a large negative effect whilst Extroversion has a smaller positive effect. The addition of age and sex in Model 2 removes Extroversion as being statistically significant, flips the sign of Openness and sends Neuroticism positively significant. This suggests that the effects of the Big 5 are mediated through age and sex, echoing comments in the literature review. The addition of the geographical variables in Model 3 has little substantive effect but the addition of the individual variables in Model 4 leaves only Neuroticism as statistically significant. Finally, the addition of neighbourhood variables in Model 5 leaves Neuroticism as statistically significant, but also means that Conscientiousness has a large and positive effect. Considering these results, it seems that personality has a direct independent effect after controlling for other variables but that it is possible that there are less direct routes through neighbourhood perceptions and influence on individual characteristics.

In moving at least once between Wave 3 and Wave 8 a different pattern is seen. In the base model with the Big 5 only, Agreeableness is statistically insignificant with Extroversion, Neuroticism, and Openness having positive effects (Conscientiousness is negative). The addition of age and sex removes the significance of Conscientiousness but also reduces the size of the effects of Extroversion, Openness and Neuroticism suggesting that age and sex have some mediating effects. As before, adding region and urban/rural does not change the picture but the addition of personal characteristics has a major effect leaving only Neuroticism with a statistically significant but substantively very small positive effect. The final model drops Neuroticism but restores the positive effect of Extroversion. Once again, this indicates that the association between the Big 5 and individual socio-demographic traits and neighbourhood perceptions maybe important.

The models above were based on the whole sample. The next three models on types of move by distance (and total distance moved) are estimated on the base of movers only. We examine first the model for those who only made moves of less than 10km. This story is quickly told. In Model 1, Extroversion has a statistically significant effect whereas Openness has a negative significant effect that is substantively greater. The addition of age and sex remove Extroversion but Openness persists in a large and statistically significant negative effect although slightly diminished by the addition of other variables. For those making at least one move of 50km or more the situation is more complex. Openness remains statistically significant and positive across all five models whereas Conscientiousness is negative and significant for Models 1, 2, and 3. This suggests that Openness is independently significant but that the effects of Conscientiousness are expressed partly through individual characteristics. Finally, in modelling the total distance moved between Wave 3 and Wave 8, Openness is statistically significant across the full suite of models (from Model 1 to Model 5) whereas Conscientiousness and Neuroticism are significant only in Model 1. Openness therefore remains significant even in the presence of other control variables whilst the statistical significance of the other variables is 'mopped up'.

In presenting the results, we finally survey the findings of the full models in Appendix A to establish the robustness of the analysis by demonstrating other relationships in the sample. Looking at 'expectation of moving', being self-employed has a negative effect as does increasing age, living in an agreeable neighbourhood, being similar to one's neighbourhood, and being in a partnership. On the other hand, being a private renter and having university qualifications are positively associated with expectation of moving. For 'moving at least once between Wave 3 and Wave 8', there are statistically significant negative relationships with age,

living in Northern Ireland, being unemployed, being in a partnership at Wave 3 but positive significant coefficients for partnership change, university qualifications and private renting. Long and short-distance movers are differentiated in the results; living in Northern Ireland is positively related to moving 'only less than 10km' but negatively to making 'at least one move of 50km or more' as is being in paid employment. Living in a rural area decreases the chances of moving only less than 10km as does having school- or university-level qualifications relative to those with none. Being in rented accommodation is positively linked to short-distance moves. Having university qualifications is positively related to longer-distance moves as expected. Broadly the same patterns and relationships are observed for total distance moved. The significance and signs of the socio-demographic variables that are normally used in migration studies such as age, qualification, and housing tenure are thus consistent with other studies of the individual drivers of migration (see, for example, Champion et al 2017; McCollum et al 2020) and this gives considerable confidence in the robustness of the results.

Discussion

The analysis shows that selected personality traits have an independent effect on (a) the expectation of changing address; (b) address changes in actuality; and (c) in shaping whether someone is a short- or long-distance migrant even after controlling for age, region, economic activity, educational qualification, housing tenure, partnership, and neighbourhood characteristics. The same patterns were found regardless of whether the weighted or the unweighted data set was used, again increasing confidence in the reliability of the results. With some confidence, we can thus assert that Neuroticism and Conscientiousness were predictors of expecting to move, Extroversion a predictor of making at least one move between Wave 3 and 8 whilst Openness, was a robust predictor of moves of different length. Our first finding is therefore that individual personality traits should be considered more seriously as an element in the analysis of migration, whether in terms of propensity to move, or in influencing the distance of the move. A second, more tentative finding, is that the Big 5 partly operate upon migration expectations and making a move in reality through individual characteristics and neighbourhood perceptions. However, once a move has been made, these intermediary variables are less importance in shaping the distance moved when using the base of those who have either decided to move (or who have been forced by other circumstances) to change address.

These findings can be compared with those noted earlier in the literature review (Jokela et al 2008; Jokela 2009; Tabor et al 2015). Those researchers had found that the personality trait of Openness was a predictor of both short and long moves among US respondents (Jokela, ,2008) and emigration among New Zealanders (Tabor et al., 2015). Given what we know about

the relationship between Openness and seeking adventure and new experiences, this is to be expected and our findings also support this. Our results also point to the role of Extroversion in predicting an expectation of moving and also in reality making an address change. This accords to some extent with the findings of Jokela who showed that Extroversion predicted interstate moves in the USA and Silventoinen et al (2007) who demonstrated it predicted moves between Finland and Sweden for men. These are relatively long-distant moves. However, our analysis finds no association between distance moved and Extroversion. In contrast, this dimension of the Big 5 is only positively related to making at least address change between Wave 3 and Wave 8. This might be because extroverts are happy to make a move but do not wish to abandon existing social networks by moving longer-distances. Digging deeper into expectations of making an address change (and making one in reality) our findings that Neuroticism is positively related to both these outcomes is in accord with Silventoinen et al (2007). However, they do not agree fully with those of Campbell (2019) who notes that Openness and Extroversion are positively related to expecting to move (our analysis does not identify either), and whilst Conscientiousness has a positive effect in England and Wales it was negative in Australia. However, in making a move (as distinct from an expectation) both analyses note a positive effect of Extroversion.

These national similarities (and differences) pose interesting wider conceptual questions. Personality, as was discussed in the literature review, can be viewed as biologically determined although perhaps mutable to some degree given life experiences. The difference in the relationship between the Big 5 and migration expectations and outcomes in different national contexts suggests strongly that there is not a deterministic relationship between personality and behaviour. It appears there are tendencies arising, they work out differently in different national environments and that people with the same personality traits might have varying experiences according to the social, institutional, and economic networks in which they are located.

The finding that personality traits seem to influence future migration events is particularly strong, as it implies a degree of temporal causality. This, of course, is true but only so far and needs further thought. This is because the measure of personality taken at only one point, and this time point for some respondents was not in childhood or early adulthood. It is known

from the migration literature that a strong predictor of future migration is past migration (Cooke 2018) and this should be considered in interpreting the results. A more fundamental point, however, concerns the fixity of the Big 5 personality traits as we have seen. At one end of the continuum, they might be viewed as being a biological predisposition, at the other as entirely a result of life experiences and relatively mutable. Either fundamental position is likely to be incorrect, and the literature suggests that whilst personality is fixed to some degree by biological predisposition, it can be modified to a greater or lesser extent by social experiences.

This is important because it means it is impossible to be sure whether someone who scored highly on Openness in Wave 3 and thus was more likely to make a longer-distance move by Wave 8, was more likely to move (and to score more highly on Openness) because (a) they had more experience of longer-distance moves in the past and (b) whether their personality had been modified to be more open by their historical migration experience. We are thus confronted with a 'chicken and egg' problem in the form of a potential selection bias which qualifies the extent to which it is possible to be absolutely sure about cause and effect. Our current results could suggest that those personality factors 'explained away' by the inclusion of demographic variables may be therefore more amenable to contextual influence, such that movement may well lead to shifts in levels of Neuroticism and Agreeableness, while the others remain unchanging predictors of mobility. Alternatively, the traits identified as predictors of mobility here may be the ones reinforced by mobility such that a predilection to Openness becomes a self-fulfilling prophecy as the new experiences occasioned by moving have a mind-broadening effect.

The only way to be completely confident in this is to follow a cohort of young people, to measure their personality traits at one initial time point, to follow their future migration history, to re-measure their personality, and then to follow again their future migration. The data we possess cannot perform this task and even though earlier personality measures are available they do not conform to the Big 5. Because they were taken some considerable time after the predecessor British Household Panel Survey (BHPS) commenced – in Wave 15 – they only push back in time, and not solve, the dilemma as discussed above. Nevertheless, despite these caveats, the results in this paper do point firmly in the direction of personality traits being independently important in influencing future migration behaviour, not only as something that should be considered as a determinant, but also as something that might be an outcome of the spatial mobility experiences following the old adage that 'travel broadens the mind'.

Conclusion

The analysis shows that personality traits should be considered in analyses of migration. It also suggests that there is space for wider conversations between Geographers and Social Psychologists to explore the intersection between spatial mobility and personality. This is important in three possible ways. Firstly, depending on their personality, outlook, and receptiveness to new experiences some are more open towards migration than others. This psychological selectivity is important even after the standard socio-demographic variables have been taken into account but has seldom, if ever, been considered in studies of internal migration. Secondly, and here more evidence is needed, it is likely that the experience of spatial mobility influences personal attitudes and might act to modify existing personality traits as discussed in the literature review. The experience of spatial mobility has been shown to influence electoral behaviour (Lee et al 2018), attitudes to immigrants (Bjarnason et al 2019), and personal identity across several domains (Oishi 2010). Spatial mobility is transformative and this is therefore something that therefore should be studied further at different spatial scales, and in different contexts. Finally, selective migration by personality trait will lead to some 'left behind' areas with ageing, less-educated, and less trusting and less open populations. This phenomenon has been noted by Ciani et al (2007) and also suggested by Rentfrow et al (2015) at the regional scale in the Psychological literature. The implications of this selectivity are subtle but potentially wide ranging, running from capacity for economic innovation, and economic and social resilience, to changed electoral geographies with conservative (with a small 'c') populations in some areas and more outward looking mobile ones elsewhere (see Garretsen et al 2018). This echoes the discourse of citizens of 'anywhere' and 'somewhere' noted in recent interpretations of electoral behaviour in the USA and the UK (Goodhart 2017) but more significantly ties back into the origins of social science theory in the 19th Century where cosmopolitan mobile urban populations are contrasted with the rural (Tönnies 1887; Durkheim 1893; Simmel 1903), not to mention Marx's views on the reactionary idiocy of rural life.

The analysis also forefronts the different personality and demographic determinants of moves by distance band. Non-movers differ from movers but there also divides between longer-distance (≥ 50 km) movers and those who move exclusively short distances less than 10km. Longer-distance movers are more likely to score higher on the openness personality trait. Moreover, they were more likely to have said they were expecting to move in the next year at Wave 3 whereas move expectation has no statistically significant effect on moving less than 10km. This implies that long-distance moves tend to be associated more with people who want or expect to move whereas short-distance movers presumably have quite a few unexpected, moves. This needs to be teased out further in order to understand why people move but also to grasp how they experience changing address in terms of its outcomes on identity,

personality, and self-image. The population of short-distance movers, some who have may have moved unexpectedly, is different to that of long-distance movers and the outcomes of migration in political attitudes, for instance, may be very different.

The emerging research agenda at the intersection of Geography and Psychology, personality and migration, and migration and its attitudinal outcomes, is rich but challenging since it requires detailed and wide-ranging longitudinal data. Few data sources except *Understanding Society* include personality measures, social demographic information, detailed migration indicators, households, and questions on political party affiliation and voting intentions. However, it is just this type of information that is needed to understand and to tease out the links between personality, migration, and politics. Other areas for analysis concern the mix of personality types with households, how these co-determine decisions to move/not move, and how they relate to other outcomes such as voting, relationship changes, and labour market trajectories. The need to consider these themes are pressing given the context of the slowing of internal migration in many countries (Champion et al 2018) combined with their ethnic diversification. Spatial immobility for some but mobility for others may widen already existing fault lines.

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	Count	Percentage
Explanatory variables		
Region		
North East	647	4.45
North West	1612	11.09
<i>Yorkshire and the Humber</i>	<i>1340</i>	<i>9.22</i>
East Midlands	1042	7.17
West Midlands	1286	8.85
East of England	1374	9.46
London	1536	10.57
South East	2054	14.13
South West	1335	9.19
Wales	703	4.84
Scotland	1212	8.34
Northern Ireland	389	2.68
Urban/rural		
<i>Urban area</i>	<i>11313</i>	<i>77.86</i>
Rural area	3216	22.13
Economic activity		
Self employment	1066	7.30
Paid employment	7357	50.60
Unemployed	777	5.30
<i>Inactive</i>	<i>5347</i>	<i>36.80</i>
Qualification		
University qualifications	5299	36.60
School qualifications	7399	51.10
<i>No qualification</i>	<i>1831</i>	<i>12.30</i>
Neighbourhood variables		
Agreeable neighbourhood	8321	61.70
Cohesive neighbourhood	1407	10.40
Similar to neighbourhood	8101	60.10
Trust people	9357	64.90
Friends different race	1173	8.10
Housing tenure		
Social renter	2365	16.30
Private renter	1862	12.80
<i>Owner occupier</i>	<i>10301</i>	<i>70.90</i>
Partnership		
Partner at W3	7455	51.31
Change W3 to W8	1473	10.14
No partner at W3 or did not change partnership status	5602	38.55

Table 1(a): Categorical explanatory variables (reference categories marked in *italics*)

	Count	Min	Max	Mean	SD
Outcome variable					
Total distance moved	3992	0.00	1399.69	47.30	122.77
Explanatory variables					
Agreeableness	13484	1	7	5.59	1.04
Conscientiousness	13482	1	7	5.43	1.10
Extroversion	13485	1	7	4.56	1.30
Neuroticism	13485	1	7	3.59	1.44
Openness	13473	1	7	4.57	1.31
Age	14529	16	95	45.87	17.80

Table 1(b): Non-categorical explanatory and outcome variables

Outcome Variables		
Expect to move in next year	2025	13.90
Change address W3-W8	3992	27.47
At least one move =>50km	706	4.90
Only moves < 10km	3004	20.70

Table 1(c): Categorical outcome variables

	Model 1		Model 2		Model 3		Model 4		Model 5	
Expect to move	Exp(B)	Sig								
Agreeableness	1.040	0.269	0.987	0.717	0.990	0.782	0.980	0.568	1.020	0.582
Conscientiousness	1.027	0.441	1.047	0.183	1.051	0.149	1.087	0.021	1.111	0.004
Extroversion	1.062	0.040	0.998	0.953	1.002	0.945	1.009	0.753	1.029	0.330
Neuroticism	1.011	0.619	1.092	0.001	1.094	0.000	1.091	0.001	1.074	0.007
Openness	0.860	0.000	1.085	0.004	1.076	0.010	1.048	0.115	1.033	0.280
Constant	0.051	0.000	0.036	0.000	0.034	0.000	0.023	0.000	0.029	0.000
-2 log likelihood	73377.88		75244.15		75428.45		76004.54		74884.83	
Move at least once W3-W8										
Agreeableness	0.952	0.070	0.989	0.713	0.992	0.787	0.928	0.685	1.000	0.993
Conscientiousness	0.889	0.000	0.979	0.459	0.980	0.466	0.930	0.706	0.991	0.783
Extroversion	1.081	0.000	1.047	0.045	1.048	0.042	0.997	0.065	1.068	0.009
Neuroticism	1.159	0.000	1.069	0.001	1.070	0.001	1.008	0.020	1.035	0.129
Openness	1.136	0.000	1.077	0.001	1.070	0.004	0.969	0.455	1.022	0.402
Constant	0.155	0.000	0.130	0.000	0.121	0.000	0.084	0.000	0.106	0.000
-2 log likelihood	68456.18		70356.68		70506.50		72267.84		70831.94	
Only move <10km										
Agreeableness	1.040	0.269	1.049	0.171	1.047	0.198	1.039	0.294	1.039	0.326
Conscientiousness	1.027	0.441	1.048	0.170	1.056	0.115	1.040	0.273	1.042	0.284
Extroversion	1.062	0.040	1.052	0.082	1.046	0.127	1.042	0.170	1.044	0.179
Neuroticism	1.011	0.619	0.999	0.977	0.997	0.902	0.991	0.690	1.006	0.830
Openness	0.860	0.000	0.849	0.000	0.853	0.000	0.880	0.000	0.886	0.000
Constant	2.958	0.000	2.548	0.000	3.072	0.000	3.584	0.000	2.609	0.010
-2 log likelihood	25422.58		25467.78		25586.29		24621.83		22733.90	
At least one move =>50km										
Agreeableness	1.014	0.724	1.014	0.727	1.017	0.677	1.002	0.956	0.987	0.775
Conscientiousness	0.881	0.001	0.882	0.001	0.880	0.001	0.923	0.051	0.908	0.027

Extroversion	0.958	0.197	0.957	0.184	0.959	0.217	0.969	0.356	0.961	0.272
Neuroticism	0.985	0.573	0.983	0.524	0.982	0.488	0.985	0.574	0.967	0.293
Openness	1.185	0.000	1.187	0.000	1.183	0.000	1.143	0.000	1.124	0.003
Constant	0.195	0.000	0.195	0.000	0.201	0.000	0.264	0.000	0.455	0.055
-2 log likelihood	26466.73		26481.59		26636.13		25939.16		23906.06	
Total distance (log 10)										
Agreeableness	-0.013	0.051	-0.011	0.086	-0.011	0.099	-0.020	0.082	-0.013	0.088
Conscientiousness	-0.014	0.037	-0.006	0.331	-0.007	0.309	-0.010	0.342	-0.005	0.493
Extroversion	-0.001	0.804	-0.003	0.545	-0.003	0.627	-0.014	0.138	-0.004	0.512
Neuroticism	0.009	0.033	0.007	0.120	0.007	0.121	0.004	0.549	0.003	0.552
Openness	0.023	0.000	0.018	0.003	0.017	0.005	0.048	0.000	0.014	0.031
Constant	0.847	0.000	0.796	0.000	0.716	0.000	0.733	0.000	0.963	0.000
-2 Restricted Log Likelihood	12084.74		12056.88		12001.55		13658.70		10743.11	

Table 2: The Statistical Significance of the Big 5 Personality Traits in Different Models

Model 0: Only the Big 5

Model 1: The Big 5 plus age and sex

Model 2: As Model 1 plus region and urban/rural

Model 3: As Model 2 plus housing, educational qualification, economic activity, housing tenure, partnership

Model 4: As Model 3 plus neighbourhood variables

Appendix A – Full Models

	Full model – expect to move		Full model – move at least once W3 to W8	
	Exp(B)	Sig.	Exp(B)	Sig.
Big 5				
Agreeableness	1.020	0.582	1.000	0.993
Conscientiousness	1.111	0.004	0.991	0.783
Extroversion	1.029	0.330	1.068	0.009
Neuroticism	1.074	0.007	1.035	0.129
Openness	1.033	0.280	1.022	0.402
Region				
Yorkshire & Humberside (reference)	1.000		1.000	
London	1.101	0.585	0.804	0.170
North East	0.672	0.085	1.135	0.497
North West	0.916	0.611	0.972	0.849
East Midlands	1.037	0.845	1.014	0.934
West Midlands	0.780	0.187	0.959	0.791
East of England	1.023	0.895	1.205	0.220
South East	1.282	0.120	1.134	0.375
South West	1.044	0.805	1.501	0.007
Wales	0.867	0.531	0.899	0.590
Scotland	0.833	0.344	1.018	0.913
Northern Ireland	0.767	0.370	0.475	0.006
Urban/rural				
Urban (reference)	1.000		1.000	
Rural	1.073	0.462	1.043	0.605
Sex				
Female (reference)	1.000		1.000	
Male	1.097	0.210	0.999	0.989
Economic activity				

Inactive (reference)	1.000		1.000	
Self employed	0.771	0.089	0.892	0.363
Paid employed	0.940	0.472	0.908	0.194
Unemployed	1.211	0.241	0.738	0.045
Education				
No qualifications (reference)	1.000		1.000	
University qualifications	1.679	0.002	1.432	0.008
School-level qualifications	1.339	0.066	1.181	0.196
Centered Age	0.968	0.000	0.964	0.000
Neighbourhood				
Agreeable neighbourhood	0.826	0.020	0.736	0.000
Cohesive neighbourhood	0.775	0.069	0.856	0.149
I am similar to neighbourhood	0.566	0.000	0.855	0.025
Trust people in neighbourhood	1.008	0.923	0.938	0.376
Friends different race	0.819	0.134	0.938	0.577
Housing tenure				
Owner occupier (reference)	1.000		1.000	
Social renter	1.251	0.055	1.011	0.918
Private renter	3.147	0.000	4.259	0.000
Partnerships				
Partnership W3	0.626	0.000	0.768	0.000
Change W3 to W8	1.248	0.052	2.744	0.000
Expect to move				
Do not expect to move (reference)			1.000	
Expect to move in next year			8.982	0.000
Constant	0.029	0.000	0.106	0.000
-2 Log likelihood	74884.83		70831.94	

Table A1: Coefficients for (a) expect to move in next year and (b) made at least one address change between Wave 3 and Wave 8

	Move <10km only		At least one move =>50km	
	Exp(B)	Sig.	Exp(B)	Sig.
Big 5				
Agreeableness	1.039	0.326	0.987	0.775
Conscientiousness	1.042	0.284	0.908	0.027
Extroversion	1.044	0.179	0.961	0.272
Neuroticism	1.006	0.830	0.967	0.293
Openness	0.886	0.000	1.124	0.003
Region				
Yorkshire & Humberside (reference)	1.000		1.000	
London	0.877	0.501	0.616	0.029
North East	0.904	0.687	0.577	0.069
North West	1.385	0.106	0.772	0.235
East Midlands	0.984	0.938	0.876	0.558
West Midlands	1.232	0.329	0.717	0.157
East of England	0.918	0.663	0.813	0.341
South East	0.815	0.254	0.914	0.648
South West	1.279	0.201	0.715	0.113
Wales	1.183	0.436	0.805	0.359
Scotland	1.229	0.308	0.783	0.271
Northern Ireland	2.190	0.004	0.195	0.000
Urban/rural				
Urban (reference)	1.000		1.000	
Rural	0.523	0.000	1.234	0.063
Sex				
Female (reference)	1.000		1.000	
Male	1.025	0.757	1.065	0.496
Economic activity				
Inactive (reference)	1.000		1.000	

Self employed	1.621	0.005	0.331	0.000
Paid employed	1.516	0.000	0.365	0.000
Unemployed	1.241	0.247	0.408	0.000
Education				
No qualifications (reference)	1.000		1.000	
University qualifications	0.289	0.000	1.779	0.017
School-level qualifications	0.423	0.000	1.276	0.299
<i>Centred Age</i>	0.988	0.000	0.998	0.437
Neighbourhood				
Agreeable neighbourhood	1.119	0.212	0.951	0.626
Cohesive neighbourhood	1.116	0.488	0.723	0.087
I am similar to neighbourhood	1.259	0.010	0.923	0.433
Trust people in neighbourhood	0.935	0.450	1.195	0.084
Friends different race	1.068	0.642	1.112	0.508
Housing tenure				
Owner occupier (reference)	1.000		1.000	
Social renter	1.932	0.000	0.404	0.000
Private renter	1.462	0.000	0.877	0.234
Partnerships				
Partnership W3	1.092	0.326	0.921	0.427
Change W3 to W8	0.922	0.439	0.909	0.439
Expect to move				
Do not expect to move (reference)	1.000		1.000	
Expect to move in next year	1.067	0.453	1.205	0.055
Constant	2.609	0.010	0.455	0.055
-2 Log likelihood	22733.90		23906.06	

Table A2: Coefficients for (a) only making a move of less than 10km or (b) making at least one move of equal to or greater than 50km – mover base only

	Coefficient	T	Sig
Constant	0.963	11.883	0.000
Big 5			
Agreeableness	-0.013	-1.707	0.088
Conscientiousness	-0.005	-0.685	0.493
Extroversion	-0.004	-0.656	0.512
Neuroticism	0.003	0.594	0.552
Openness	0.014	2.156	0.031
Region			
Yorkshire and Humberside (reference)			
London	0.062	0.940	0.347
North East	-0.072	-0.836	0.403
North West	-0.079	-1.187	0.235
East Midlands	0.004	0.064	0.949
West Midlands	-0.030	-0.426	0.670
East of England	0.032	0.482	0.630
South East	0.114	1.860	0.063
South West	-0.052	-0.808	0.419
Wales	-0.062	-0.854	0.393
Scotland	-0.059	-0.874	0.382
Northern Ireland	-0.428	-5.138	0.000
Urban/rural			
Urban (reference)			
Rural	0.222	6.532	0.000
Sex			
Female (reference)			
Male	0.018	1.399	0.162
Economic activity			
Economically inactive (reference)			

Self employment	-0.121	-3.597	0.000
Paid employment	-0.129	-6.357	0.000
Unemployment	-0.089	-2.429	0.015
Qualifications			
No qualifications (reference)			
University qualifications	0.087	2.218	0.027
School-level qualifications	0.037	0.976	0.329
Centred Age	-0.002	-3.161	0.002
Neighbourhood			
Agreeable neighbourhood	-0.044	-2.500	0.013
Cohesive neighbourhood	-0.044	-1.506	0.132
Similar to neighbourhood	-0.037	-2.048	0.041
Trust people in neighbourhood	-0.006	-0.324	0.746
Friends different race	0.010	0.367	0.714
Housing tenure			
Owner occupier (reference)			
Social renter	-0.335	-7.923	0.000
Private renter	-0.036	-1.097	0.273
Partnerships			
Not in partnership at W3 and did not change status (reference)			
Partnership W3	-0.104	-3.950	0.000
Change W3 to W8	-0.008	-0.278	0.781
Expect to move			
Did not expect to move (reference)			
Expect to move in next year	0.076	3.418	0.001
-2 Restricted Log Likelihood	10743.11		

Table A3: Total distance moved between Waves 3 and Wave 8, total distance moved (log 10 transform)