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Place and preference effects on the association between mental health and internal migration within Great Britain

Sam Wilding[a,b,*], David Martin[a], Graham Moon[a]

[a] Department of Geography and Environment, University of Southampton, Building 44, Southampton SO17 1BJ, United Kingdom
[b] Primary Care and Population Sciences, University Hospital Southampton, Room AC22, South Academic Block, Southampton SO16 6YD, United Kingdom

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ABSTRACT

Individuals with mental health needs are more likely to migrate than the general population, but the effects of migration preference and place of residence are often overlooked. These issues are addressed through the application of a novel origin and destination multilevel model to survey data. In comparison to those with good mental health, individuals with poor mental health are more likely to make undesired moves and this is moderated, but not explained by place of residence. Implications for understanding the mental health and migration relationship, and its impact on service provision are then proposed.

1. Introduction

Poor physical health has been shown to be associated with low likelihoods of internal (within-country, over any distance) migration in Europe (Westphal, 2016), Northern America (Curtis et al., 2009) and Australia (Larson et al., 2004). Less attention has been paid to the influence of mental health on migration behaviour. In contrast to physical health, internal migrants are more likely to self-report mental health problems than non-migrants (Larson et al., 2004; Tunstall et al., 2014). Extant research is primarily drawn from populations with severe and rare mental health conditions (Harvey et al., 1996; Ngamini Ngui et al., 2013), although analyses using instruments designed to measure common mental disorders find similar associations between moving and mental health (Tunstall et al., 2015). Although the mental health of internal migrants is well studied, the majority of research compares the health of recent internal migrants to that of non-movers, so it is unclear whether mental health affects the likelihood of migration, or migration affects mental health.

The desire to migrate or stay (migration preference) and ability to meet this preference may confound the relationship between mental health needs and high rates of internal migration, and Great Britain (GB; England, Scotland and Wales) provides an interesting case study to test this hypothesis. There is evidence of undesired staying (i.e. not moving when one would like to) and undesired migration (i.e. moving when one would not like to) among the population of GB (Coulter and van Ham, 2013). Mental health needs are associated with a desire to migrate regardless of whether an individual has recently moved, but not with undesired migration. In addition, undesired staying and undesired migration are associated with worsening mental health over time, after controlling for baseline mental health (Woodhead et al., 2015). Mental health status may act as a barrier to realising migration preferences, as mental health problems are associated with relatively low levels of psychosocial resources, educational attainment, employment and financial capital (Fryers et al., 2003; Weich and Lewis, 1998), all factors that are drawn upon in the search for alternative residences (Lee, 1966). A realistic estimation of the influence of mental health on internal migration must control for interactions with migration preference, but this relationship is largely overlooked in the literature.

In addition to ignoring mental health associations with migration preference, place of residence effects are rarely accounted for in migration literature (Thomas et al., 2015). Previous (origin) and current (destination) place of residence likely moderates (i.e. affects the strength of) the association between mental health and migration. Individuals with mental health needs have been found to migrate into deprived and urban areas in GB shortly before the onset of severe mental health problems (Harvey et al., 1996; Ngamini Ngui et al., 2013; Taylor, 1974). This has been explained through the social selection or 'drift' theories, where the onset of mental health problems leads to reductions in earning capacity or unemployment, and then a reduced ability to remain in or move to affluent neighbourhoods (Lowe et al., 2014). In the context of rising house prices and rental rates in GB over the 1990s and 2000s (Dorling, 2015), we might expect individuals with mental health needs may be less able to afford to stay in desirable homes and neighbourhoods, and less able to afford to move out of

* Corresponding author at: Academic Unit of Primary Care and Population Sciences, Faculty of Medicine, University of Southampton, Room AC22, South Academic Block, Southampton SO16 6YD, United Kingdom.
E-mail address: s.a.wilding@soton.ac.uk (S. Wilding).

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undesirable homes and neighbourhoods (Smith and Easterlow, 2005), in comparison to the general population. Such place moderation effects have been observed for physical health limitations, where the overall positive association between good physical health and migration was reversed in the Midlands of England in the 2011 Census (Wilding et al., 2016).

When place effects are explored, the characteristics of the place of residence post-move (destination) are usually used. The dominance of destination effects is challenged by established migration models such as the gravity model (Flowerdew and Aitkin, 1982) and developments in multilevel modelling showing that it is important to consider previous and current place of residence in migration models (Thomas et al., 2015). Specifically, the association between mental health and migration may differ for an area as an origin and destination respectively, as in the 'drift' framework we would expect mental health to be associated with moves into deprived urban areas (destination), but low rates of moves out of these areas (origin).

In summary, individuals with poor mental health are more likely to become internal migrants (over any distance) than the general population. This association is confounded by migration preference, as those with poor mental health are more likely to want to move, and wanting to move appears to be harmful to mental health. The extant evidence fails to adequately account for the potential moderation effect of place on this relationship, and there are theoretical reasons for expecting the relationship between mental health and migration to vary by area. The aims of this study are to test i) if poor mental health is associated with internal migration ii) if the association between poor mental health and internal migration differs between those who prefer to move, and those who prefer to stay and iii) if the association between poor mental health and internal migration varies by place of origin and destination. The rest of this paper addresses these issues, using data from two major surveys, utilising a cross-classified multilevel model to test whether mental health predicts internal migration, and if this explained or moderated by origin, destination and migration preference effects.

2. Methods

2.1. Data

This analysis uses panel data from the British Household Panel Survey (BHPS) and its successor, Understanding Society (USoc). The BHPS is an annual longitudinal survey which ran from 1991 to 2008, collecting information on the socioeconomic characteristics of individuals and households across GB (England, Wales and Scotland). The original sample (wave one) was comprised of 10,264 individuals within 5505 households across GB. Booster samples were added for Scotland and Wales in 1999 and these samples are incorporated in this analysis. Members of these samples are known as Original Sample Members (OSMs), and their children become OSMs as they reach the age of 16. Data collection for USoc started in 2009, and BHPS sample members were included in USoc from 2010 onwards.

Observations are included for all BHPS OSMs present in any two adjacent waves of the BHPS (1–18) and USoc (2–6). At each survey wave (time t), migration is measured as a change in address since the previous wave (time t-1), this framework is often used in migration research using panel data to boost effective sample sizes (Coulter et al., 2011). The Local Authority (LA; large administrative areas with an average population of 120,000) in which an individual lives at the current survey wave (time t) is referred to as the *destination*, and the LA where the individual was present in the previous survey wave (time t-1) is referred to as the *origin*. There are 378 LAs in GB. Observations from 11 LAs which contain fewer than 10 observations are excluded from the sample. All predictors, including mental health, are lagged by one survey wave (i.e. measured at time t-1).

This process is repeated for each pair of waves of the BHPS and USoc. Respondents who appear in only one wave for each two-wave sequence are excluded. There are 18 (1991–2008) waves of the BHPS, and 6 waves of USoc which include the BHPS sample (2010–2015). For the remainder of this paper, each observation in the dataset is referred to as the 'occasion' (denoted by subscript i), occasions are nested within individuals (j), LA (origin) at time *t-1* (k) and LA (destination) at time *t* (l). To maximise the sample size eligible for this analysis, intra-LA movers are retained, as 65% of movers are classified as intra-LA movers.

2.2. Migration

In this analysis, the outcome of interest is individual internal migration within GB. Currently, migration research combining the BHPS and USoc is flawed by inconsistencies in how migration is measured in the BHPS and USoc surveys. In the BHPS, individual migration is measured by whether the interview was carried out at the same address as the previous wave. The USoc survey does not collect an equivalent measure, as migration status is assigned at the household level (Understanding Society User Support, 2016).

To construct a consistent migration measure, the secure access version of both surveys are used, which contain the Ordnance Survey Grid Reference for the centroid of the postcode where each individual lived at each occasion (*t* and *t-1*). Grid references are cross-referenced by the annual release of the ONS National Postcode Directory closest to the year of the survey wave. The spatial resolution of the postcode directory has improved over time. In the early 1990s, postcode centroids were provided at a 100-metre resolution (Martin, 1993). Centroids later became available at a 1-metre resolution (Rabe, 2009). Internal migrants are defined as individuals whose grid reference at time *t* and *t-1* differ by more than 100 m, if the pair of grid references are identical or differ by 100 m or less then the observation is coded as a non-mover. A 100-metre cut-off is used as this is the coarsest resolution for postcode grid references found in the postcode directory over the study period, and it is assumed that postcode adjustments over consecutive waves are unlikely to be of greater distances than 100 m.

2.3. Mental health

The 12-item General Health Questionnaire (GHQ) is used to measure mental health status in this analysis. The GHQ was designed to measure the risk of common mental disorders in observational studies (Goldberg, 1978). Each item has four possible answers in a Likert scale design. Responses in the two lower categories are coded as 0 for each item, and the two higher categories are coded as 1. This coding system is known as the 'GHQ method' (Hankins, 2008). The sum of item scores is calculated (with a minimum of 0 and maximum of 12); sums of 3 or more are considered to be indicative of poor mental health, and sums less than 3 are indicative of good mental health (Shelton and Herrick, 2009). The 12-item GHQ has been shown to be a strong predictor of common mental disorders in a range of contexts, and is robust to gender, age and educational differences in reporting of symptoms (Goldberg et al., 1997). In line with past research, individuals with poor mental health (as measured by high GHQ scores) are expected to be more likely to move than those with good mental health (Larson et al., 2004), and this association will differ in strength between those who prefer to move, and those who prefer to stay (Woodhead et al., 2015).

2.4. Contextual measures

Local (or neighbourhood) characteristics used in this analysis (deprivation and population density) are known predictors of migration behaviour and relate to mental health. Residents in urban and deprived parts of Britain experience higher rates of common mental disorders and depressive symptoms (Mair et al., 2008; Weich et al., 2006), and these areas experience higher levels of population turnover (Bailey and Livingston, 2005; Champion, 2005). Area-level confounders must