



The influence of mobility on mental health status in young people: The role of area-level deprivation



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ABSTRACT

Residential mobility during childhood has been previously associated with poor mental health; however, this association could be mediated by several aspects of moving. This paper investigated the impact of mobility across different levels of area deprivation on the individual's mental health status in Northern Ireland. Mobility towards deprived areas was associated with an elevated risk of reporting poor mental health in both house owners and renters. However, the number of residential moves appeared to be moderating the effect of area change on the individual's mental health. Further exploration of this relationship is warranted through the use of more in-depth mental health measures.

1. Introduction

It has now been acknowledged that many of the antecedents to chronic poor mental health in adulthood arise during childhood and early adolescence (Kessler et al., 2005). One such factor that has been increasingly associated with poor mental health in early adulthood is childhood residential instability, though it is unclear which facets are causative (Ross et al., 2000; Leventhal and Brooks-Gunn, 2000; Aneshensel and Sucoff, 1996). Residential change in childhood can be the end product of a range of overlapping sociological factors and the associated psychological effects on the child can arise from both the processes that preceded or lead to the address change as well as from the effects of the address change itself.

Residential mobility hasn't only been linked to current household environment, but also to other circumstantial parameters such as the change in family structure due to divorce or childbirth, employment related reasons, change in tenure status and the quality of the neighbourhood (Rabe and Taylor, 2010). Some of these residential changes may also be associated with a positive change of circumstances, such as moving to a bigger and better house, or as a consequence of parental employment advancement, resulting in access to an improved physical environment, including potentially better schools. In such cases, childhood residential mobility might act as a protective factor for later mental health, interacting with the individual's underlying personality traits (Oishi and Schimmack, 2010). However, in many circumstances the effects are not positive (Dewit, 1998). During the process of moving, children might become exposed

to new neighbourhood and environments (Diez Roux, 2001). This change of both home and social environment is a stressful condition for the offspring of mobile families as they usually appear to be more susceptible to other detrimental effects, including poor school performance (Gasper et al., 2010) and decreased social capital (Gillespie, 2013), due to the disruption of social networks formation (Brown et al., 2012; Pettit, 2004; South and Haynie, 2004). Early life transitions may be indicative of a process of cumulative disadvantage where students who change residence and schools repeatedly, fail to adapt to new environments with skills shaped by their previous social context (Cotterell, 2007). Although, the way school and neighbourhood environments are structured, can differentiate the exposure of children to a range of stressors (Avison, 2010), mobile children face difficulties in establishing a sense of self due to a constantly changing environment (Wooster and Harris, 1972), thus being more likely to associate with peer groups that engage in delinquent behaviour (Eckert, 1989).

There are several aspects of residential change that contribute to the overall impact of moving on the individual, including the presence of social support from meaningful others (Hendershott, 1989). In the pursuit of understanding these parameters, several potential factors have been considered such as health status (Brown et al., 2012) and familial stability (Gilman et al., 2003), but relevant findings have been inconsistent. Marital dissolution due to divorce (or less frequently death of a parent) is a recognised confounding factor as it is a known source of poor mental health in children (Hayatbakhsh et al., 2013) and is often associated with a change of address (Gilman et al., 2003), though a recent study has demonstrated that frequent address change

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is still present in children living within stable family structures (Tseliou et al., 2015). These discrepancies can be attributed to the fact that adversity in early life may act through a series of inter-correlated life stressors cumulatively affecting mental health outcomes later in life (Boynton-Jarrett et al., 2013).

A number of previous studies have explored the role of migration and neighbourhood and area deprivation on mental health outcomes (Butler et al., 2012; Brown et al., 2012; Tunstall et al., 2012), but the main focus has been on the association with recent residential moves (Tunstall et al., 2014), instead of childhood mobility. There are further limitations due to methodological issues such as the use of parent-reported measures of deprivation, telephone-based survey procedures (Butler et al., 2012), self-reported measures of perceived environment (Aneshensel and Sucoff, 1996; Lenzi et al., 2012), attrition (Taylor et al., 2010), low response survey rates (Drukker et al., 2005), selection bias (Root and Humphrey, 2014) and the use cross-sectional study designs (Jelleyman and Spencer, 2008). These issues have led to uncertainty over the true effects of area deprivation on children's long-term mental health status, as it is yet unclear whether children who move, do so in similar areas and whether they maintain comparable trajectories in terms of socio-economic status with each residential move. The use of administrative data with full population cover would assist in an unbiased examination of the association of area deprivation and child mental health, by circumventing many of the issues related to selection and recall bias.

Thus, the association between childhood area mobility and later mental health problems needs to be further explored using representative samples of individuals to account for individual, family and household characteristics. Taking into account changing parental marital status as a measure of social support (Hendershott, 1989), as well as, both house value and tenure as a measure of different levels of mobility (Popham et al., 2015), could add to the current understanding on the ranging susceptibility of each individual's mental health status.

This study's aims were to determine: 1) if moving towards a less deprived area is associated with better mental health in adolescents and young adults, 2) if moving to a more deprived area is associated with a poor mental health status, 3) whether the observed association with mental health is moderated by the initial level of area deprivation (2001), the frequency of residential moves or other individual and household characteristics and 4) whether the association of interest is observed in both house renters and owners.

2. Methods

This study implemented a record linkage using data extracted from the Northern Ireland Longitudinal Study (NILS). This is a representative sample of approximately 28% of the Northern Irish population based on a random selection of 104 dates of birth in the Health Card Registration Database (which ensures universal access to health care free at the point of delivery) linked to the 2001 and 2011 Census returns for this study (see O'Reilly et al. (2012) for a more detailed description of the cohort and linkage methodology). The main aim of the current study was to create a cohort of individuals enumerated in both the 2001 and 2011 Censuses, measure the number of inter-censal address changes, determine whether they ended up on a more or less deprived area than in the beginning and then examine how these changes relate to self-assessed chronic poor mental health reported in the 2011 Census.

2.1. Cohort characteristics

Our cohort consisted of a representative sample of all non-institutionalised children in Northern Ireland, aged 0–8 years at the time of the 2001 Census who were also present and enumerated in the 2011 Census. Older individuals were excluded as there was a high probability that they would have moved out from their parental home

ten years later, due to higher education or employment opportunities. Baseline individual characteristics were mainly determined according to the 2001 Census. This included the presence of a long-term illness limiting the person's daily activities (limiting long-term illness; LLTI) which was assessed through a yes/no response and was also included as an indicator of poor physical health (Cohen et al., 1995), as physical health has previously been linked to residential instability, in terms of healthcare needs of individuals with chronic conditions (Yantzi et al., 2001).

Parental marital status was considered as a potential confounding factor in our regression models, representing a measure of social support and a potential moderating factor (Hendershott, 1989). As we were interested in observing shifts in parental marital status between the two Census periods, we measured the number of parents at both time points and our variable was grouped to five categories: 2 parents at both time points; 2 parents going to 1 parent (where it was presumed that marital dissolution was the predominant attribute); 1 parent going to 2 parents; 1 parent at both time points; and other. The 'other' category included children who were supported by family members other than their parents. The total number of individuals in the household at 2001 was also included as a further measure of social support.

Socioeconomic status at baseline was assessed using household car availability (two or more; one only, no access) and a separate variable measuring both housing tenure and house value. House tenure-value included distinct categories for owners (grouped into six categories ranging from less than £75k to over £200k and accounting for owners with unvalued houses) and people who were renting (split to private and social renters). Data on house capital value were obtained as part of an exercise by central government in 2005 to determine the level of local tax payable by each household.

2.2. Area deprivation

Each of the jurisdictions within the UK has adopted a common methodology for identifying area disadvantage; in Northern Ireland this is called the Northern Ireland Multiple Deprivation Measure (NIMDM) (NISRA, 2010). This identifies seven separate domains of deprivation and an overall summary measure. We chose the income domain as the more apposite aspect of deprivation for this study. This measure is based on the proportion of people experiencing income deprivation at the small area level through the use of a non-overlapping count of individuals living in households receiving means-tested social security benefits. The deprivation measure was calculated at the level of Census super-output area (SOA), a standard governmental administrative geographical unit comprising on average 1800 individuals in 2001 (NISRA, 2010) that is generated to be similar in population size unlike electoral ward boundaries. The measure, grouped into quintiles of the population, was utilised to ensure that there will be no disclosure risks. As this measure has been updated in 2005 and 2010, we used the recommended measure of assessment (NISRA, 2010) to avoid conflating the effects of residential movement and reclassification of areas.

The geography of 6 SOAs were slightly modified between 2001 and 2011 which would have led to some individuals appearing as either having moved across quintiles (N=446) or having no information of area of residence in 2011 (N=428). These 874 individuals were further investigated in terms of socio-demographic characteristics, and as they were not different from the rest of population, they were excluded from the analysis under the assumption that they were missing at random, with the final cohort changing from 49,762 to 48,888 individuals (see Tseliou et al. (2015) for the initial cohort).

2.3. Area mobility

This study recognises two types of internal migration; the first being a simple count of the number of address changes experienced by the

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