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On the move: Exploring the impact of residential mobility on cannabis use

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ABSTRACT

A large literature exists suggesting that residential mobility leads to increased participation in risky health behaviours such as cannabis use amongst youth. However, much of this work fails to account for the impact that underlying differences between mobile and non-mobile youth have on this relationship. In this study we utilise multilevel models with longitudinal data to simultaneously estimate between-child and within-child effects in the relationship between residential mobility and cannabis use, allowing us to determine the extent to which cannabis use in adolescence is driven by residential mobility and unobserved confounding. Data come from a UK cohort, The Avon Longitudinal Study of Parents and Children. Consistent with previous research we find a positive association between cumulative residential mobility and cannabis use when using multilevel extensions of conventional logistic regression models (log odds: 0.94, standard error: 0.42), indicating that children who move houses are more likely to use cannabis than those who remain residentially stable. However, decomposing this relationship into within- and between-child components reveals that the conventional model is underspecified and misleading; we find that differences in cannabis use between mobile and non-mobile children are due to underlying differences between these groups (between-child log odds: 3.56, standard error: 1.22), not by a change in status of residential mobility (within-child log odds: 1.33, standard error: 1.02). Our findings suggest that residential mobility in the teenage years does not place children at an increased risk of cannabis use throughout these years.

1. Introduction

1.1. Residential mobility

Residential mobility has long been of interest to academics (Rossi, 1955). The interest in this everyday process has grown greatly in the past few decades with social scientists endeavouring to uncover the complex ways in which residential mobility affects outcomes from multiple domains throughout the lifecourse. One domain that has garnered much attention is health and the ways in which exposure to mobility may affect health outcomes (Jelleyman and Spencer, 2008). Studies that focus on individuals as the units of analysis have provided an impressive amount of empirical evidence associating high levels of residential mobility with a wide range of subsequent poor health outcomes from cardiovascular disease to obesity, and depression to substance use (DeWit, 1998; Exeter et al., 2015; Morris et al., 2015; Tunstall et al., 2010).

A large proportion of research conducted on the health effects of residential mobility has focussed on children, who may suffer more from residential changes than adults (Tonnessen et al., 2013). While many household moves are made with the intention of improving family life (Rossi, 1955), these decisions are made at the parental level and children themselves have little influence over family decisions to relocate. Moves may be made specifically for the benefit of a child, for example moving into the catchment area for a 'good school', but from a child's point of view the rewards may not be perceptible and therefore far outweighed by the costs. A move may be far more distressing for a child than for an adult as they are

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likely to suffer more complete loss of social networks (Stokols et al., 1983) and experience social exclusion (Cole et al., 2006), rendering them more vulnerable to the stress that occurs from household moves (Haveman et al., 1991).

Negative life experiences in childhood may have a substantial effect on the development of psychological conditions (Rutter, 1981) and it has been shown that such early life experiences can have strong systematic influences in later life (Bailey, 2009). Additionally, the stress from events such as moving house may harm parent-child relationships because of reduced supervision, interaction and less supportive parenting (Anderson et al., 2014; Waylen et al., 2008). As children's development and well-being are largely dependent on their parent's attention and resources (Shonkoff and Phillips, 2000), adverse social events such as residential mobility may lead to psychological wear and tear (Barboza Solís et al., 2015) and have lasting long term impacts on various domains of health such as health behaviours.

1.2. Risky health behaviours

Risky health behaviours (RHBs) such as smoking, drug and alcohol use account for a major source of preventable morbidity and mortality amongst populations, particularly young people (Gore et al., 2011), and due to their modifiable nature offer an attractive target for policy intervention. For instance, the UK government has a number of policies in place designed to reduce participation in RHBs, particularly amongst children, such as an annually reviewed drug strategy (the Drugs Act, 2005) and a confidential drugs advice initiative named FRANK. Children are of particular concern because RHBs are commonly first encountered in childhood and adolescence and then track into adulthood, impacting on health, education, and employment (Chassin et al., 2004; Gruber, 2001). Participation in RHBs has a social aspect and there is a body of evidence to suggest that residential mobility is robustly associated with a range of behaviours including drug use (Brown et al., 2012; DeWit, 1998; Hoffmann and Johnson, 1998; Lee, 2007).

RHBs may appeal to certain types of children and adolescents as a means of autonomy and rebellion from parents or to those subjected to certain social environments and events. RHBs can, for example offer a psychological or pharmacological coping strategy for dealing with distress (Friedman, 2013; Hyman and Sinha, 2009) and a means to break into new peer networks (Haynie et al., 2006), both of which can occur as the result of a residential move or other adverse life event. Given that peer participation in RHBs is a strong determining factor in the likelihood of a child to participate (Cebulla and Tomaszewski, 2009; HSCIC, 2014) and that deviant peer groups may be more welcoming of newcomers than high achieving groups (Haynie et al., 2006), it is possible that mobile children may be at a far greater risk of engaging in RHBs than non-mobile children. From this point of view, major life events in childhood and adolescence can be seen as a potentially influential mechanism behind RHBs such as cannabis use.

In the UK, cannabis is the third most used drug after tobacco and alcohol with prevalence rates of 7% for 11–15 year olds and 16% for 16–24 year olds (HSCIC, 2014; Lader, 2015). It makes a considerable contribution to the burden of disease through a range of physical and mental health problems, which effect young people more than other age groups (Imtiaz et al., 2015). Mental health problems are the major issue surrounding cannabis use in both the media and academic literature, with studies suggesting that regular cannabis use at a young age is associated with mental illness, relapsed episodes of mental illness symptoms, increased criminal activity, and suicidal behaviours (Fergusson et al., 2002; Gage et al., 2014; Rubino et al., 2012). There is also evidence that cannabis use can exacerbate mental health problems amongst children that have already been subjected to the experience of adverse life events (Morgan et al., 2014). However, it should be noted that cannabis use may be beneficial for individuals with certain clinical conditions (Volkow et al., 2014). Beyond the health domain cannabis use is associated with a number of negative social outcomes including poor educational performance, unemployment, and relationship quality (Cebulla and Tomaszewski, 2009; Fergusson and Boden, 2008; Stiby et al., 2015). It is therefore important that social pathways contributing to cannabis use as a risky health behaviour are well understood. Residential mobility may be one such pathway that is currently under researched.

1.3. The influence of unobserved confounding

Pervading the vast majority of research examining the health impacts of residential mobility has been an underlying assumption that effects are independent of and not due to underlying (unobserved) differences between mobile and non-mobile individuals (Morris et al., in press). Whilst some studies have accounted for a wide range of important variables relating to the family environment (Brown et al., 2012; Morris et al., 2015) there is still a widespread implication that residential mobility has an exogenous influence upon health outcomes, with only a handful of authors explicitly acknowledging that it may be acting as a proxy for often unaccounted factors (Anderson et al., 2014; Flouri et al., 2013; Gasper et al., 2010). Given that mobile and non-mobile groups tend to differ across a wide range of characteristics and therefore this assumption is likely not satisfied, there is a strong possibility that bias due to unobserved confounding will influence findings. This is a substantial limitation because these often neglected factors, most noticeably adverse life events such as parental separation, divorce, death, and job loss which are related not only to residential mobility (Clark, 2013; Feijten and van Ham, 2010), but also to RHBs (Dong et al., 2005; Hoffmann and Johnson, 1998; Morgan et al., 2014). This raises an important question in the literature as it may not be residential mobility itself that drives the observed associations with negative health outcomes, but the underlying factors that are associated with both. If this is indeed the case then excluding these variables from analysis will result in unobserved confounding that may cause the effect of residential mobility to be erroneously inflated upwards beyond that of its own true independent effect. Put simply, because residential mobility and cannabis use share common underlying influences, it is entirely possible that the relationships observed in previous studies have been spuriously driven by unobserved confounding caused by these important unaccounted factors.

Of the studies above, only that by Dong et al. (2005) adjusted for other adverse childhood events in addition to residential mobility, although they were unable to account for unobserved factors. Their findings revealed that while residential mobility was indeed strongly related to each of depression, attempted suicide, alcoholism and cigarette use, accounting for additional adverse childhood events attenuated almost all associations (Dong et al., 2005). This is important as it highlights that it may not be residential mobility, *per se*, that causes health differences, but rather the underlying differences between individuals who are more residentially mobile or non-mobile. That is, residentially mobile children may have a greater underlying propensity for engaging in RHBs, and these unobservable differences may be what drive the mobility health relationship. This view is backed up by two recent studies utilising advanced analytical methods which both suggest that it is unobserved, underlying differences between mobile and non-mobile children that is related to delinquency and substance use rather than any causal effect of residential mobility (Gasper et al.,