Neighbourhood effects, social capital and young adults' homeownership in the United Kingdom

Dr. Damilola Aguda[1] Prof. Chris Leishman[2]

[1] School of the Built Environment and Architecture, London South Bank University, London, UK
Email address: dammyaguda@gmail.com

[2] Centre for Housing, Urban and Regional Planning, University of Adelaide, Adelaide, Australia

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Abstract

Many housing researchers and policymakers assume that homeownership remains the tenure of choice for many individuals and their households in the UK and internationally. Housing affordability concerns and access to mortgage finance have taken centre stage in the debate about the declining prospects for young adults to enter homeownership. Yet, some recent studies have questioned how well we understand other factors that combine to shape housing and tenure outcomes for young adults. We specifically ask whether different combinations of neighbourhood effects, homeownership path dependency and social capital influence tenure transitions for young adults. We provide estimates using multi-level mixed-effects logistic regression models using the British Household Panel Survey 2001-15 for Great Britain. We find evidence to support the argument that these specific effects help to shape housing and tenure outcomes for young adults, albeit with socialization within the family appearing to have a stronger effect in comparison to neighbourhood socialization.

1. Introduction

Although homeownership is still generally presumed to be the tenure of choice for the majority of households in the UK, for young adults their declining prospects of entering homeownership have been well documented in recent years (McKee, 2012; Lennartz et al, 2016; Dewilde et al, 2018). Whether through choice or lack of opportunities and resource constraints, tenure outcomes for young people have increasingly emphasised private renting. This trend has continued despite the general improvements to the economy and labour markets since recovery from the Global Financial Crisis. This, in turn, has prompted some researchers to question whether the numerous drivers of growth in private renting among young people are sufficiently well understood. Economic indicators are best understood in the study of unequal housing opportunities between generations. However, the consequences for the inequalities within the younger population cohorts are becoming crucial for research.

Structural changes in the economy and finance markets have undoubtedly had a significant influence on housing system trends. For example, stricter lending requirements have been shown to have delayed the prospects of young adults entering homeownership (Andrew, 2012). However, there is growing evidence that changes in the economy and labour markets have negatively and disproportionately affected young people in recent years. McKee (2012) argues that falling rates of homeownership for young adults reflect not only economic factors, but also broader social-economic processes. She argues that homeownership and housing wealth are simply the more visible elements of an underlying problem of pronounced intergenerational inequalities. DeWilde et al (2018) argue that employment insecurity, stricter mortgage lending requirements, austerity measures and welfare reforms combined to mean that the limitations on young adults' access to housing in general, and homeownership in particular, have become worse since the GFC.

Lennartz et al (2016) show that the drop in homeownership rates from 18-30-year-olds has been particularly pronounced since the global financial crisis, but that similar trends have occurred in many European countries other than the UK. They point out that the 'Generation Rent' (McKee, 2012) narrative in the UK might also be said to apply to other countries including Denmark and Spain and point out that the rising incidence of co-residence of adult children is playing a greater part of the transformation of housing systems than the rising incidence of privately renting. However, in recent times, rising co-residence of adult-children has been revealed in wider contexts, such as the mindset to stay at home to mainly pursue homeownership (Clapham *et al*, 2014; Tatch, 2007). This mindset may have developed internally or externally. Some studies, such as Galster (2008); Kearns et al (2012) and van Ham and Manley (2015) have revealed the instances of socialisation external to parental influences by considering the connection between individual life course (or a different variety of outcomes) and neighbourhood effects. However, there is yet to be a specific exploration of housing tenure outcomes caused by neighbourhood effects.

In this article, we contribute to the literature by viewing the changing and unequal propensities of young adults to homeownership through another lens. More particularly, this paper adds the dimension of neighbourhood effects to socialisation into homeownership, by considering alternative tenure outcomes. We begin in the next section by reviewing the literature on inter-generational transfers and support and consider the specific role of neighbourhood factors, social capital, and path dependency in terms of homeownership. The remaining sections set out our research method, describe data and modelling approach and discuss the results. Key findings indicate that the tendency of homeownership transition rises, although at a falling rate, with the increasing length of parental homeownership experience. Coupled with increasing years of parental homeownership experience, the tendency, however, reduces if they lived in an area with a concentration of lower occupations / educational attainment. Furthermore, a stronger network of friends and family, in combination with parental homeownership experience, positively drive homeownership transitions. Lastly, socialisation within the family (i.e. internal socialisation) also appears stronger than neighbourhood effects (i.e. external socialisation) in contributing towards homeownership transitions among British young adults.

2. Inter-generational factors, social capital, and neighbourhood effects

The general state of housing market disadvantage being suffered by young people is a common point of debate in the popular press in the UK and internationally. The narrative often emphasises the starkly different outcomes (on average) for the Millenial and Generation Y cohorts as compared to earlier cohorts – particularly Baby Boomers[1]. Of course, by emphasising these inter-generational differences, the narrative also inadvertently suggests homogeneity or a common set of outcomes for young adults. In fact, without belittling the severity of inter-generational differences, it seems at least possible that inequalities within generations may be more serious in the future than hitherto.

To illustrate, there are growing concerns in the housing research and policy community of impending and compounding inequalities within younger cohorts as well as between generations. This has led some to question whether inter-generational transfers of resources and other forms of inter-generational support are playing an important role in shaping housing market outcomes for younger people. Works of literature like DeWilde et al (2018) and Heath (2018) have argued that intergenerational support can take many forms including financial transfers, but also loans, mortgage guarantees, in-kind contributions to help off-set other expenditures, paying off overdrafts or credit cards, facilitating living at home for longer and help with renovation projects. A similar argument is also contained in Hochstenbach (2018). However, there is relatively little empirical evidence on the extent to which intergenerational supports affect the transition of young adults to homeownership, or whether these have changed since the GFC.

DeWilde et al (2018) pointed out intergenerational inequity among younger people in recent years due to less advantageous circumstances they face in comparison to previous generations. These trends are compounded by the fiscal pressures created by population ageing and by the exploitation of opportunities to own additional property of many older individuals through 'buy to let'. The literature includes some quantitative studies that

[1] See Albertini et al (2018) for a Europe-wide narrative of this issue.

emphasise the role that advantaged parents may play in helping to determine the tenure outcomes of young people (Bengtsson and Ruonavaara, 2010; Robertson et al, 2010). Moreover, it has recently been discovered that this intergenerational mechanism is transmitted across at least three generations (Galster and Wessel, 2019).

Tenure path-dependencies have come up in recent literature as the additional influence of tenure, as demonstrated in Aguda (2019); Coulter (2018) and Wagner (2014). Different dimensions of the connection between young people's housing tenure outcomes and their parental tenure are revealed in these studies. Yet, there is a question mark on whether path-dependencies combine with other social factors to drive tenure transitions among young adults. Social capital and neighbourhood effects may further explain some 'herding' effects (Drew, 2014) taking place. The effects further draw on the importance of socialisation hypothesis (Aguda, 2019; Aguda and Ebohon, 2020; Lersch and Luijkx, 2015; Leviten-Reid and Matthew, 2017) and how they contribute to tenure shifts. Other literature, such as Albertini et al (2018); Lennartz and Helbrecht (2018) and Mulder et al (2015) provide evidence of intergenerational support to influence young people's housing outcomes across Europe. However, these studies focus largely on the individual levels of tenure transition and with very limited emphasis on the combination of neighbourhood (area) effects.

Some strands of literature emphasise the potential importance of neighbourhood factors on the housing (including tenure) outcomes for young people. There is, of course, a very well-developed and extensive literature that deals with the influence of neighbourhood factors on the production and reproduction of inequalities. This literature emphasises educational attainment and labour market outcomes, but also reflects housing outcomes, and is rooted in the notion that the relationship between the volume or concentration of deprivation and the life chances of residents or children of residents is non-linear. This, in turn, introduces the concept of 'threshold effects' or the possibility that incrementally adding disadvantage to a neighbourhood has a small, linear and perhaps unsurprising effect on the outcomes for residents – until a certain threshold is reached. After this point, the negative impacts of neighbourhood level disadvantage on individuals increases much more strongly, such that a threshold is said to have been reached or exceeded and the relationship becomes non-linear. The neighbourhoods and deprivation literature is too extensive to review in full here, but an excellent summary of the salient features is provided by Galster (2012) who summarised neighbourhood effects into impacts from interactions through socialisation, the immediate environment or geographic location, and the associations where one belongs. Besides, Kearns et al (2012) showed the importance of housing deprivations on people's eventual outcomes.

There are several areas of relevant overlap between the 'neighbourhoods' literature and the questions of tenure choice (outcomes) and wider housing system outcomes for young adults. Some studies have found connections between the attributes of neighbourhoods and outcomes, broadly defined, for young people. Examples include van Ham et al. (2014) and Hedman et al. (2015), in which neighbourhood sociological histories of young people were linked to their later economic outcomes, and Bramley & Karley (2007) whose econometric analysis of children's school performance took account of a statistically significant link to the housing tenure and the neighbourhood level attributes associated with children's parents. Harkness & Newman (2003) found that for young people in their teenage years the housing tenure of parents and the attributes of their neighbourhood during those years made an impact on their demographic and economic outcomes in later years.

Much of the research undertaken on intergenerational transmission of neighbourhood effects on children's outcomes relate to wider economic, social, and psychological issues. There are critical viewpoints, such as in Dietz (2002) and Arthurson (2012), suggesting that although neighbourhood effects exist, the effects are often over-estimated. This may stem from the scale and boundary definition of neighbourhoods, but could also be the instance of reverse causation (for example, see Arthurson, 2012), whereby what is intended or assumed to be the resultant effect of neighbourhood differences may be the cause of such differences. This effect may be difficult to differentiate empirically due to certain selection procedures and it can occur in some socio-economic outcomes research. For instance, it may be difficult to ascertain whether neighbourhood effects contribute to future economic circumstance or perhaps economic circumstances resulting in movements into certain neighbourhoods (see also van Ham and Manley, 2009). The latter study explored neighbourhood effects on employment outcomes of individuals.

To summarise, the changing patterns of housing (including tenure) outcomes for younger people need to be understood not merely concerning the economy and rising housing costs, but in the wider contexts of inter-generational relations and neighbourhood effects. While the former is currently best understood in housing research as the study of unequal opportunities between generations, the research agenda is beginning to reflect these consequences for inequalities within the younger population cohorts. The few studies that have recognised this have focused thus far on direct transmission of resources and non-financial familial assistance and the effects on propensities to enter homeownership. There has been very little research focused on the indirect or socio-psychological effects of other aspects of social capital on those propensities. This line of argument is also applicable to the literature on neighbourhood effects, which has emphasised threshold effects or the non-linear nature of accumulation of disadvantage on the life chances of individuals. This is best demonstrated by the rich empirical literature on neighbourhood effects and the strong emphasis on educational attainment. The impacts of growing up in owner-occupation and/or in neighbourhoods dominated by owner-occupation, combined with social capital factors, on the propensities of young people to enter homeownership as adults, have not been explicitly estimated by any previous study, to the best of our knowledge. The remainder of the article remedies this gap, beginning with a discussion of our research method and data in the next section.

3. Study approach

We draw on the British Household Panel Survey (BHPS)[2] (2001[3] through 2015) to estimate tenure transition probabilities for individuals (household reference persons and others[4]) aged 18 through 34. We hypothesise that the probability of transition to homeownership depends partly on social capital, and on past exposure to homeownership (i.e. growing up in homeownership). The latter can be measured directly within the BHPS, following the approach in Aguda (2019), by following respondents with a history of living in parental homeownership. We also include social capital proxies, as applicable in Aguda (2019) and Leviten-Reid and Matthew (2017), such as the frequency/regularity of contact between the individual and parents; being involved in a local organisation and strength of like/dislike of the neighbourhood. We expect that socialisation in the neighbourhood may delay tenure transitions for young people (Leviten-Reid and Matthew, 2017). Nevertheless, stronger bonds with parents may suppress neighbourhood effects, especially for homeownership transitions (Aguda, 2019). Social capital cannot be measured directly, but the BHPS contains proxies indicating the social capital drivers[5]. In addition to these proxy variables, we include neighbourhood-level variables derived from the census and the indices of multiple deprivations (Rabe and Taylor, 2010). These are discussed in more detail below.

In addition to using the BHPS, we use variables drawn from the UK census for 2001 and 2011, and variables drawn from a series of cross-sectional studies of deprivation (the index of multiple deprivations or IMD for 2004, 2007, 2010 and 2015 for England; for 2005, 2008, 2011 and 2014 for Wales, and 2004, 2006, 2009 and 2016 for Scotland[6]. Unfortunately, the methodologies by which the indices of multiple deprivations are constructed differ for each country within Great Britain, in addition to changing over time. This makes it inadvisable to attempt to construct a single national scale (McLennan, 2019), although some studies have sought to adjust each country-specific IMD to generate a single UK-wide scale[7]. In this study, we follow the advice of the Office for National Statistics by working with the country-specific IMD variables.

[2] The BHPS is a large multi-disciplinary dataset of socio-economic situations of individuals and households in Britain. The BHPS primarily ended in 2008 but continued in a larger panel survey: The UK Household Longitudinal Study (UKHLS).

[3] The starting year was chosen primarily due to data availability, especially with the IMD indices starting in 2004 across the UK.

[4] Others are individuals that are either yet to form independent households or in full-time studies. They are therefore recategorized as living with parents.

[5] See Aguda (2019) for a full demonstration of the proxies.

[6] See Appendix A for distribution of census and deprivation data.

[7] An example of this study is Payne and Abel (2012).

It is important to note that the cross-sectional IMD indices consist of deprivation measurements relating to seven specific attributes of the Lower layer Super Output Areas (LSOA)[8]: housing barriers and accessibility to local services, income, crime, health, employment, living environment and education. In addition to these, there is a general measurement index of deprivation for each LSOA, which is a weighted mix of the seven attributes. This was achieved using wide-ranging resources of data covering 37 indicators of deprivation. IMD2004 in England, for instance, matches 2001 census data while IMD2015 matches the 2011 census data as the census years match closely to the years of IMD indicators assessment (Rabe and Taylor 2010). This is also applicable to the indices of deprivation chosen for Scotland and Wales. A summary of IMDs and census data used is as shown in Appendix A[9].

Across the data years, 32482 LSOAs were covered in England while 1909 were covered in Wales and 6505 data zones in Scotland resulting in 40896 small areas covered in all of Britain. In this study, we place particular emphasis on the housing and education deprivation domains. McLennan et al (2019) define the educational deprivation measurement as the shortage of achievements and abilities in a local area, which could be about young people, older people, or children. Meanwhile, housing deprivation refers partly to the lack of housing quality and accessibility in an area. Chances of tenure transitions could, therefore, be influenced by the level of housing or educational deprivation in the neighbourhood e.g. possibility of homeownership transitions may be predicted by the level of deprivation or socialisation in the neighbourhood of origin.

As a preliminary step to the analysis, we re-ranked the LSOAs ranks[10] by dividing them into three equals (or groups). These three groups are used as proxies for neighbourhoods such that group 1 is the most deprived group of LSOAs and group 3 the least deprived in each country (England, Wales, Scotland). For the Scottish data, we used data zones, which is the closest equivalent geographical unit to the LSOA in England and Wales. However, data zones range between 500 to 1,000 people whereas LSOAs range from 1,000 to 3,000. Northern Ireland has not been included in the analysis due to the unavailability of comparable deprivation data for this region, thus the focus of the analysis is Great Britain rather than the United Kingdom.

Data relating to neighbourhood quality (specifically housing and education deprivation levels), percentages of individuals in different national statistic socioeconomic classification scales, academic qualification, unemployment rates and housing tenure rates are extracted from the census. In joining the census and deprivation variables to the BHPS, we linked the closest applicable year.

The essential element of the analysis is a set of tenure transition probability models. We estimate separate models of transition to homeownership, private renting, and parental housing. In addition to social capital and childhood experience of homeownership, as discussed above, the models naturally include a set of variables that are already known to be predictors of tenure choice/outcomes at the level of the individual. This includes gender, presence of a spouse, labour market income, employment status, presence of children in the household, age, local levels of housing costs, and economic/demographic shock variables including loss of job, loss or gain of a partner, and entering parenthood for the first time. Thus, the models include variables at the individual level nested within a higher level - neighbourhood level. This approach is referred to as multi-level regression. We reflect this by specifying the tenure transition probabilities as multi-level mixed-effects logistic regression models taking the form:

$$Log\left(\frac{h_{ij}}{1-h_{ij}}\right) = \alpha Z_{ij} + \beta x_{ij} + u_j \qquad (1)$$

$$u_j \sim N(0, \sigma_u^2)$$

[8] LSOAs (England and Wales) and Data zones (Scotland) are small geographical classification of all areas across Britain. Population size for an LSOA ranges from 1000-3000 residents while a lower figure is applicable to data zones.

[9] We acknowledge the disadvantage of timeliness of census data collection, especially in areas where population changes rapidly (e.g. London). However, the more frequent IMD data aims to bridge this gap.

[10] For every domain, each LSOA is ranked according to their level of deprivation from the lowest rank (most deprived) to the highest rank (least deprived) (McLennan, 2019)

Where for each set of tenure transition model, the left-hand side indicates the binary response of the log of tenure transitions[11] to, say, homeownership, private renting or parental housing; Z_{ij} indicates the variables of interest; x_{ij}indicates the established covariates; $\alpha\ and\ \beta$ indicate the fixed-effects estimates (reported as odds ratios[12]); and $u_j$as the random effects, allowing for possible random variability across the neighbourhoods in which respondents live.

When compiling the census data, the unemployment rate includes all economically inactive individuals. In the National Statistic Socio-economic Class (NS-SEC)[13] classification, full-time students were excluded for consistency reasons as they were not accounted for in the 2001 census. All variables are estimated just before tenure change[14]. Before the econometric estimations, census and deprivation variables are merged to the BHPS sample through the lower super output area code relating to everyone's household. The sample is also restricted to individuals who are present in at least 3 consecutive waves which result in a total of 5,267 individuals across different housing tenures when they were first interviewed. Of this number, 1,031 individuals became homeowners, 832 respondents made the transition to private renting and 663 returned to parental housing on or before age 34 during the study period (Table 1). The remaining 2741 respondents either remained in the same tenure or moved to social renting during the study period. The average age when they were first interviewed is 24 years and females constitute 54 percent of the sample.

[Table 1 about here]

As a final preliminary data preparation step, we carried out a round of factor analysis and saved the resulting factor scores as new explanatory variables. This step is not strictly essential, but it is generally advisable to reduce the possibility of multicollinearity within the set of explanatory variables should a Variance Inflation Factor (VIF) test indicate a high correlation between explanatory variables. To test this, we specified a multiple linear regression of the homeownership rate (from the 2001 and 2011 census) on a set of socio-economic variables[15]. The VIF test indicates the possibility of multicollinearity following the rule-of-thumb suggested in Chatterjee and Hadi (1986). For instance, NS-SEC 12[16] and NS-SEC 57[17] have VIFs of 25.28 and 19.52 respectively, which are well above the rule of thumb cut-off of 10 points.

Therefore, factor analysis was carried out to reduce the risk of multicollinearity by reducing the correlated variables to a smaller set of uncorrelated new variables (i.e. factor scores) (Leishman, 2009). This step reduces the risk of multicollinearity without losing too much information from the original variables. The Kaiser-Meyer-Olkin (KMO) test has been carried out to display a measure of sample adequacy and to ascertain whether the variables have enough in common for a Principal Component Analysis (PCA). This came back with more than 0.5 points, signifying that we may proceed. The results of the analysis are shown in table 2. The varimax rotation has also been applied to make the factor loadings easier to interpret.

[Table 2 about here]

The factor scores substitute for the original neighbourhood level variables. Table 2 indicates that FS1 is negatively correlated with a degree or higher educational qualification, and with managerial and professional occupations, but is positively correlated with lower supervisory, technical, and routine occupations. FS2 is positively correlated with educational qualification below degree level and with intermediate and self-

[11] The primary focus of this research is homeownership transitions but with the other tenure transitions included for the sake of completeness and comparison.

[12] Other form of reporting could use the marginal effects where the percentages are determined. However, this could not be obtained in this study due to the complexity of the non-linear models and the statistical software used. Nevertheless, we have employed the recommended reporting format. See Peng et al (2002).

[13] NS-SEC is the official socio-economic classification. See Office for National Statistics (2017) for official illustration of the classification.

[14] See Appendix C for the summary statistics of data in use.

[15] See Appendix B for summary of the post-estimation VIF statistics.

[16] Consists of NS-SEC 1 and 2

[17] Consists of NS-SEC 5 and 7

employed occupations. It is negatively correlated with the unemployment rate. FS1 has a very low loading on social or private renting, but FS2 is negatively correlated with social renting. Finally, FS3 primarily proxies for neighbourhoods with a high proportion of private renters, but there is also a moderate (0.30) correlation with unemployment. To summarise, FS1 proxies for the concentration of lower socio-economic groups and less than degree level qualification. FS2 proxies for intermediate occupations and FS3 reflect concentrations of private renting and unemployment.

As well as testing whether area effects exist, model (1) specification is an attempt to test whether such effects are conditional on the individual's tenure pathway as a child living in the parental home. To put this another way, we might pose the following questions:

> *Controlling for the individual's characteristics, do concentrations of different levels of socioeconomic status and/or tenure affect the odds of a young adult transitioning to another tenure?*
>
> and;
>
> *Are these effects different for those who grew up in homeownership as a member of their parent's household?*

4. Estimation results

The econometric results are summarised in tables 4 and 5. For ease of comparison, table 3 sets out the base models which include variables that are already known, from our review of the literature, to be important determinants of tenure transition. The models are a series of binary logistic regressions as described earlier. We model transition to homeownership, to private renting, and the parental housing (i.e. a return to the parental home) respectively[18]. In table 3, there are two estimations for each of these tenure transitions. Model 1b differs from 1a in that four 'shock' variables (Ermisch and Di Salvo, 1996) are included, although not commonly considered in the literature. These are dummy variables denoting the loss of a job, gaining a partner, losing a partner, or becoming a parent since the previous wave. The remainder of Table 3 continues in this vein – models 2a and 2b concern transitions to private renting with the latter specification including the four shock variables, and models 3a and 3b deal with transitions to parental housing.

The discussion of the base model results can be kept relatively brief given that this element of the analysis is largely confirmatory. The odds of transition to homeownership or private renting increase with the individual's wage rate in a linear fashion (squared wages are not significant), reduce with part-time employment status and reduce substantially for unemployed status in the case of transition to homeownership. Being unemployed increases the odds of transition to private renting. The 'under 25' age group is the reference category. Individuals in older age groups have a lower odds of transition across the board – apart from the 25-29 age group who have a higher odds of transition to homeownership, but only when the 'shock' variables flagging loss of job and/or gaining a partner are included in the specification. The results tend to confirm the relative instability of younger respondents because the odds of any tenure transition fall with age.

Having children generally reduces the odds of any form of transition, but having a spouse greatly increases the odds of transition to homeownership and greatly reduces the odds of transition to parental housing. For private renting the results are inverted between the two model specifications. Having a spouse increases the odds of transition to private renting when the shock variables are not included or reduce the odds when the latter are included. The odds ratios of the shock variables are very high for 'gained a partner' and 'lost a partner', showing that changes to household composition and relationships are more important than household composition per se.

[18] We focus mainly on tenure outcomes as we could not reach convergence with the estimation when we include their original tenure. Additionally, social renting outcomes are left out primarily because the tenure has shifted away from government focus over the last decade.

Becoming a parent for the first time increases the odds of transition to private renting or parental housing but is not significant for a transition to homeownership. Losing a partner also increases the odds of transition to both private renting and parental housing. However, gaining a partner only increases the odds of transition to private renting. Meanwhile, losing a job only increases the odds of transition to parental housing. This combination of results strongly reinforces the importance of economic and demographic shocks, but the form of tenure transition depends on the interplay between them. While losing a partner and/or parenthood increase the odds of a transition, whether that move is into private renting or back to the parental home may depend on whether a new partner is acquired and/or employment sustained. Ethnicity and gender also play a role, although the odds ratios do not suggest that these are large influences on the odds of tenure transition. In general, individuals in ethnic groups other than white are less likely to transition to another tenure but the exception is model 2b which shows that when economic and demographic shocks are taken into account then the odds of non-whites transitioning to private renting are slightly higher.

The model specifications also include measures of lower quartile LSOA house prices and further divided into four quantiles. Quantile 1 is the reference category and refers to the lowest quantile of housing prices as measured in the individual's area (LSOA) before the transition. The quantiles are entered in the model specification as a series of binomial variables. The model also includes the median net annual private rent level. Both variables are measured at the local authority level. The most interesting results emerge in models 1a and 1b. Higher housing prices reduce the odds of transition to homeownership, but higher private rents increase the odds. The UCC variables are not significant in any of the other models, but the private rent level is significant in the case of both models of transition to parental housing. The odds ratios show that higher rent levels increase the odds of such transitions.

As indicated earlier in table 1, about 13 percent of the respondents (i.e. 663 individuals) returned to parental housing. But only 197 individuals moved to parental housing from another tenure to start a full-time study. On the other hand, some individuals stayed back in parental housing after completing their studies. About 47 percent of those moving back to parental housing was previously in homeownership and 32 percent in private renting. Although 75 percent were employed (whether full or part-time), around 25 percent of individuals that made the transition back to parental housing stopped working and about the same amount (29 percent) were back to full-time education, suggesting that a large proportion remained in one form of work despite the move.

[Table 3 about here]

Table 4 summarises the results of the expanded econometric specifications. These include all the explanatory variables included in the base models, together with additional variables that proxy for neighbourhood effects, social capital, path dependency, and interactions between these hypothesised effects. To ease interpretation and comparison, the coefficients of variables included in the base estimations are not shown in table 4. This improves the readability of the table. The coefficients of the variables from the base estimations do not change markedly. Full results are, of course, available on request to the authors.

As with the results shown previously, we provided models of the odds of transition into homeownership, private renting, and parental housing. Models 4a, 5a and 5c are specified as shown in the base models summarised in table 3, but with the addition of a variable that measures the number of years within which a respondent lived in homeownership while they were a member of their parent's household. To capture any non-linearity, we also include the square of this variable. Models 4b, 5b, 5c add the social capital proxy variables. Models 4c, 5c, 6c add the new variables created through factor analysis, and interactions between these and the 'parental homeownership' variable. This innovation is designed to capture any interaction effects between neighbourhood characteristics and the path dependency or intergenerational transmission of propensity to enter homeownership.

Individuals with a history of having lived in homeownership as part of the parents' household have a higher odd of a transition to homeownership. This result is stable across all models. The square of this variable is also significant, with an odds ratio slightly less than one. Together, these results indicate that the odds of transition to homeownership increase as the number of years in parental homeownership rises, but that this is at a falling rate. The parental homeownership variables are not significant in the models of transition to private

renting or parental housing. This may be because homeowning parents have better resources to maintain their children's independent housing careers or they have homes which are more suited to welcome children with urgent housing needs.

[Table 4 about here]

Individuals who reported liking their neighbourhood in the year before transition have higher chances of transition to homeownership by about 2 odds, but there are no statistically significant effects on the transition to private renting or the parental home. This is also true for the variable 'being active in a local organisation'. Frequency of talking to neighbours has four discrete categories with the reference category defined as an amalgam of the original BHPS codes 'most days' through 'once or twice per week'. Other categories are 'once or twice per month' and 'less than once per month or never', the latter also being an amalgam of two original BHPS responses. Missing responses, or those coded inapplicable, are defined as the fourth category in our coding to avoid losing responses[19] or confounding estimates unnecessarily. The results suggest no difference between the reference category and 'once or twice per month', but the odds of transition to homeownership are much lower for individuals who responded to 'less than once a month or never'. The odds of transition to private renting are much higher for these respondents, by about 1.7 odds, possibly due to lower dependence on social networks for such transition.

The fourth, and final, a social capital proxy is a measurement of the frequency of a respondent's contact with parents. The reference category is set at the highest level of frequency (at least once per week), with other categories being 'several times per year' and 'less often'. The estimates are not particularly stable between estimations, with the results generally suggesting that a lower frequency of parental contact increases the possibility of entering homeownership and/or returning to the parental home and lower odds of entering private renting. However, these estimates become statistically significant only in models 4c, 5c, 6c by up to 1.2 odds – after neighbourhood variables and interactions with parental homeownership is considered. This implies the extent to which some external (e.g. at the neighbourhood level) and internal (e.g. through parental tenure path) socialisation processes may be important in describing tenure transition patterns among young adults in Britain.

The odds ratios for the area level variables are the most difficult to interpret given that the new variables based on factor analysis results are, by definition, a weighted combination of original variables from the census and domains of the indices of multiple deprivations. As described earlier, and in table 2, FS1 proxies for the concentration of lower socio-economic groups and less than degree level qualification. FS2 proxies for intermediate occupations and FS3 reflect concentrations of private renting and unemployment. The odds ratio for FS1 suggests that living in an area dominated by lower occupations and lower levels of educational attainment reduce the chances of entering private renting by 0.87 odds. However, there is a reduced risk of homeownership transition for those who grew up in parental homeownership and living in an area with a concentration of lower occupations / educational attainment by 0.86 odds. For the homeownership models, the coefficients for FS2 and FS3, including their interactions with parental homeownership, show a similar pattern. Both factor scores are associated with reduced odds of transition to homeownership by an average of 0.86 odds, but these reverse and increase the chances by up to 2 odds for those whose parents were homeowners.

Conclusions

The declining prospects for younger individuals and their households to enter homeownership has been a policy concern for some time, but more recently the literature has begun to reflect that housing consumption and tenure outcomes are influenced by factors other than the affordability of housing and credit constraints, however important these undoubtedly are. Some recent studies such as Albertini et al (2018); DeWilde et al (2018); Heath (2018) and Hochstenbach (2018) have commented on the growing importance of inter-generational support which includes, but not restricted to financial support, in shaping outcomes for young adults. The evidence suggests that these influences are becoming more important. Amidst rising labour market

[19] They constitute about 7 percent of total responses.

instability and slow wage growth, it seems likely that housing outcomes will continue to polarise and exacerbate inequalities.

In this article, we have drawn on the British Household Panel Survey to explore the determinants of housing tenure transitions for young adults. Our analysis is restricted to respondents under the age of 35, and we use data from 2001-15 to make better use of the fuller housing-related variables collected under BHPS than its successor, the UK household longitudinal study (UKHLS). In addition to testing the principal determinants of tenure transitions to homeownership and private renting, we examine the odds of individuals returning to housing provided by their parents. This strand of the analysis reveals some interesting insights including the supportive role that parental housing potential provides young adults in the event of the labour market and/or relationship upheaval. Our models also show that higher housing prices at the lower quartile reduce the odds of entering homeownership, while higher median private rents increase the odds. While it is, of course, largely confirmatory, they are valuable from the perspective of providing robust, empirical estimates with which to inform policy.

The other main contribution of this article to knowledge arises through our explicit estimation of area, social capital, and path dependency effects as they contribute to the odds of tenure transition for young adults. We find that social capital factors such as attachment to / liking the neighbourhood, being involved in a local organisation, frequently talking to neighbours, and having frequent contact with parents all give rise to higher odds of young adults entering homeownership. We also show that these effects seem to be conditioned on whether individuals possessed a history of having lived in homeownership as a member of their parents' household. Indeed, the latter is a powerful predictor of the odds of young adults entering homeownership, and a detractor from the odds of entering private renting. Finally, our results show evidence to suggest that area-level variable such as concentrations of socio-economic groups or educational attainment effect, albeit modest, on propensities of young adults to transition – particularly into homeownership. Hence, in this context, socialisation within the family appears to have a stronger effect in comparison to neighbourhood socialisation. Results from our neighbourhood influences may, therefore, contribute additional insights to the existing body of literature on the importance of patterns of tenure mix and social capital and the extent to which these could influence eventual housing outcomes for young people.

As a limitation, this study did not consider the number of years that individuals lived in private or social rented housing due to data availability. Additionally, the effects of these drivers in the periods before, during and after the financial crises could be explored in an expanded study.

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Appendix A Distribution of census and deprivation data across the year 2001 to 2015

Year	Census data	England IMD	Wales IMD	Scotland IMD
2001	Census 2001	IMD2004	WIMD2005	SIMD2004
2002	✓	✓	✓	✓
2003	✓	✓	✓	✓
2004	✓	✓	✓	✓
2005	✓	IMD2007	✓	SIMD2006
2006	✓	✓	WIMD2008	✓
2007	✓	✓	✓	SIMD2009
2008	✓	IMD2010	✓	✓
2009	✓	✓	WIMD2011	✓
2010	✓	✓	✓	SIMD2016
2011	Census 2011	IMD2015	✓	✓
2012	✓	✓	WIMD2014	✓
2013	✓	✓	✓	✓
2014	✓	✓	✓	✓
2015	✓	✓	✓	✓

Note: ✓ indicates 'as above'

Appendix B Summary of Variance Inflation Factors (VIFs)

2001		2011	
Variable (%)	**VIF**	**Variable (%)**	**VIF**
Managerial and professional occupations (NS-SEC12)	25.28	Managerial and professional occupations (NS-SEC12)	26.08
Lower supervisory, technical and routine occupations (NS-SEC57)	19.52	Lower supervisory, technical and routine occupations (NS-SEC57)	19.12
Degree or higher	11.31	Degree or higher	17.11
No degree	4.67	No degree	9.51
Intermediate and self-employed occupations (NS-SEC34)	4.46	Intermediate and self-employed occupations (NS-SEC34)	5.19
Unemployment rate	2.85	Unemployment rate	4.14
Social rented	2.36	Social rented	2.56
Private rented	1.10	Private rented	1.20
Mean	8.94	Mean	10.63

Appendix C Summary table of variables under use in models 7-11

Variable	Obs (2001-2015)	Mean	Std. Dev.	Min	Max
HO transition $_{dv}$	43022	0.024	0.153	0	1
PR transition $_{dv}$	43022	0.019	0.138	0	1
PH transition $_{dv}$	43022	0.015	0.123	0	1
Wage rate $_{t-1}$	40296	0.848	1.653	0	66.748
Working full time $_{t-1}$	35509	0.600	0.490	0	1
Part time work $_{t-1}$	43022	0.179	0.383	0	1
Unemployed $_{t-1}$	43022	0.236	0.425	0	1
Job loss	43022	0.045	0.208	0	1
Female, ref=male	43022	0.538	0.499	0	1
Aged 25-29 $_{t-1}$, ref= aged less than 25	43022	0.210	0.407	0	1
Aged 30-34 $_{t-1}$	43022	0.515	0.500	0	1
No children $_{t-1}$	43022	0.476	0.499	0	1
children 1-2 $_{t-1}$	43022	0.438	0.496	0	1
Children 3-4 $_{t-1}$	43022	0.082	0.274	0	1
Children 5 plus $_{t-1}$	43022	0.004	0.067	0	1
Non-white, ref=white	43022	0.562	0.496	0	1
Presence of spouse	43022	0.521	0.500	0	1
Joined partner	43022	0.036	0.185	0	1
Split from partner	43022	0.009	0.092	0	1
Quantile 2 HP $_{t-1}$, ref=quantile 1	43022	0.141	0.348	0	1
Quantile 3 HP $_{t-1}$	43022	0.361	0.480	0	1
Quantile 4 HP $_{t-1}$	43022	0.450	0.497	0	1
Net rent £000 $_{t-1}$	40301	0.802	2.192	0	43.401
5-9 YPH, ref= <5	43022	0.016	0.126	0	1
>9 YPH	43022	0.018	0.135	0	1
Likes neighbourhood $_{t-1}$	43022	0.895	0.307	0	1
Moderately talk to neighbours $_{t-1}$, ref=(more) often	35503	0.170	0.375	0	1
Less often or never $_{t-1}$	35503	0.152	0.359	0	1
Active in any organisation $_{t-1}$, ref= not active	35509	0.308	0.462	0	1
Contact parent(s) several times a year $_{t-1}$, ref= once a week or more	35509	0.265	0.441	0	1
Less often contact with parent $_{t-1}$	35509	0.454	0.498	0	1
PC1 $_{t-1}$ (Degree or higher, non-degree, NS-SEC12, NS-SEC57), ref=lower-proportion					
mid-proportion $_{t-1}$	43022	0.338	0.473	0	1
higher-proportion $_{t-1}$	43022	0.333	0.471	0	1
PC2 $_{t-1}$ (Social rented, NS-SEC34, Unemployment rate), ref=lower-proportion					
mid-proportion $_{t-1}$	43022	0.334	0.472	0	1
higher-proportion $_{t-1}$	43022	0.325	0.468	0	1
PC3 $_{t-1}$ (Private rented), ref=lower-proportion					
mid-proportion $_{t-1}$	43022	0.338	0.473	0	1
higher-proportion $_{t-1}$	43022	0.330	0.470	0	1
Moderate HDAs $_{t-1}$, ref= highest	35509	0.352	0.478	0	1
Lowest HDAs $_{t-1}$	35509	0.319	0.466	0	1
Moderate EDAs $_{t-1}$, ref= highest	35509	0.338	0.473	0	1
Lowest EDAs $_{t-1}$	35509	0.332	0.471	0	1

$_{dv}$ = Dependent variable; $_{t-1}$ =lagged by a year; HO = Homeownership; PR = Private renting; PH = Parental housing; IMD = Index of Multiple Deprivation; HP = House prices in quantiles; YPH = Years in parental homeownership; PC = Principal component; HDAs = Housing Deprived Areas; EDAs = Education Deprived Areas

Table 1 Summary of housing tenure transitions (percentage change)

Previous tenure	To Homeownership (*N*=1031)	To Private Renting (*N*=832)	To Parental Home (*N*=663)
Homeownership	0	21.88	46.76
Private Renting	39.67	0	31.83
Social Renting	11.4	19.47	21.42
Parental Home	48.93	58.65	0
Total	100	100	100

Table 2 Factor analysis results based on neighbourhood level variables

Variables	**Factor scores**		
	FS 1	FS 2	FS 3
Social rented	0.1207	-0.4990	-0.0208
Private rented	-0.0186	0.0350	0.9189
Degree or higher	-0.5302	-0.0038	0.1110
Less than degree	0.5232	0.3962	-0.0391
Managerial and professional occupations (NS-SEC12)	-0.4751	0.1368	-0.1282
Intermediate and self-employed occupations (NS-SEC34)	0.0941	0.6026	0.1771
Lower supervisory, technical, and routine occupations (NS-SEC57)	0.4264	-0.2172	-0.0337
Unemployment rate	0.1176	-0.4048	0.3041
Eigenvalues	3.8435	1.8652	0.9692
% of variance	41.82	27.62	14.04

Table 3 Base models of tenure transition

Transition to:	Homeownership				Private rental				Parental home			
Variable	Model 1a		Model 1b		Model 2a		Model 2b		Model 3a		Model 3b	
Constant	0.059	***	0.048	***	0.032	***	0.022	***	0.057	***	0.043	***
Equivalent wage rate (lag 1)	1.105	***	1.064	**	1.133	***	1.088	**	1.057		1.046	
Wage rate squared (lag 1)	0.998		0.999		0.992		0.995		0.978		0.980	
Part-time (lag 1)	0.515	***	0.515	***	0.959		1.031		0.889		0.788	**
Unemployed (lag 1)	0.553	***	0.531	***	1.389	***	1.434	***	0.897		1.128	
Female	1.322	***	1.337	***	1.164	**	1.100		1.157		1.081	
Age band (lag 1) (ref=<25)	*ref*		*ref*		*ref*		*ref*		*ref*		*ref*	
25-29	1.120		1.348	***	0.549	***	0.640	***	0.753	***	0.751	***
30-34	0.276	***	0.370	***	0.156	***	0.224	***	0.185	***	0.187	***
Kids 1-2 (lag 1)	0.539	***	0.664	***	0.804	***	1.028		0.912		0.903	
Kids 3-4 (lag 1)	0.420	***	0.533	***	0.799		1.027		1.055		1.020	
Kids 5+ (lag 1)	0.289		0.354		0.636		0.710		0.620		0.717	
Non-white	0.842	**	0.862	**	1.033		1.185	**	0.771	***	0.747	***
Spouse present	3.065	***	2.163	***	1.412	***	0.792	**	0.341	***	0.355	***
quantile1 house prices (lag 1)	*ref*		*ref*		*ref*		*ref*		*ref*		*ref*	
quantile 2	0.624	***	0.616	***	1.105		1.102		0.982		0.996	
quantile 3	0.385	***	0.375	***	1.014		0.984		0.978		0.998	
quantile 4	0.438	***	0.432	***	1.260		1.256		0.907		0.940	
Net annual rent	1.138	***	1.145	***	1.008		1.014		1.056	***	1.062	***
Lost job			0.662	**			0.670	**			5.829	***
Gained partner			6.848	***			11.221	***			0.521	**
Lost partner			1.426				4.296	***			3.647	***
Became parent			0.995				1.407	**			1.563	**

*** denotes significance at 1%; ** at 5%; and * at 10%

Table 4 Models with social capital proxies and neighbourhood variables

Transition to:	Homeownership			Private rental			Parental home		
Variable	Model 4a	Model 4b	Model 4c	Model 5a	Model 5b	Model 5c	Model 6a	Model 6b	Model 6c
Lost job	0.664 **	0.692 **	0.687 **	0.663 **	0.660 **	0.674 **	5.830 ***	5.733 ***	5.726 ***
Gained partner	6.915 ***	7.104 ***	7.131 ***	11.20 ***	11.28 ***	11.61 ***	0.516 **	0.508 ***	0.506 ***
Lost partner	1.442	1.453	1.366	4.290 ***	4.066 ***	4.377 ***	3.636 ***	3.763 ***	3.863 ***
Became parent	0.982	0.973	0.912	1.427 **	1.496 **	1.678 ***	1.573 ***	1.596 ***	1.549 **
Years in parental HO	1.143 ***	1.155 ***	1.121 **	0.270 ***	0.253 ***	0.216 ***	0.936	0.936	0.945
Years sq in parental HO	0.994 **	0.993 **	0.995 **	1.031	1.033	1.037	1.006	1.006	1.002
Likes neighbourhood		1.948 ***	2.066 ***		1.069	0.931		0.855	0.907
Talk to neighbours *(ref=most days through once or twice per week)*		*ref*	*ref*		*ref*	*ref*		*ref*	*ref*
Talk to neighbours *once or twice a month*		0.942	0.991		1.088	1.025		1.073	1.078
Talk to neighbours *less than once a month or never*		0.563 ***	0.600 ***		1.730 ***	1.649 ***		1.171	1.147
Talk to neighbours *(non-response/missing)*		0.949	1.144		0.535 **	0.446 ***		1.287	1.243
Active in local organisation		1.174 **	1.186 **		0.970	0.934		0.947	0.957
Parental contact *(ref=once+ per week)*		*ref*	*ref*		*ref*	*ref*		*ref*	*ref*

Parental contact		0.97	1.06			1.27		1.17			1.06	1.05	
several times a year		9	6			1	**	7			2	9	
Parental contact		1.17	1.19			0.78		0.73			1.20	1.26	
less often		6	7	**		5	**	6	***		0	5	**
			1.12					0.86				1.07	
Factor score 1			9	***				8	***			6	***
FS1 × history parental			0.86					1.19				0.93	
HO			2	**				6				6	
			0.89					1.00				1.03	
Factor score 2			0	***				7				5	
FS2 × history parental			1.45					0.39				1.33	
HO			6	***				2				4	**
			0.83					1.03				1.18	
Factor score 3			0	***				3				4	***
FS3 × history parental			2.07					0.94				0.90	
HO			6	***				1				5	
Post estimation/goodness of fit tests													
N (Observations)			*35509*					*35509*				*35509*	
N (Individuals)			*5267*					*5267*				*5267*	
Model wald chi²			*chi² (48) = 800.53****					*chi² (47) = 339.81****				*chi² (48) = 788.34****	
Log likelihood			*-3961.15*					*-3450.49*				*-2771.64*	
LR test vs logistic regression			*chi² (01) = 184.46****					*chi² (01) = 398.26****				*chi² (01) = 30.20****	