GROWING UP IN SOCIAL HOUSING IN THE NEW MILLENNIUM: HOUSING, NEIGHBOURHOODS, AND EARLY OUTCOMES FOR CHILDREN BORN IN 2000

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CASE/143
February 2011

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Editorial Note and Acknowledgements

Rebecca Tunstall is a Lecturer in the Department of Social Policy, LSE, and a CASE Associate, Ruth Lupton is a Senior Research Fellow at CASE, Dylan Kneale was a Research Officer at the Centre for Longitudinal Studies when this paper was written, and is now a Senior Researcher at the International Longevity Centre, UK, and Andrew Jenkins is a Senior Research Fellow in the Centre for Research on the Wider Benefits of Learning, Institute of Education. This paper is one of a pair funded by the Homes and Communities Agency and the Tenant Services Authority, produced at the same time. The other report can be found at http://sticerd.lse.ac.uk/dps/case/cr/CASEreport64.pdf. As members of the project steering group, Kurshida Mirza (HCA), Jim Bennett (HCA), and Phil Miles (TSA) gave valuable feedback on results and early drafts.

Stephen Muers (HCA) also provided helpful guidance and ideas, and Abigail McKnight (LSE) provided guidance on methods and presentation.

We would also like to thank Anna Tamas and Jane Dickson of CASE, who prepared the text.

The analysis, views and conclusions expressed in this report are those of the research team and not necessarily of the HCA or the TSA.

Abstract

This study draws on the Millennium Cohort Study to explore the housing and neighbourhood circumstances of children born in England in 2000 at the age of 5 in 2006. The majority of children experienced good housing conditions. Those in social rented homes, and to a lesser extent in private rented homes too, were markedly disadvantaged in terms of family circumstances and neighbourhood deprivation, while housing conditions and other neighbourhood characteristics also varied somewhat between tenures. Links were found between children's housing tenure and test scores. These were largely explained by a combination of family characteristics and neighbourhood deprivation.

JEL Classification: I30
Keywords: Millennium Cohort Study, housing conditions, neighbourhood conditions, housing tenure effects, neighbourhood effects

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Introduction

This report builds on past work using the British birth cohort studies to investigate childhood housing conditions and tenure for people born in 1946, 1958, 1970 and 2000 and their associations with adult outcomes for the first three of those generations (Feinstein *et al*, 2008 and Lupton *et al*, 2009), as well as other work in the field (particularly Hansen et al. 2010).

The report investigates childhood housing conditions, tenure and neighbourhood conditions for 5-year old children, taking advantage of the extensive information provided in the Millennium Cohort Study: a longitudinal study of children born in 2000. It also looks at associations between housing tenure and early developmental outcomes, and the role that neighbourhood characteristics may play in this.

The report is one of a pair funded by the Homes and Communities Agency and the Tenant Services Authority, produced at the same time, each building on previous work in different ways. The other report, which uses the British Cohort Study of people born in 1970, explores associations found between teenage housing tenure and adult outcomes, and the extent to which both rented tenures may be associated with less positive outcomes, and the role that neighbourhood characteristics may play in this. The other report can be found at http://sticerd.lse.ac.uk/dps/case/cr/CASEreport64.pdf.

Aims and approach

In this report, we focus on data on children in the Millennium Cohort Study in England at age 5 in 2006.

Firstly, we use the study to learn more about the homes and neighbourhoods of today's children, and how much their experiences vary by tenure and neighbourhood. This builds on some existing analysis by other authors (especially Ketende *et al*, 2010), and substantially extends the information on the 2000 cohort in earlier work by members of the same team (Feinstein *et al*, 2008 and Lupton *et al*, 2009).

Secondly, we use this information to explore connections between childhood housing tenure and early outcomes. In contrast to our earlier work, which looked at whether housing tenure in childhood was related to outcomes in later life for people born in 1958 and 1970, here we examine whether housing tenure in childhood was related to outcomes at the same point in childhood, for people born in 2000. We describe the relationship between housing tenure at age 5 and scores in vocabulary and pattern construction tests at age 5. Then we test to see if statistically significant associations remain after controlling for family and individual factors.

Data and methods

The Millennium Cohort Study follows a sample of children born in the UK in 2000 as they grow up. Almost 15,000 have been tracked to the age of 5 in 2006. Data were collected when the children were about 9 months old in 2000/01, when they were 3 years old in 2003/04, when they were 5 in 2006 and most recently at the age of 7 in 2008. All waves of data collection to date involved interviews with parents. At the age of 5, cohort members also did diagnostic tests. Where present and able, their older siblings completed a survey. (For more information on the Millennium Cohort Study and its data, see Lupton *et al* (2009)

and Joshi *et al* (2010), or visit http://www.cls.ioe.ac.uk). We report data from England, rather than Great Britain (in contrast to Feinstein *et al*, 2008 and Lupton *et al*, 2009, due to the interests of the funders).

The Millennium Cohort Study provides a wealth of data on children, families and their environments. Figure 1 shows the data used in this report.

Figure 1: Millennium Cohort Study data used in this project

2000/01 - cohort members aged about 9 months

Index of Family Advantage (made up of parent's highest educational level and parents' occupational class at cohort member's birth in 2000; divided into five groups or 'quintiles')*
Mothers' age at birth of first child (which may have been before cohort member's birth in 2000)*

2006 - cohort members aged 5

Housing tenure (home ownership, private renting, social renting and living with cohort member's grandparents)
Housing characteristics: size, building type, damp and condensation, atmosphere according to parent
Characteristics of neighbourhood in which cohort member was living at age 5 in 2006 (in terms of deprivation, and parents' attitudes to the area as a place to raise children)*
Parent's views of education child receiving*
Cohort member's school and use of neighbourhood
Cohort members' older siblings' views and use of the neighbourhood (older siblings' median age was 12)
Whether there were one or two parents resident in the household in 2006*
Number of siblings resident in the household in 2006*
Early outcomes: cohort member's scores on British Ability Scales tests of pattern construction and naming vocabulary

Note: *=characteristics to be used as control variables.

In Part 1 of this report, we simply describe the housing and neighbourhood conditions of 5 year old children, how parents, children and children's older siblings experienced and used their neighbourhoods, and variations by housing tenure. For cohort members, we report figures for those who were included in data collection both in 2000/01 and in 2006, and who were living in England, about 9,000 children. Figures have been weighted to compensate for the intentional over-sampling of certain groups of children, including those in deprived neighbourhoods. 16% of cohort members were only children, but most had siblings and about half had older siblings, mostly close in age. A total of 2,000 older siblings were deemed mature enough to complete the written questionnaire. They were aged between 10 and 15 and had a median age of 12. For cohort member's older siblings, we report unweighted data.

In Part 2, we describe the relationship between housing tenure at age 5 and two measures of early outcomes at age 5. This contrasts with the wide range of adult outcomes we looked at in previous studies, covering income, employment, health, well-being, as well as education and skills (Feinstein *et al*, 2008 and Lupton *et al*, 2009). Then we test to see if statistically significant associations remained between tenure and early outcomes after controlling for neighbourhood characteristics, and for a small number of family and individual factors known at birth or at age 5. We used a smaller set of control variables than in previous studies, in order to explore the effects of individual control variables and their relative impact (Feinstein *et al*, 2008 and Lupton *et al*, 2009).

PART 1: The housing and neighbourhoods of today's children

What were the housing circumstances of children aged 5 in 2006?

Housing tenure

At age 5 in 2005/06, 65% of Millennium Cohort Study children were in owner occupied homes. 24% were in social rented homes, including homes rented from councils and from housing associations, and a very small number in homes part-rented and part being bought with a mortgage from housing associations. 9% were in private rented homes. 2% were living with their grandparents, in various tenures (we do not report further results for this small group) (Table 1).

Table 1: Tenure of MCS cohort members at age 5, 2006

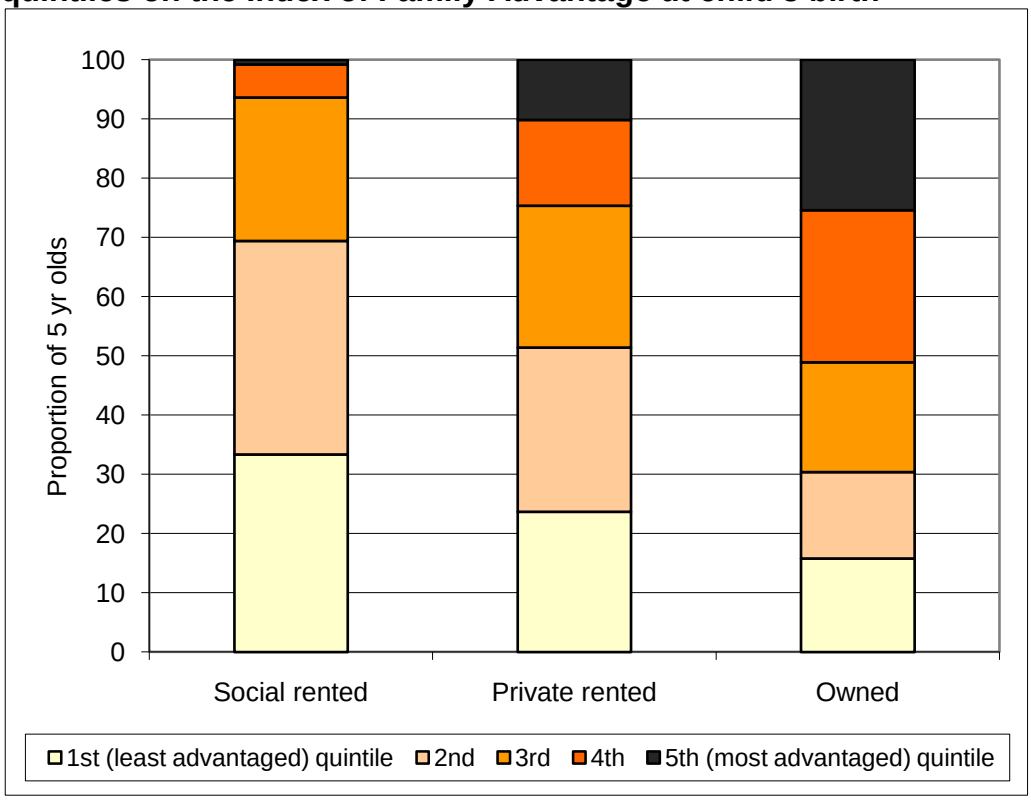
	Owned	Social rented	Private rented	Living with cohort member's parent/s' parents	Total
Number	5893	2210	792	147	9041
Proportion	65%	24%	9%	2%	-

Millennium Cohort Study cohort members in England were more likely to be in home ownership at age 5 than members of the British Cohort Study across Great Britain, born in 1970, had been at age 5, with a figure of 65% compared to 59% (Lupton *et al*, 2009). This reflects the overall growth of home ownership over the thirty year period (as well as some differences between England and Great Britain) However, at age 5 in 2006 Millennium Cohort Study cohort members were less likely to be in home ownership than the 1970 cohort members had been at age 16 in 1986, with a figure of 65% compared to 72% (Lupton et al. 2009), reflecting how families change tenure and move into ownership as children grow up.

Housing tenure and family advantage

We calculated an 'Index of Family Advantage' for children's families, made up of their parent's highest educational level and occupational class when the cohort member was born in 2000. In lone parent households, the just one set of characteristics made up the index. The Index of Family Advantage is closely correlated with housing tenure (Figure 2) (see also Feinstein *et al*, 2008 and Lupton *et al*, 2009).

Figure 2: Proportion of children in each tenure in 2006 from families in different quintiles on the Index of Family Advantage at child's birth



The situation of children in social renting stands out. In 2006, only 1% of 5 year old children of social renters had parents in the top quintile on the Index of Family Advantage, and only 7% had parents in the top two quintiles combined. 69% of children in social renting had parents whose education and jobs put them in the bottom two quintiles.

In contrast, substantial proportions of children in both private renting and home ownership came from every quintile of Family Advantage, although in general private renting families were somewhat disadvantaged and home owners' families were more advantaged. Half of all children in private renting had parents whose education and jobs put them in the bottom two fifths, while half of all children in owner occupation had parents whose education and jobs put them in the top two quintiles.

A wide range of other measures of child and family advantage vary starkly by tenure. For example, across Great Britain, at the age of 5, 70% of children in home ownership had mothers who were working, compared to 42% of those in private renting and 32% of those in social renting (Lupton *et al*, 2009). Children living in social housing at age 5 were the most likely to have parents with lower education, economically inactive mothers, lone parents, and minority ethnic parents (Ketende *et al*, 2010). Bradshaw and Holmes (2010) found that children of both social renters and private renters were more likely than those of owners to be in 'poor' households on a range of indicators of poverty, including:

- households with incomes less than 60% of the median (this is the standard measure of 'child poverty');
- households receiving means tested benefits;
- parents saying they could not afford nine important items or activities (such as birthday celebrations or all-weather shoes); and
- parents saying they were 'just about getting by', 'finding it quite difficult' or 'finding it very difficult (Bradshaw and Holmes, 2010).

Children who were in social housing at birth were also more likely to stay poor over their first five years than those in other tenures, even after controlling for the number of earners in the households and mother's education (ibid.).

These patterns do not imply that social housing caused lower parental advantage or household poverty: they are much more likely to be due to effective targeting of social housing on more disadvantaged families. Bradshaw and Holmes (2010) also found that households with young children were also more likely to be poor if there was only one parent, a large number of children, mothers who were young, had low qualifications or were of minority ethnicity. However, the link between poverty measures and social rented and private rented tenures persisted after controlling for all these factors. This means that social housing contained not just higher concentrations of lone parent households than other tenures, for example, but concentrations of the poorer lone parent households. After controls, the association between social housing tenure and child poverty was somewhat larger than that between having just one earner in the family and child poverty, although it was much smaller than that between having a mother of Pakistani and Bangladeshi ethnicity and child poverty (Bradshaw and Holmes, 2010).

Each of these measures of child and family advantage is likely to have an influence on early child outcomes.

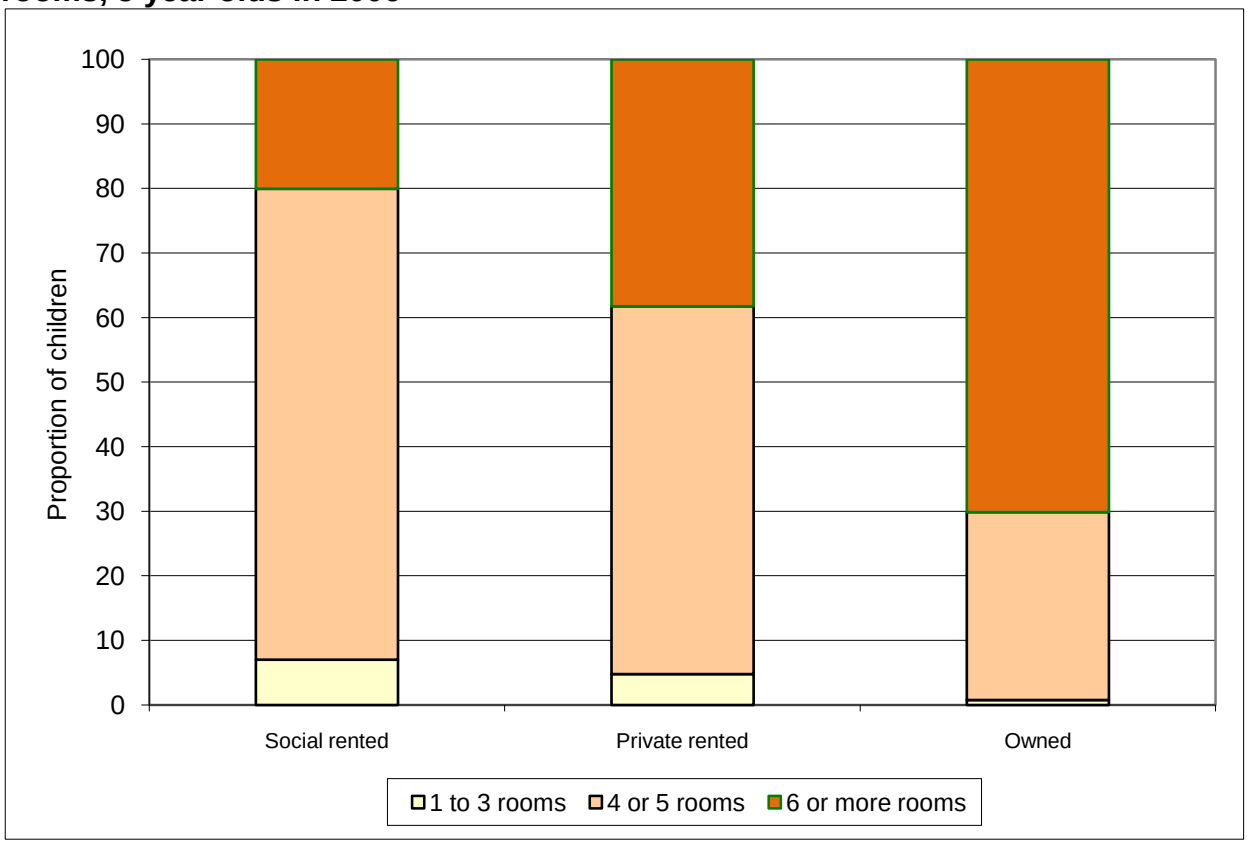
Size of homes

The Millennium Cohort Study collects information about the total number of rooms in a house, excluding bathrooms, toilets and halls, but not what the rooms are used for. A home with three rooms, for example, could be a one- bedroom home with a separate kitchen and living room or a two-bedroom home with combined kitchen and living room. A more typical two-bedroom home would have a total of four rooms.

Only 3% of children were living in the smallest homes with one, two or three rooms. 14% of children were living in four-roomed homes. Using the standard of having more than 1.5 persons per room, only 2% of cohort families across Great Britain were living in overcrowded accommodation when children were 5, although the figure was 4% for those in social housing (Lupton *et al*, 2009). The overcrowding measure, however, does not take account of much higher general space norms and expectations.

There is, a stark tenure divide in terms of the size of children's homes. 7% of children in social renting families were in small homes with one, two or three rooms. 73% were in medium sized homes with four or five rooms (a kitchen, living room and two or three bedrooms), compared to 57% of children of private renters and 29% of children of owner occupiers. In sharp contrast, 70% of children of owner occupiers were in homes with six or more rooms (either a kitchen, living room and four or more bedrooms, or two reception rooms and three or more bedrooms), compared to 38% of private renting families and 20% of those in social renting families. For families, private renting can offer more space than social renting.

Figure 3: Proportion of children in each tenure in homes with different numbers of rooms, 5 year olds in 2006



Social housing has generally been built to provide reasonable space, with four or five rooms and two or three bedrooms. Two bedrooms allow the separation of child and adult sleeping (except where there are multiple adults), and three bedrooms allow at least some separation of siblings sleeping by age and gender, and possibly individual bedrooms for children. However, in 2006 the median 5 year old's home had six or more rooms, and families in these larger homes were more likely to be able to give each child its own bedroom, and to have different living areas for activities of different members of the family.

Building type and gardens

A majority of children in all tenures live in houses or bungalows, as opposed to flats or maisonettes. The idea that most social housing is in the form of flats is a myth. However the proportion of children in houses is markedly lower (77%) for social housing than for owner occupied homes (97%) and private renting (89%).

The proportion of children in homes with sole or shared access to a garden is high at 87% and is similar to the proportion living in a house or maisonette. However; those in social housing were least likely to have a garden, with 70% having access, compared to 78% of private renters and 94% of home owners.

Damp and condensation

A large number of studies have found associations between damp housing and child and adult health problems (Tunstall *et al*, 2009). The majority of children lived in homes free from any damp or condensation. However, there was a difference between tenures, with children in both rented tenures more likely to experience some problems with damp or

condensation, at 21% of social renting children and 22% of privately renting children compared to just 10% of those in owner occupied homes.

Atmosphere and activities in the home

Millenium cohort parents were asked to give their impressions of the tidiness, noise and atmosphere inside their own homes. These questions provide unusual information about internal conditions in homes.

A majority of interviewees in all tenures thought homes were not 'really disorganised' or noisy and they were calm in atmosphere. Overall, a minority of children were experiencing disorganised or noisy homes, but there was some sign of a split between rented and other tenures. 25% of social renting families thought their homes were 'really disorganised', compared to 14% of home owners, and 20% of private renters. 28% of social renting families thought that you could 'not hear yourself think' compared to 23% of private renters, and 14% of owner occupiers.

Despite these tenure differences, interviewers felt the atmosphere was not 'calm' in only 18% of social rented homes and 15% of private renter homes, compared to 12% of owner occupied ones. Notably, the 'calmness' of the atmosphere is the characteristic of these three which is most directly linked to occupier behaviour rather than the physical environment.

What kinds of neighbourhoods were children living in?

'Neighbourhoods' are defined here in two ways. Firstly, we used data on children's neighbourhoods, defined as the Lower Super Output Areas (LSOAs) their homes were located in. LSOAs are areas made up of a few streets, typically with about 600 homes and households, and about 1,500 residents. Secondly, cohort members' parents and older siblings were asked questions about their 'local area', which they probably interpreted as a similar sized area.

Neighbourhood deprivation

Millennium Cohort Study data already links records on individual children with their home address linked to Lower Super Output area scores on the Index of Multiple Deprivation (IMD) 2004. However, we rematched them into the IMD 2007 to get the most up-to-date data, collected close to when the 2006 cohort research was carried out. 5 year old children were very slightly over represented in the most deprived decile (tenth) of small neighbourhoods, with 12% living there, but they were also overrepresented in the least deprived decile, with 11% living there.

Parents' and older siblings' views of the neighbourhood

The 2006 survey asked children's parents and older siblings, where present and able to fill in a survey, for their views of the local area. When parents were asked if they thought they were living in a neighbourhood that was good for raising children, overall most thought their neighbourhood was 'excellent' or 'good'. The vast majority (85%) of parents felt 'very safe' or 'fairly safe' in their areas.

85% of older siblings said they 'enjoy living in this area' and the same proportion said that 'most people in this area are friendly'. However, 45% were sometimes afraid of walking

alone at night in the area (this question might be theoretical for many respondents, as many may not be allowed to go out alone at night). 24% were worried about being robbed or mugged in the street in their area.

Parents' and older siblings' activities, experiences and services in the neighbourhood

The Millennium Cohort Survey allows us to learn a little about the social context that different homes and neighbourhoods provide for 5-year olds and their families, and provide an insight into how children and families use their homes and neighbourhoods.

For example, the vast majority of parents thought their neighbourhood was 'excellent' or 'good' as a place to raise children (72%). The vast majority of parents said that they had friends or family or both living in the area (85%), had friends amongst other parents in the area (87%), and saw friends frequently (77% within the last week). The vast majority of children had attended some kind of childcare before starting school, including nursery, playgroup or pre-school (93%). The vast majority of children attended a school that was their parents' first choice (94%). The clear majority of parents were 'very satisfied' with the education their children are receiving at their current school (73%), and the vast majority were 'very satisfied' or 'fairly satisfied' (96%). The vast majority of parents thought their children always or usually enjoyed school (96%). A majority of all children saw friends outside school (probably almost entirely in the company of parents or carers) at least once a week (59%). Just under two thirds of children were taken to the park or playground at least once a week (60%).

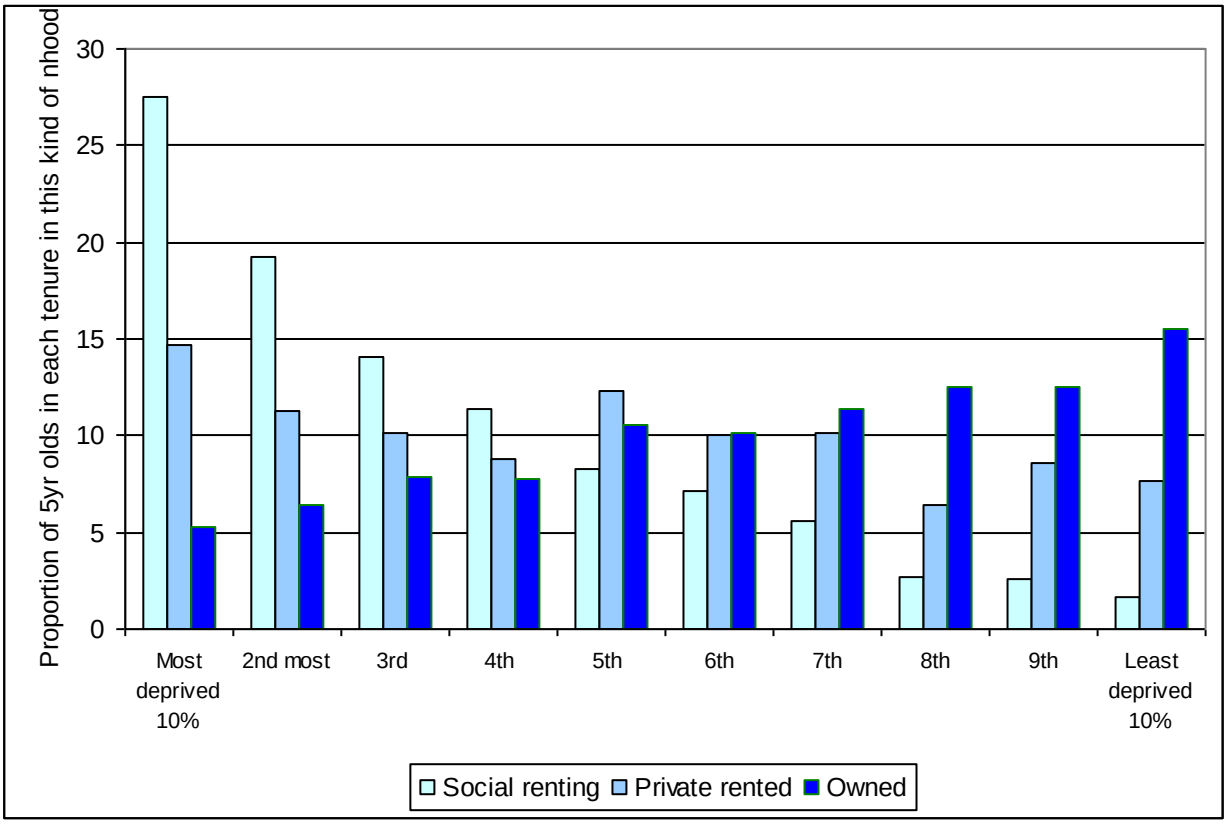
Were children in different tenures also in different types of neighbourhood?

Neighbourhood deprivation

On average, 5 year old children in different housing tenures in 2006 were growing up in very different neighbourhoods. Fully 28% of children from social renting families lived in the most deprived decile (tenth) of small neighbourhoods. 47% lived in the most deprived two deciles of small neighbourhoods. 61% lived in the most deprived three deciles of small neighbourhoods. While children growing up in social housing were not entirely excluded from more advantaged areas, only 20% of the children were in neighbourhoods which were less deprived than average, and only 7% of children of social renters were living in the least deprived three deciles of neighbourhoods.

Amongst children of private renters, 15% lived in the most deprived decile of small neighbourhoods, 26% lived in the most deprived two deciles of small neighbourhoods, and 36% lived in the most deprived three deciles of small neighbourhoods. 57% of these children were in neighbourhoods which were less deprived than average, and 23% were in the least deprived three deciles of neighbourhoods.
Amongst children of owner occupiers, 5% lived in the most deprived decile of small neighbourhoods, 12% lived in the most deprived two deciles of small neighbourhoods, and 20% lived in the most deprived three deciles of small neighbourhoods. 63% of these children were in neighbourhoods which were less deprived than average, and 42% were in the least deprived three deciles of neighbourhoods.

Figure 4: Proportion of children in each tenure found in different deciles of neighbourhood according to the IMD 2004, 5 year olds in 2006



What are 'deprived' neighbourhoods like? Examples of places that fall into the most deprived decile of LSOAs according to the IMD 2007 are most of East Manchester, Moss Side, Wythenshawe in Manchester; Canning Town and parts of Stratford in Newham, and Manningham in Bradford. Places that fall into the third most deprived decile tend to be less well-known, sometimes adjacent to these very deprived parts, such as Whalley Range and Fallowfield in Manchester. Places that are covered by LSOAs in the least deprived decile include for example, most of Ilkley in West Yorkshire, Didsbury in Manchester and part of Manchester city centre, and Wokingham in Berkshire. These are the kinds of places that children in social housing were largely excluded from. However even within Wokingham there is an area which is in the fourth most deprived decile of LSOAs (for more information of which places fit into which deciles, see www.neighbourhood.statistics.gov.uk).

Children whose parents were social renters typically were living in very different local neighbourhood contexts to those whose parents were home owners. Children of private renters were in an intermediate position. If deprived neighbourhoods do exert negative 'neighbourhood effects', then a large group of children growing up in social housing will be subject to these effects.

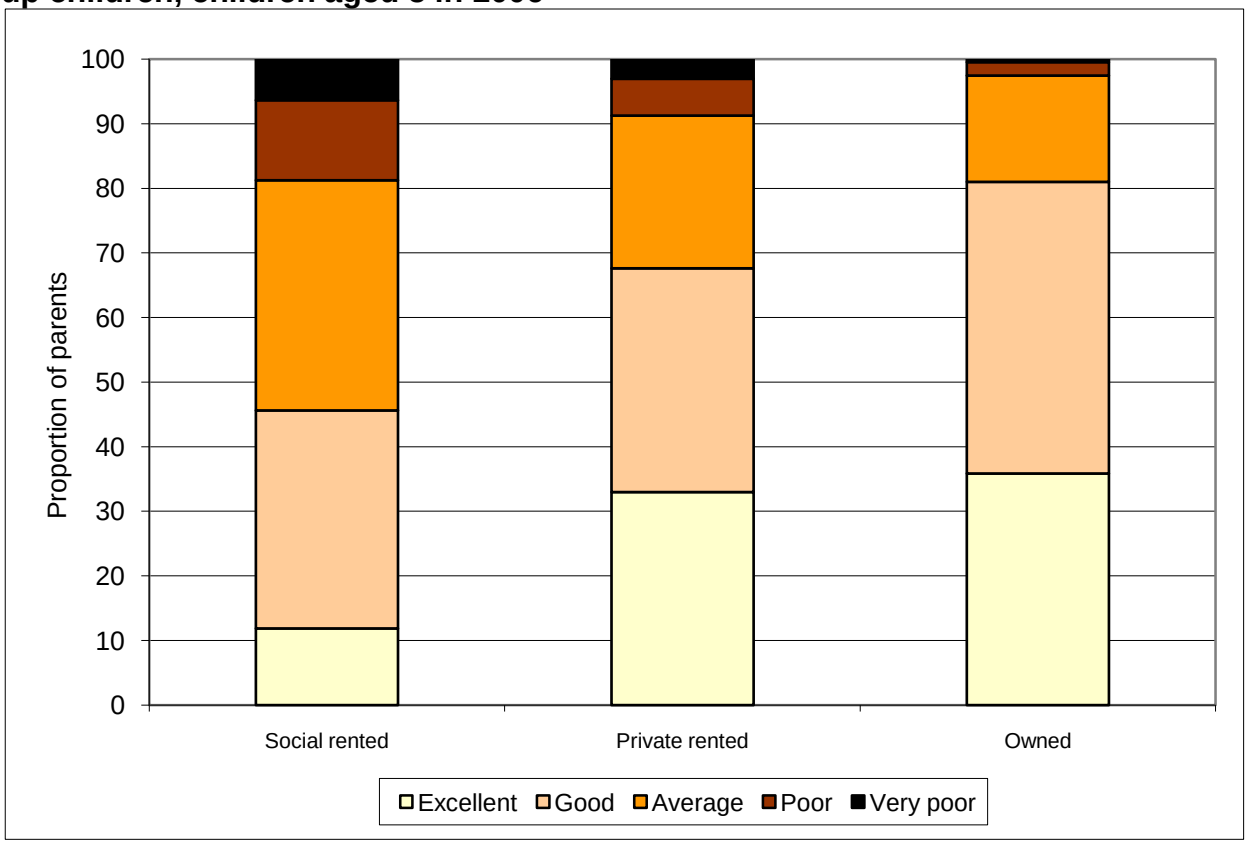
What children's parents and older siblings thought of their neighbourhoods

Overall most parents were happy with their areas as places to raise children, but there was a sharp tenure divide. 36% of home owners, and 33% of private renters thought the area was 'excellent' for raising children, compared to only 12% of social renters. 81% of home owners, and 68% of private renters thought the area was 'excellent' or 'good' for raising children, compared to only 46% of social renters. In other words, the majority of social

renting parents did not feel that their neighbourhood was excellent or good for raising children.

Only 3% of home owner parents said the neighbourhood was 'poor' or 'very poor' for raising children, compared to 9% of private renters, and 19% of social renters. These differences were statistically significant (unlikely to have occurred by chance). Even though social renting parents make up a small minority of the total, in terms of numbers they make up the majority of parents who felt their neighbourhood was not conducive to their childrearing efforts.

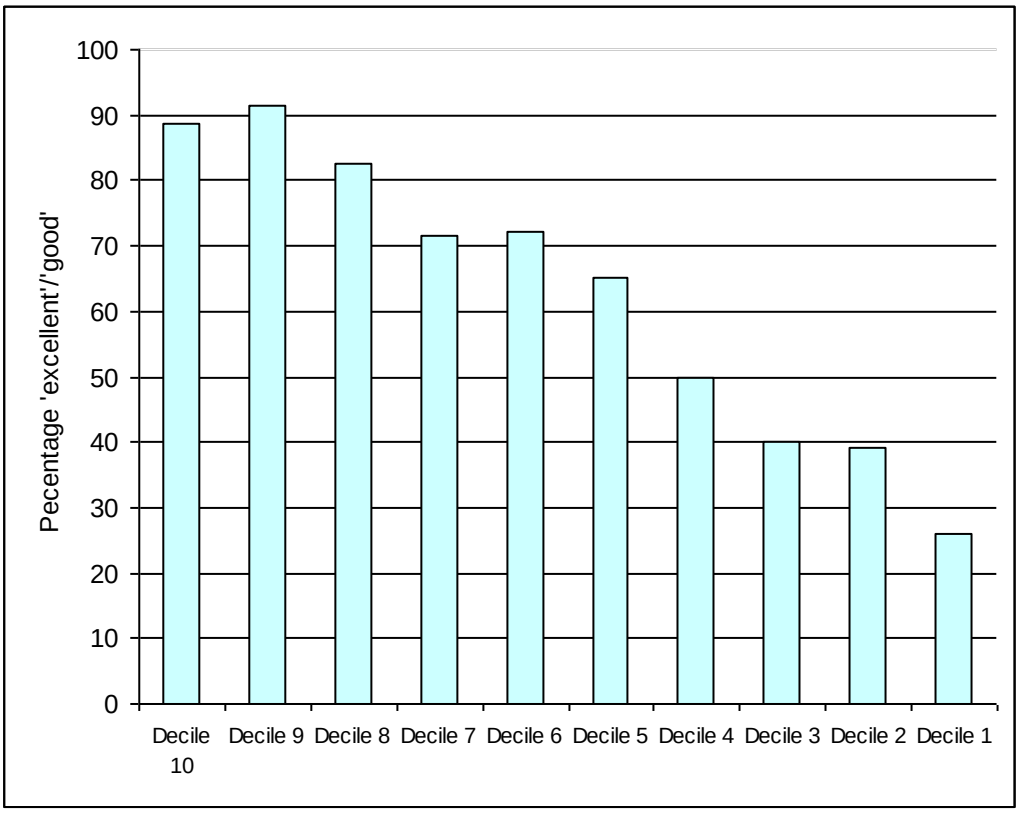
Figure 5: How parents in each tenure rated the neighbourhood as a place to bring up children, children aged 5 in 2006



Attitudes of Millennium Cohort Study parents to the local area as a place to raise children when cohort members were aged 5 are also known to vary by ethnicity (Sullivan, 2010). The parents least likely to say the area was 'excellent' or 'good' were those of Black Caribbean and Black African ethnicities. Parents of minority ethnicity were also more likely to live in social housing (Ketende *et al*, 2010).

What kinds of neighbourhoods were social renters more or less satisfied with? Figure 6 shows that there was a strong correlation between neighbourhood deprivation and the satisfaction of social renter parents with their areas as a place to raise children. About 90% of social renting parents in the two least deprived deciles of neighbourhoods thought their areas were excellent or good to raise children in. However, very few social renting parents and children lived in such advantaged neighbourhoods (Figure 4).

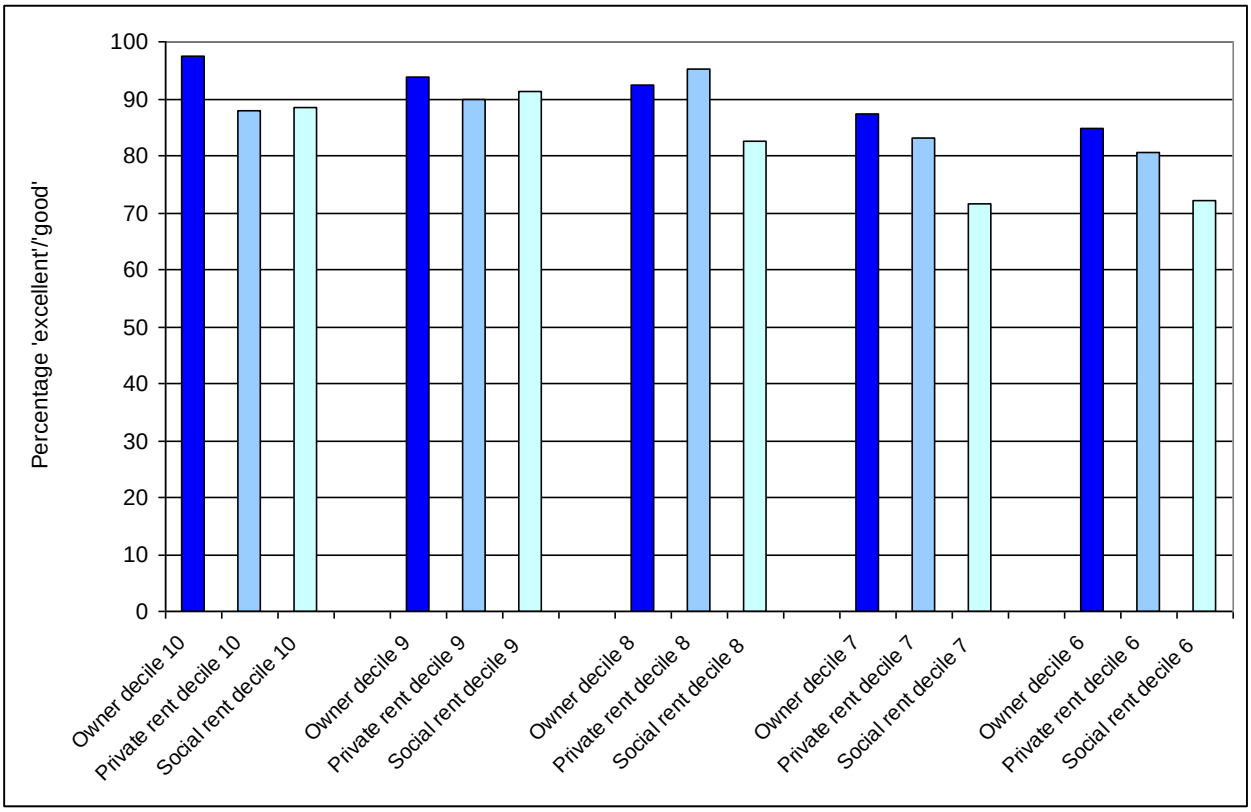
Figure 6: The proportion of social renting parents rating the neighbourhood as 'excellent' or 'good' as a place to bring up children, by neighbourhood decile on the IMD 2007, children aged 5 in 2006



Note: The breaks in the ordinal pattern are likely to be due to the very small numbers of social renters in the least deprived neighbourhoods.

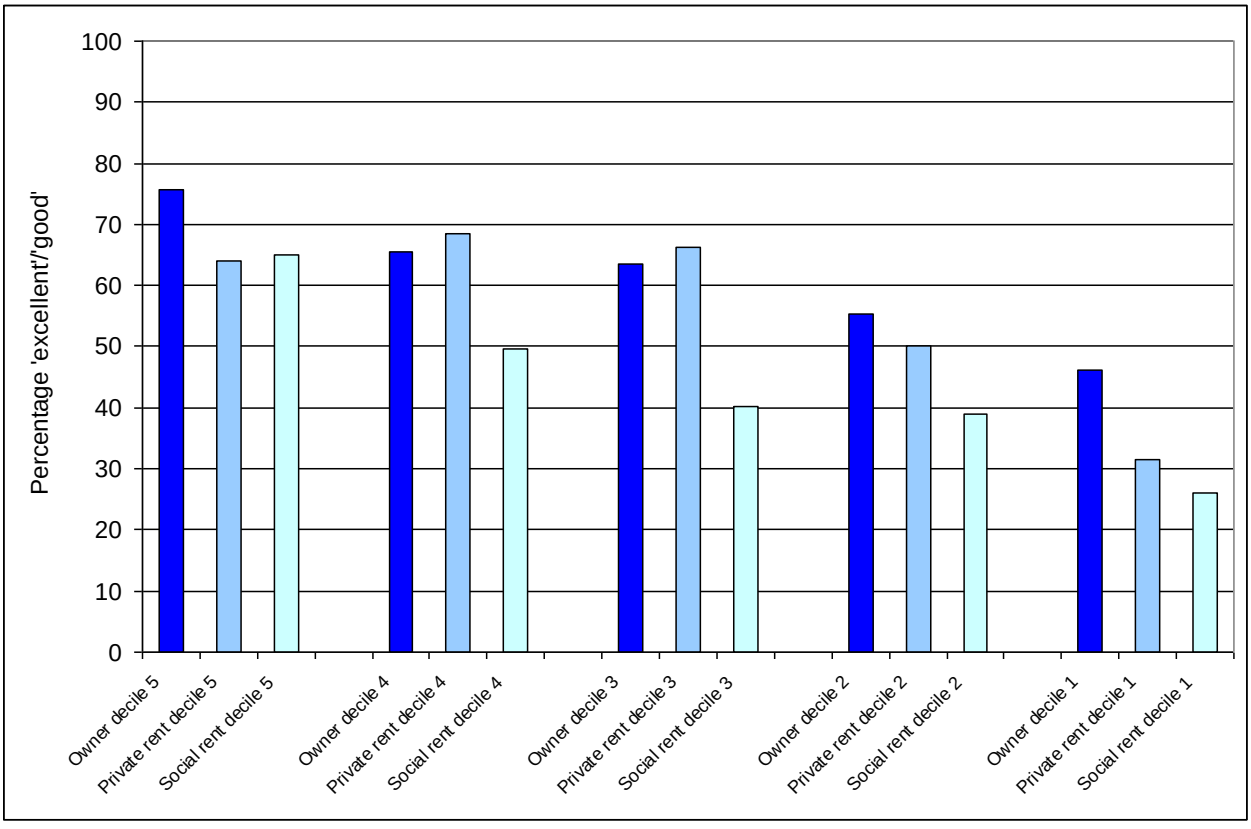
When comparing parents in each individual decile of neighbourhoods, social renting parents tended to be less satisfied with the area than private renters and owners. However, the differences between neighbourhoods were greater than those between tenures. Figure 7a shows that social renters in the least deprived two deciles of neighbourhoods were more satisfied with their areas as a place to raise children than all owner occupiers in all but the three least deprived deciles.

Figure 7a: The proportion of parents rating the neighbourhood as 'excellent' or 'good' as a place to bring up children, by tenure and by neighbourhood decile on the IMD 2007, children aged 5 in 2006



Note: Some of this data repeats Figure 6.

Figure 7b: The proportion of parents rating the neighbourhood as 'excellent' or 'good' as a place to bring up children, by tenure and by neighbourhood decile on the IMD 2007, children aged 5 in 2006



We looked at places which parents of all tenures said were ‘poor’ or ‘very poor’ for raising children, and examined their scores according to the various component elements or ‘domains’ of the IMD 2007. The IMD is composed of scores on employment and income, education, skills and training, health deprivation and disability, crime, barriers to housing and services, and living environments. Many of the measures relate to the characteristics of the neighbourhood population, rather than physical or economic features of the neighbourhood itself. In general, places that were more deprived (with higher scores) on most of the IMD domains were more likely to be seen as poor places to raise children. This was particularly true of places that scored badly on the employment and income domain, the education domain, and to a lesser extent the health and crime domains and indoor and outdoor living environment sub domains. On the other hand, places which were further from post offices, GPs and large shops (places that scored higher on the ‘geographical barriers’ sub domain) were more likely to be seen as good places to raise children. These are usually more rural locations.

We investigated to see if there were links between parents’ characteristics, regardless of tenure or neighbourhood characteristics, and how they rated the neighbourhood as a place to bring up children. Young parents, lone parents, one-child families (more likely to come from young or lone parents) and families with four or more children, parents of lower occupational class, and minority ethnicity were all less likely to rate their area as ‘excellent’ or ‘good’ for raising children. For example, 51% of black parents, 49% of teenage parents thought the area was not excellent or good, as did 47% of lone parents, and 38% of parents with four or more children.

Returning to parents’ views of their neighbourhoods, parents’ feelings of safety varied by their housing tenure. Fully 92% of home owner parents said they felt safe in their areas, compared to 83% of private renting parents, and 73% of social renting parents. Only 3% of owner occupier parents felt their area was ‘fairly’ or ‘very’ unsafe, compared to 13% of social renting parents and 8% of private renters. When asked about racist attacks and insults in their areas, again, there was a tenure pattern, with only 5% of home owner parents saying racist attacks were common in their areas, compared to 11% of private renting parents, and 17% of social renting parents. These patterns are fairly well-known from other sources, but are of continuing concern, and this is the first source to consider parents of young children separately. The fact that the majority of social renting parents did not feel that their neighbourhood was excellent or good and that 19% felt it was poor or very poor for raising children may be of concern to social housing providers.

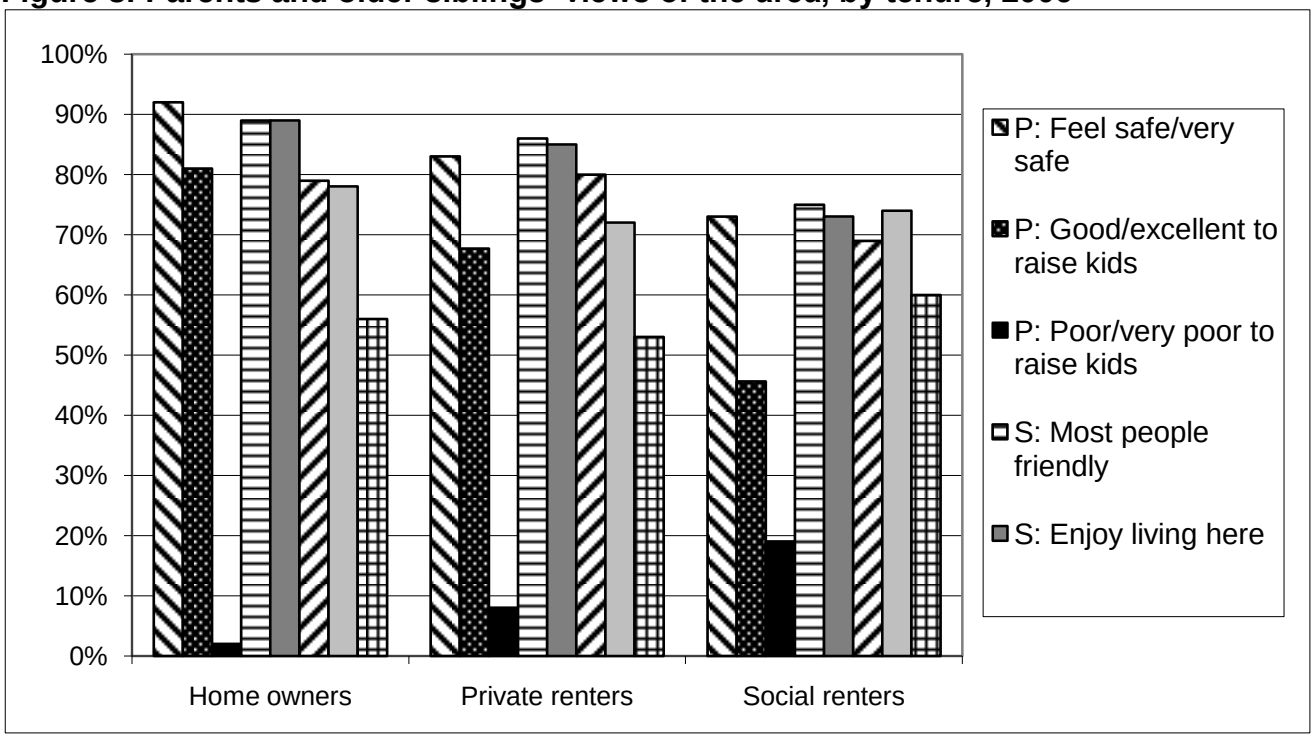
As in the case of their parents, the views of their neighbourhoods expressed by cohort members' older siblings, median age 12, differed by tenure. In each case, children of social renters have less favourable views of their area than those of private renters. There was much less difference between children of private renters and those of owner occupiers, but children of owner occupiers had the most favourable views.

89% of children of home owners enjoyed living in their areas, as did 85% of children of private renters, but only 73% of children of social renters did. Children of social renters were also less likely to say that most people in the area were friendly (75%) compared to those of private renters (86%) and those of home owners (89%). 21% of children of home owners were worried about being mugged or robbed in the area, as were 20% of children of private renters, but 31% of children of social renters were worried. (This may reflect higher actual victimisation, as will be seen below). There was less tenure difference over being afraid to walk alone in the dark, which might support the idea that this was a theoretical issue for many.

The next chart shows that parents' and older siblings' views of their neighbourhoods differed by area deprivation as well as by tenure. Across all the variables, both parents and older siblings in social renting and in the more deprived areas consistently had more negative views than those in other tenures and less deprived neighbourhoods respectively. The only exceptions were children in social renting who were less afraid of walking alone at night in their area than those from other tenures, and who were less likely to have experienced someone trying to steal something from them than those in private renting.

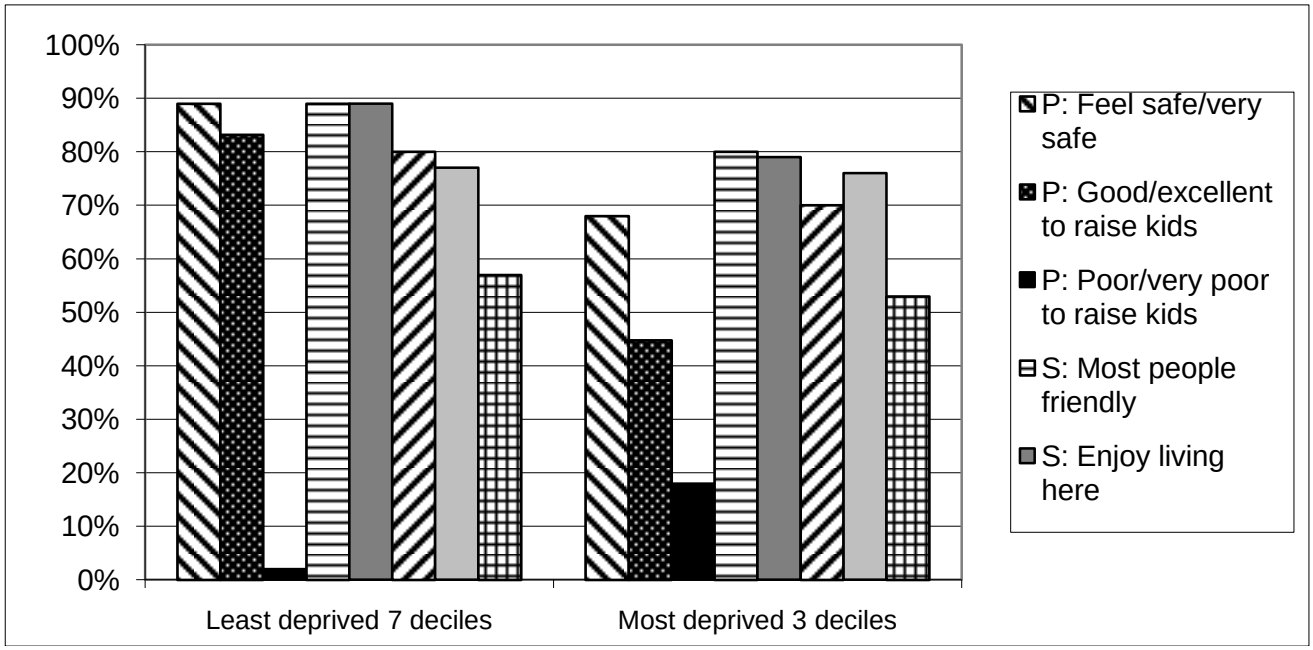
Given the fact that the majority of those in social housing lived in the most deprived three deciles of neighbourhoods, it is possible that views of the area are driven by neighbourhood characteristics as much as or more than by tenure.

Figure 8: Parents and older siblings' views of the area, by tenure, 2006



Note: P = Parents of cohort members, S = Siblings of cohort members, median age 12.

Figure 9: Parents and older siblings' views of the area, 2006, by area deprivation, IMD 2007



Note: P = parents of cohort members, S = older siblings of cohort members, median age 12.

The views of older siblings showed smaller gaps by tenure and neighbourhood types than parents, perhaps because the children had a narrower frame of reference.

The biggest gaps by tenure and neighbourhood were for parents' views of the areas as places to raise children, with parents in the most deprived 30% of neighbourhoods and parents who were social renters much less likely to agree.

How did children, parents, and older siblings use and experience their neighbourhoods?

The surveys of parents and children's older siblings give us more insight into family life, the nature of the neighbourhoods and differences between those in different tenures and those in more and less deprived neighbourhoods. Again this section focuses on the experiences of parents and older siblings in different tenures.

Friends and family: It has been argued that social housing tenants have different, stronger or weaker social networks to those in other tenures, or that allocations practices may disrupt networks. There were no real tenure differences in the proportion of parents with family in the area by tenure (57% for home owners, 57% for social renters, 55% for private renters). However, there were tenure differences in the proportion of parents with friends in the area (81% for home owners, 70% for social renters, 72% for private renters). Only 12% of home owner parents lacked any friends or family in the area, compared to 18% of social renters and 19% of private renters. 61% of owner occupier parents live within 30 minutes travel of their mother's house, as did 66% of social renting parents and 57% of privately renting parents. Children of social renters were more likely to see grandparents every day or at least once a week than those in other tenures (21% every day compared to 16% of children of owner occupiers, and 71% at least once a week compared to 68% for children of home owners). However, they were also more likely to never see their grandparents (8% compared to 1% for children of owner occupiers). The vast majority of parents in all tenures said that they were friends with other parents in the area. However, there were

some differences between tenures, with only 8% of home owner parents lacking friends amongst other local parents, compared to 17% for social renters and 19% for private renters[2].

Pre-school: Children of owner occupiers were very slightly more likely to have attended pre-school (94%) than those of social renters (92%) or private renters (93%). This could be linked to the fact that 72% of owner mothers were working when their children were 5, compared to 32% of social renter mothers (Lupton *et al*, 2009), rather than to any difference in local provision of services.

Primary school: Parents in all tenures were equally likely to get their first choice of school. (94% for home owners and 93% for social renters). However, amongst the children of owner occupiers, equal proportions travelled to school by car and on foot, whereas for social renters, nearly two thirds travelled on foot and only 28% by car. Private renting children were in an intermediate position. This suggests that, in practice, owners may have had a broader geographical choice of schools. It also points out the extra importance of safe routes to school in social housing areas. In addition, parents in different tenures were choosing on slightly different grounds. Owner occupier parents were more likely to have chosen the school not for nearness or family connections, but for more school-specific reasons. 50% of owners, compared to 47% of private renters and 35% of social renters, chose the school for factors including, for example, reputation and impression. The majority of parents in all tenures were 'very satisfied' with the education their children were receiving at their current school, (73% of home owners and 73% of social renters), and the vast majority were 'very or 'fairly' satisfied (98% of home owners and 95% of social renters). 96% of home owners' parents thought their children always or usually enjoyed school, compared to 94% of social renting parents. Only 3% of home owners parents thought their children only 'sometimes' or 'never' enjoyed school, compared to 6% of social renting parents.

On the other hand, another study using the Millennium Cohort Study found that children living in social housing at age 5 were rated less favourably by their teachers across several dimensions of ability. The difference remained even after controlling for a number of individual and family characteristics, parenting behaviour, and for test scores at age 3 (Hansen 2010). This suggests either that children in social housing fell behind between ages 3 and 5, or that teachers' estimates of their ability did not match objective performance.

Only a very small group of 5 year olds (5%) attended a breakfast club and social renters were very slightly less likely to do so than private renters or owner occupiers. Similarly, only a small group of 5-year olds (11%) attended an after school club, and social renters were less likely to do (8%) so than private renters (10%) or owner occupiers (12%). Again, this may be linked to different parental work patterns, or other factors, rather than to any difference in local provision of services.

Parks and playgrounds: There was no very clear tenure pattern in the frequency with which children were taken to parks and playgrounds, suggesting that social renters' neighbourhoods provided as good opportunities for supervised outdoor play for young children as those of owner occupiers. Only 11% of owner occupiers' children were taken to the park or playground less often than once a month, compared to 15% of social renters and 10% of private renters. However, for 94% of children of home owners, parks and

[2] There is a slight contradiction between the answers on friendships with other parents in the area and having friend who live in the area – this may be because for this question parents are answering in terms of friendships of difference significance.

playgrounds complemented their access to a garden, while only 70% of social renting children had access to a garden.

Cohort members' friends: A majority of all children saw friends outside school (probably mostly in the company of parents or carers) at least once a week. There was a relationship with tenure. Children of social renters were both more likely to see friends every day (17% compared to 7% of children of owner occupiers), and more likely to see friends less often than once or twice a month or never at all (29% compared to 19% of children of owner occupiers). This may well be a social class effect, and linked in to parents' patterns of socialising, but it is possible that some social rented neighbourhoods make it easier or more difficult for children to spend time with friends, for example by providing more local friends for children or adults, or proving safer or more conducive places to play or vice versa. (On the other hand, typically smaller social rented homes might make hosting friends more difficult.)

Secondary school: Older siblings completing the survey were aged between 10 and 15 with a median age of 12, so most were at secondary school. Older siblings who were children of social renters were just as likely as those of owner occupiers to say that good marks at school were 'very' or 'fairly' important (97% compared to 98%), and that it was 'not OK to break even a bad rule at school' (90% for both children of social renters and owner occupiers). Older siblings in social housing were slightly more likely to say they planned to leave school at 16 than those in other tenures, but nonetheless, fully 87% planned to stay on (compared to 91% of children of home owners).

However, compared to children of owner occupiers, children of social renters were less likely to like most teachers (70% compared to 79%), less likely to say they cared what teachers thought about them (54% compared to 67%). They were more likely to say that teachers were always getting at them (26% compared to 21%), and that teachers liked ordering pupils around just to show who was in charge (52% compared to 41%).

Activities of older siblings: The older siblings of cohort members who were children of social tenants were less likely than those of owner occupiers to sometimes go to classes and clubs outside school, to do sport, sometimes go to cubs, brownies, scouts, or guides, music lessons, singing or choir outside school, use the local library, to have a private tutor, to go to after school clubs, to stay after school for organised sports clubs or teams and to stay after school to play in a band or orchestra or to sing in a choir. On the other hand, children of owner occupiers and social renters were similarly likely to go to play centres or adventure playgrounds, to classes connected with religion or culture, to holiday play schemes, and to work for money outside school. Children of social renters were slightly more likely to go to breakfast clubs before school and to homework clubs after school, to youth clubs, to attend art classes or do pottery outside school, to attend a play centre or drop in on their own to talk about problems, or attend clubs connected with the armed services. Again, these patterns may be linked to different parental interests, or other factors, rather than to any difference in local provision of services.

Many but not all of the activities discussed above were likely to have been going on in the home neighbourhood, particularly for children of social renters whose families appear less likely to have cars.

Older siblings and relations with parents – Children of owners and renters were similarly likely to say that their parents set limits on how much TV they can watch. Children of social renters were more likely than those of renters to say it was they who chose what they ate

at home (23% compared to 16%), to have ever smoked cigarettes (6% compared to 2%), and to know someone who had used cannabis (11% compared to 6%). On the other hand, they were more likely to say their parents were strict about making them do chores (55% compared to 47%), and less likely to have had an alcoholic drink in the past four weeks (9% compared to 11%).

Older siblings and potential anti-social behaviour: The older siblings were asked about activities that could constitute anti-social behaviour. Children of social renters were twice as likely to have bunked off school as those of home owners (12% compared to 6%). This might be linked to the less positive relations some had with teachers. Children of owners and renters were similarly likely to have been out without their parents' knowledge after 9pm at night. However, while 83% of owner occupier older siblings said they always or nearly always told their parents when they were going out, slightly fewer, 69%, social renter children agreed. Overall rates were low, but social renters' children were more likely than those of owner occupiers to have taken something from a shop without paying (11% compared to 6%), to have done graffiti (9% compared to 5%), and to have damaged something in a public space that didn't belong to them (4% compared to 2%).

Older siblings as victims of crime and anti-social behaviour: Higher proportions of children of social renters than those of home owners had experienced someone trying to steal something from them (26% compared to 22%), had been bullied in a way that frightened or upset them (24% compared to 19%), had been threatened in a way that frightened them (15% compared to 9%), and had something damaged by vandals (12% compared to 7%)

How much are these patterns linked to tenure and how much again to area deprivation or to other factors? For example, would social renters in less deprived areas give different answers? When comparing parents and older siblings who live in the most deprived decile of neighbourhoods with others, many of the same patterns emerge as have been seen with social housing tenure as compared to others. One distinctive feature is that cohort members' older siblings in the most deprived areas were sharply less likely to work for money than those in less deprived areas, and those in social renting generally. They were particularly likely to go to homework clubs, even more likely to say that school marks were very important and to plan to stay on in education at 16, and were less worried about being attacked and had less experience of victimisation than those in social housing.

PART 2: The housing and neighbourhoods and early outcomes of today's children

The early outcomes of today's children

The Millennium Cohort Study tested children's physical and intellectual development at age 5 using a variety of measures. We use two of the 'British Ability Scale' (BAS) tests:

- Naming vocabulary test: The child is asked to name items pictured in a booklet; and
- Pattern construction test: The child is asked to copy and construct two- and three-dimensional patterns with coloured tiles and cubes (Joshi *et al*, 2010).

We chose these tests as early outcomes measures as they are seen as measures of 'school readiness' and have been widely used in other research (eg Cullis, 2008; Joshi *et al*, 2010; Hills et al, 2010). Results at age 5 on similar tests of vocabulary and the ability to copy pictures (in two dimensions) used in the 1970 British Cohort Study, have been shown to be associated with achievement in reading and maths at age 10 and qualifications and wages at age 30 (Feinstein and Duckworth, 2006). The picture copying tests were the most strongly linked to later outcomes.

Millennium Cohort Study members' results on these tests at age five have been analysed in several recent studies. Girls generally performed better than boys (Schoon *et al*, 2010). White children outperformed those of mixed ethnicity, who in turn outperformed other minority ethnic groups (Schoon *et al*, 2010; Dearden and Sibieta, 2010). Other factors associated with differences in test scores at age 5 included parents' educational qualifications and employment status and financial situation, as well as parenting practices, parents' relationship quality, mother-child relationships and mother's wellbeing and self-esteem (Jones, 2010).

Is there a relationship between housing tenure at age 5 and test scores at age 5?

Past research has found associations between housing tenure in childhood and adult outcomes, between neighbourhood characteristics in childhood and adult outcomes of various kinds (eg. Feinstein *et al*, 2008; Lupton *et al*, 2009), between adult housing tenure and adult outcomes and adult neighbourhoods and adult outcomes. Some researchers have suggested that there may be independent 'tenure effects' or 'neighbourhood' effects on outcomes, operating for example through exposure to housing conditions, neighbourhood conditions, or parental or community attitudes and behaviour.. Given the fact that different tenures have very different social composition, as we have seen in the case of the members of the Millenium Cohort above, these associations could be no more than 'selection effects', which will reduce or disappear once social composition of different tenure is controlled for. Given the link between housing tenure and neighbourhood characteristics as seen in the case of the members of the Millenium Cohort above, it is also possible that controlling for neighbourhood characteristics might make any connections reduce or disappear (or visa versa).

Here we examine the relationship between housing tenure at age 5, test scores at age 5 and other factors. The processes through which any putative tenure or neighbourhood effects might operate for such young children may be different – and perhaps weaker –

than those for older children and adults. Young children in general spend much time close to home and closely supervised by their families. They are likely to be unaware of housing tenure, which could only act on them through housing conditions or the attitudes and behaviour of adults around them. They are likely to have limited direct contact with the people, institutions and places in their neighbourhoods – childcare, schools and play areas are likely to be important – although indirect effects such as through parental satisfaction, and they cannot have been exposed to housing or neighbourhoods for a long period, although it is possible that limited and brief contact might nonetheless be influential.

One study to date using the Millenium Cohort data has found a link between housing tenure and one measure connected to children's early outcomes. As previously mentioned, children living in social housing at age 5 were rated less favourably by their teachers on arrival at primary school across several dimensions of ability, even after controlling for a number of individual and family characteristics, parenting behaviours and test scores at age 3 (Hansen, 2010). Teacher assessments, though, are at least partly subjective – and may in themselves constitute an explanatory factor for outcomes in subsequent tests.

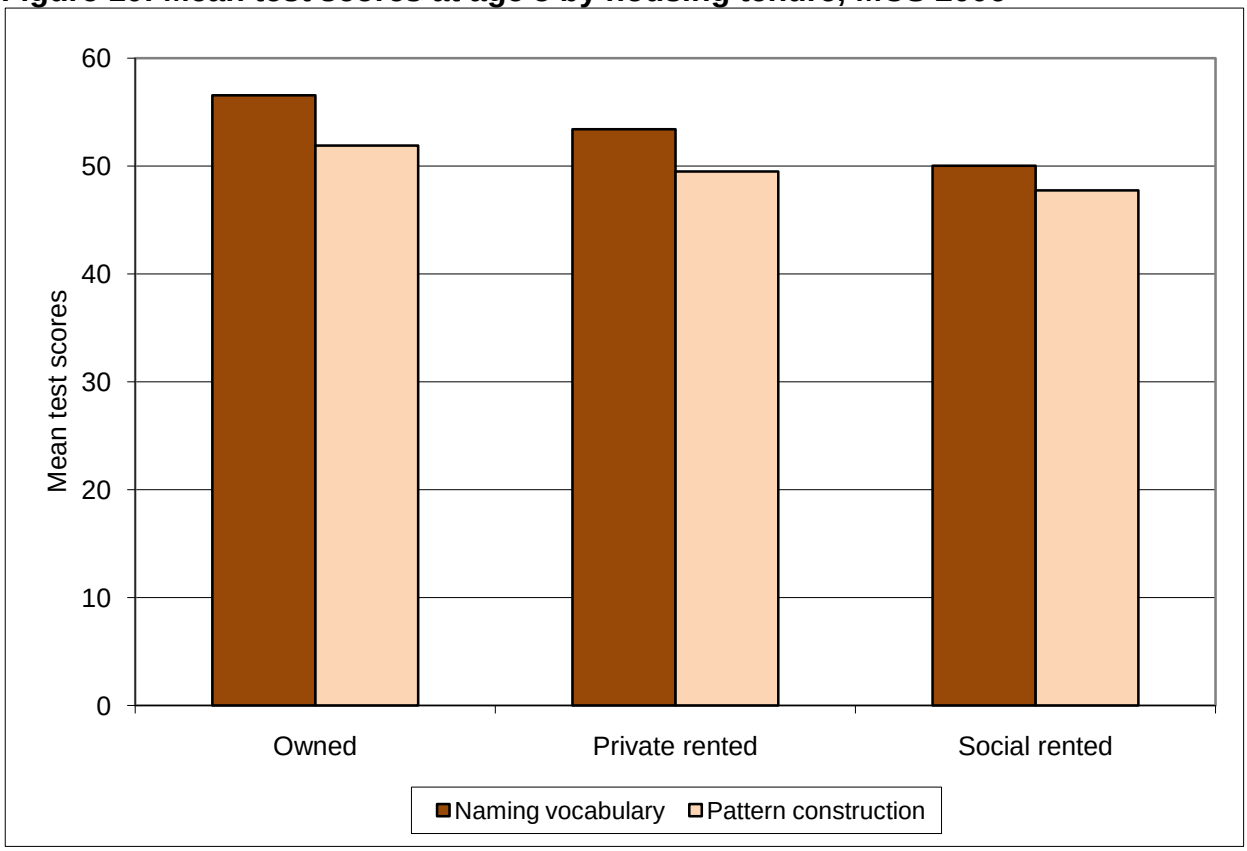
Here we explore the relationship between housing tenure at age 5 and test scores at age 5. As with other results, test scores have been weighted to compensate for the intentional over-sampling of certain groups of children, including those in deprived neighbourhoods. Some similar studies use raw scores and others normalize results and refer to how far scores were from the median. Here, we used raw scores and did not normalise the results.

Descriptive results: The 'raw' relationship

Figure 10 shows that there are differences in the mean scores of children at age five on both pattern construction and naming vocabulary tests according to housing tenure, with slightly greater differences for the naming vocabulary tests. Those living in owner occupation did best, followed by private renters, and lastly those in social housing.

For example, the mean score on the pattern construction test was 50.6 points. The standard error was 0.2 points. The lower limit 95% confidence interval was 50.2 points and the upper limit confidence interval was 51.0 points. 5 year olds living in owner occupation scored on average 52.0 points on the pattern construction test. Those in private renting scored on average 49.5 points, or 2.5 points fewer than those in home ownership, and in those social housing scored on average 4.2 points fewer (see Figure 10 and Appendix Table 1 Column 1). These differences were statistically significant (this means that they were unlikely to have occurred by chance).

Figure 10: Mean test scores at age 5 by housing tenure, MCS 2006



Whether or not these differences count as 'large' and important for policy is a matter of judgement.

We should note that a gap in raw scores between two sub-groups (such as different tenures) amongst the children is not the same as the degree of variation in scores from highest to lowest across the children. A 'small' gap in raw scores might be equivalent to a lot of the variation across the population, where most children score close to the median, or visa versa.

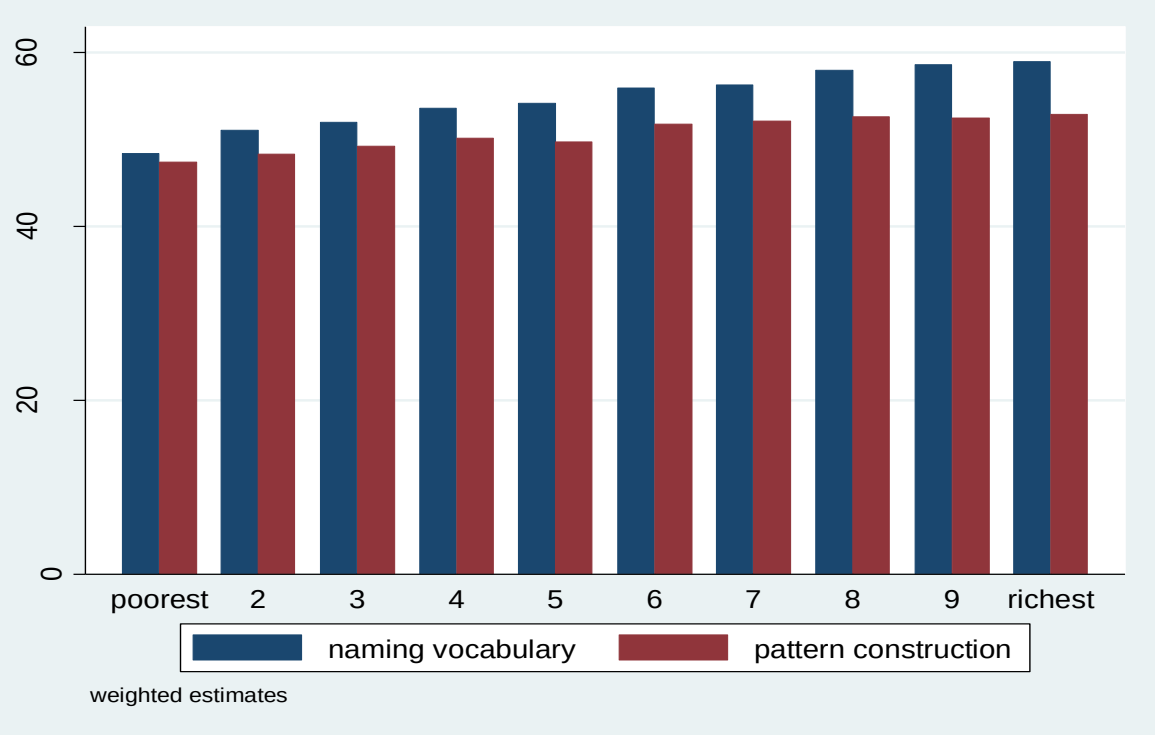
This gap in scores does not itself point to any 'tenure effect', since the difference could be accounted for by other characteristics of the individuals in different tenures, not the tenure itself, and should be interpreted according to the overall variation in scores. This will be explored in more detail below.

Is there a relationship between neighbourhood type at age 5 and test scores at age 5?

There are also differences in the mean scores of children at age 5 on both pattern construction and naming vocabulary tests according to the deprivation of the neighbourhood in which they live, with slightly greater differences for the naming vocabulary tests.

We compared those living in neighbourhoods (Lower Super Output Areas) in different deciles (tenths) of all neighbourhoods in England, according to the Indices of Multiple Deprivation 2007 (Figure 11).

Figure 11: Mean test scores at age 5 by decile of neighbourhood deprivation, according to the IMD 2007, MCS 2006



Those living in least deprived areas scored best on both tests. However, again, they do not in themselves provide evidence of a 'neighbourhood effect', and may, for example be affected by differences in typical family advantage in different areas.

Figure 3 showed that 27% of children in social housing lived in the most deprived decile of neighbourhoods, compared to 14% of children in private renting and just 5% of children in home ownership. When we look just at the 12% of children living in the most deprived decile of neighbourhoods, differences between tenures on naming vocabulary almost disappear, and in fact children of social renters did slightly better than those of owner occupiers. Differences between those in different tenures on pattern construction shrank, although children of owner occupiers still had the highest scores. Children of social renters outside the most deprived decile of neighbourhoods, who made up 73% of all social renter children (Figure 5), did better than those of any tenure in the most deprived decile of neighbourhoods on naming vocabulary. They did better than those of private renters in the most deprived decile on pattern construction.

These patterns suggest that neighbourhoods of residence may be involved in explaining at least part of the tenure differences seen, or alternatively that the characteristics of those in any one tenure who live in different types of neighbourhoods may be different.

Is there a relationship between family advantage at birth and test scores at age 5?

On average, children whose parents had a higher level of education and jobs with higher socio-economic status in 2000 did better in tests when they were aged 5 (Figure 12).

Figure 12: Mean pattern construction and naming vocabulary test scores at age 5 by index of Family Advantage quintile at birth, MCS 2006

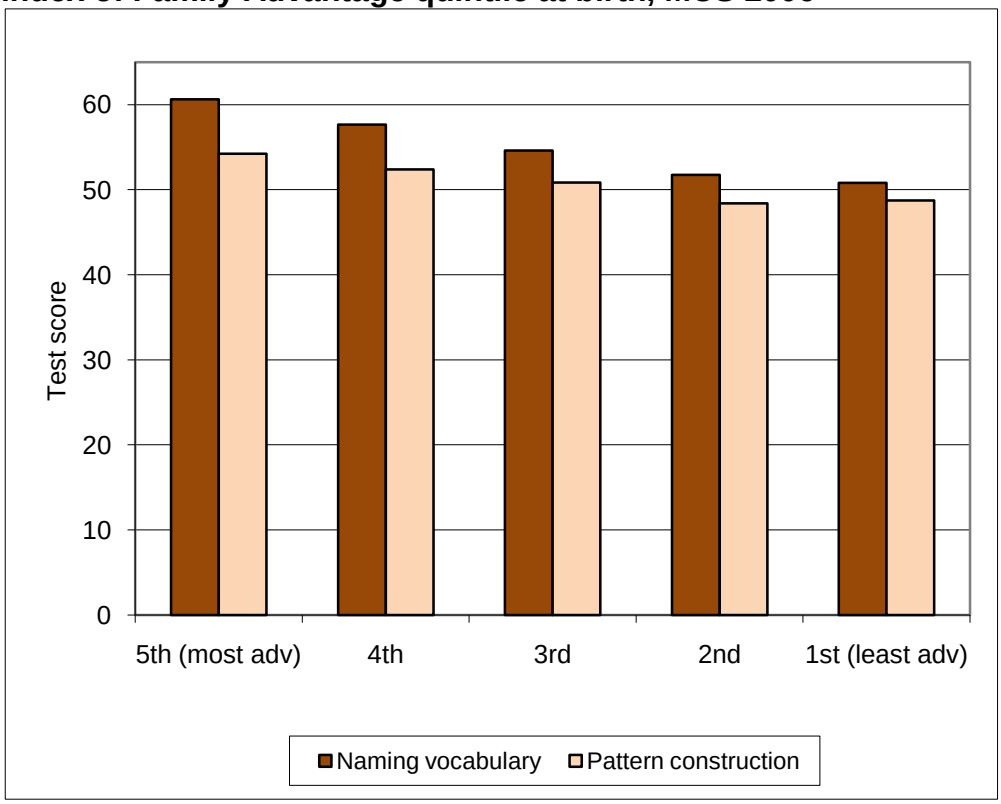


Figure 2 showed that 69% of children in social housing came from the least advantaged two quintiles of families, compared to 51% of children in private renting and 31% of children in home ownership.

The differences in results between children in different quintiles in Figure 12 were statistically significant. These raw results suggest that some of the association between tenure and outcomes might be linked to family advantage. Notably, the gap between scores of children from the most advantaged fifth of families and the last advantaged fifth is bigger than between home owners and social renters (just over a fifth of the group). Again, this is not in itself evidence of a 'family advantage' effect.

Do neighbourhood characteristics account fully or partially for the relationship seen between tenure and early outcomes?

The next steps in the analysis were to use regression techniques. We used multiple regression models with the age 5 test scores as response variables. The models initially had housing tenure as the sole explanatory variable. We then added further explanatory variables to the model – living in deprived neighbourhoods, an index of family advantage, and measures of family structure (number of siblings, lone parenthood, mother's age at first birth) – in order to see to what extent the addition of these controls reduced the impact of tenure on the test score outcomes (The results are shown in Appendix Table 1 Column 2).

Part 1 showed us that children in different tenures experienced differences in neighbourhood according to a wide range of measures. Here, we explore the relationship between a limited set of measures of neighbourhood characteristics and outcomes:

- whether the child lived in a neighbourhood that was in the most deprived decile of the IMD 2007 or not;
- whether the child lived in a neighbourhood that was in the most deprived three deciles of the IMD 2007 or not;
- the IMD 2007 score of the cohort member's neighbourhood (a continuous, rather than either/or measure); and
- whether the cohort member's parents thought the area was excellent, average or poor/very poor for raising children.

We focus on reporting scores on the pattern construction tests, because a similar test was shown by Feinstein and Duckworth (2006) to have the greatest correlation with later childhood and adult outcomes. The scores we report after controls are not the actual scores of an identifiable group of children but modelled scores.

We have seen that 5 year olds in social housing were more than five times as likely as those in home ownership to live in the most deprived decile of neighbourhoods on the IMD 2007 (see Figure 5). Taking account of whether the children's neighbourhood was in the most deprived decile reduced the gap between modelled scores on the pattern construction in test for children of owner occupiers and those of social tenants from about 4.2 test points to 3.7, and results were statistically significant. These results suggest that part, but by no means all, of the 'raw' difference between results for social renters and home owners seen in Figure 10 is accounted for by something connected with living in the most deprived tenth of neighbourhoods, and the fact so many more children of social tenants do so (see Appendix Table 1).

The modelled gap between scores for children of owner occupiers and children of private renters were also affected by these two controls, but the difference in test scores between social renters and owner occupiers is affected more by the neighbourhood control than that between private renters and home owners. We have seen that children in social housing were almost twice as likely as those in private renting to live in the most deprived decile of neighbourhoods (see Figure 5). These data suggest that part of the 'raw' difference between results for social renters and private renters seen in Figure 10 is accounted for by neighbourhood characteristics (see Appendix Table 1).

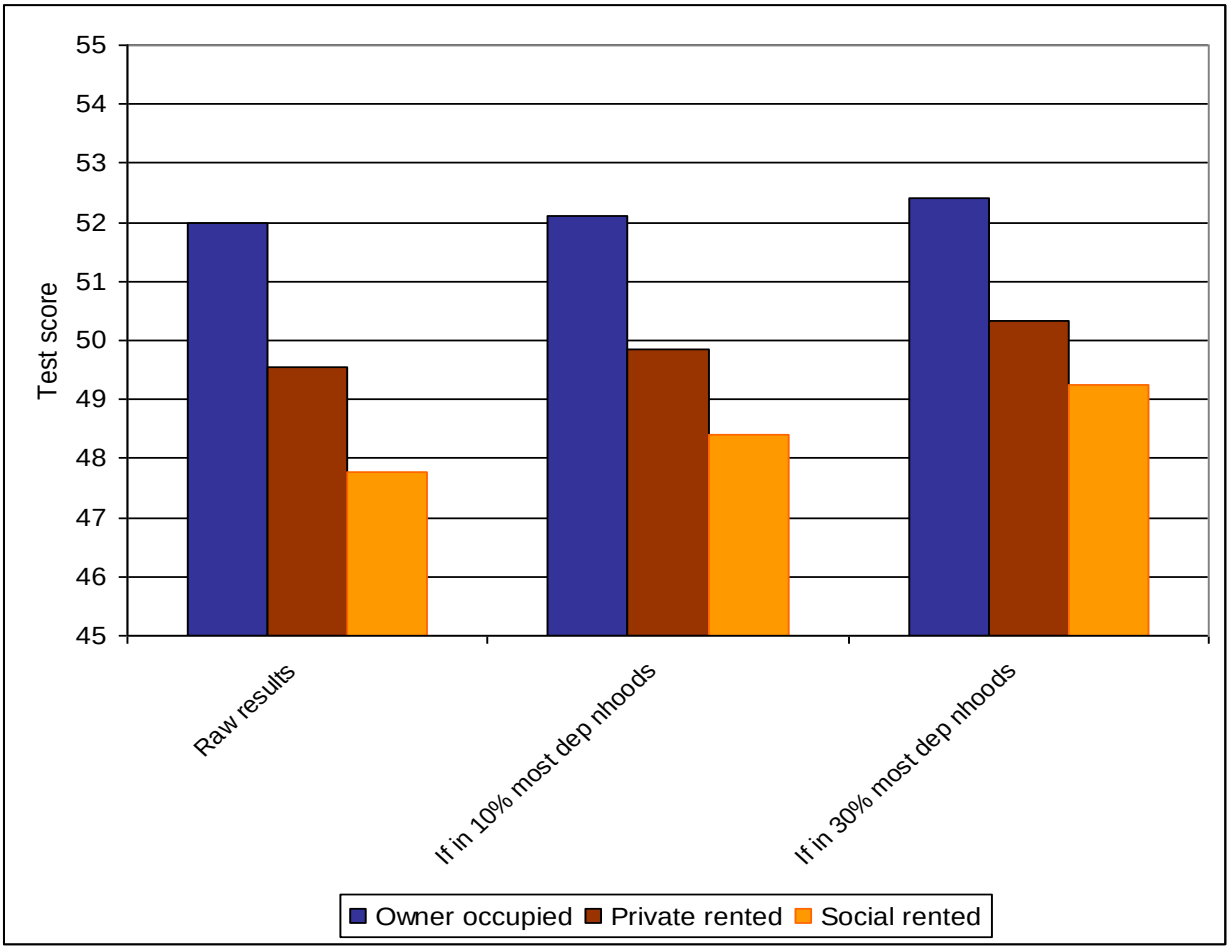
In other tests we also tried using alternative measures of neighbourhood deprivation, IMD 2007 scores of individual neighbourhoods (continuous rather than binary, and comparing all levels of deprivation against one another). This analysis also found relationships that were statistically significant.

Does this mean we have identified a 'neighbourhood effect' of small neighbourhood deprivation on children's test scores at age 5? Most definitions of 'neighbourhood effects' say that a neighbourhood effect is not simply an association between the characteristics of a place and outcomes, but one that persists after taking into account at least some of their individual characteristics which are thought to be associated with outcomes.

Therefore, we next took into account the children's Index of Family Advantage (composed of parents' highest educational qualification and occupational class in 2000). On average, in raw results children from more advantaged families scored higher on the test (Figure 12). The components of the Index have been shown to be linked to test scores at 5 after controlling for other factors (Jones, 2010). Index of Family Advantage is also linked to housing tenure (Figure 2). In 2006, only 7% of 5 year old children of social renters had

parents in the top two quintiles on the Index of Family Advantage, while 69% had parents whose education and jobs put them in the bottom two quintiles.

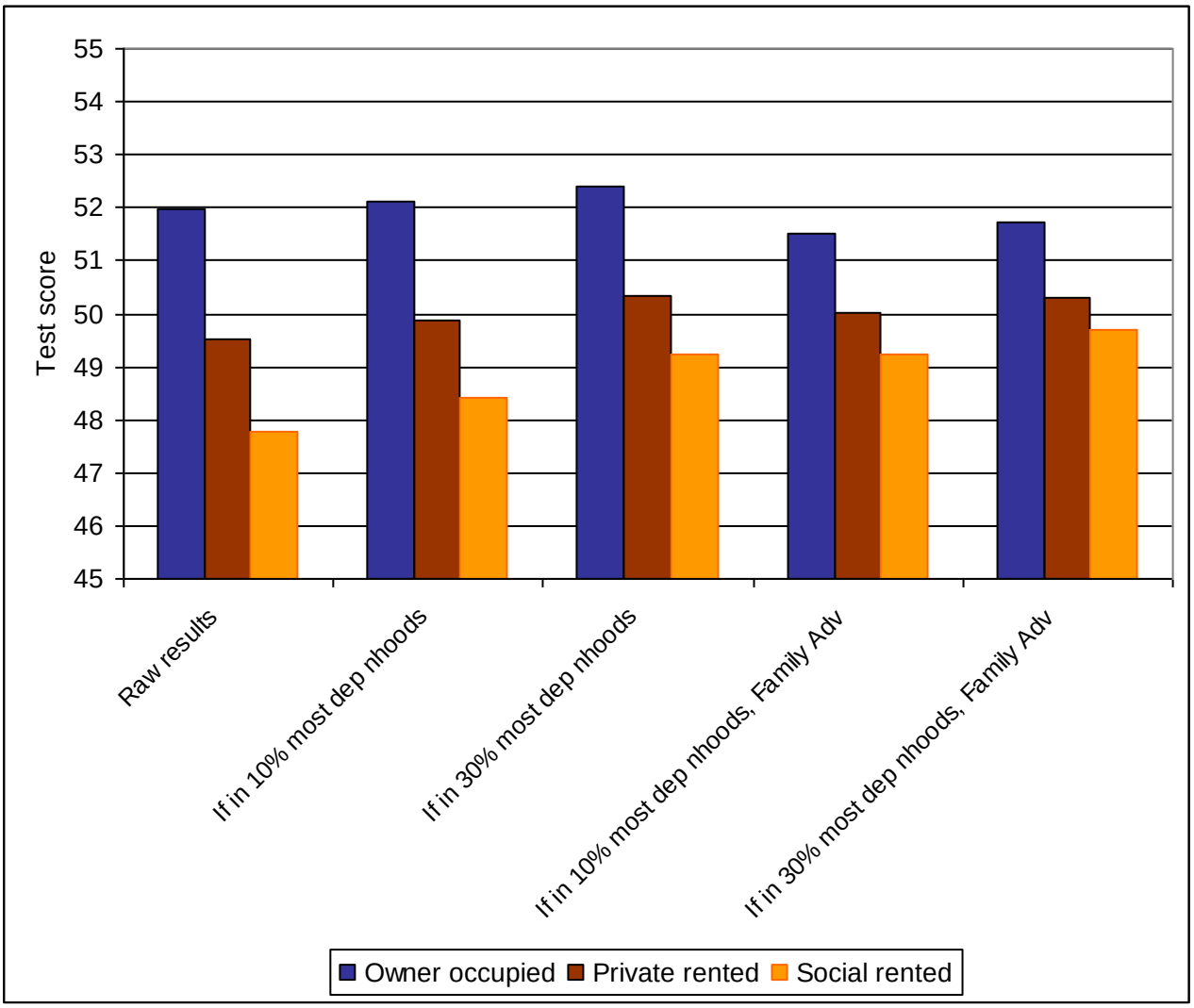
Figure 13: Modelled test scores for pattern construction at age 5, by child's tenure at 5, with controls for neighbourhood deprivation, MCS 2006



Note: All results statistically significant at the 1% level, so that differences in test scores for these groups are 99% likely not to have been due to chance.

We applied the index of Family Advantage score as a control, as a continuous rather than either/or variable, comparing all levels of advantage against one another (Figure 14 and Appendix Table 1 Column 3). The size of the association between neighbourhood deprivation and test score was reduced by taking into account Index of Family Advantage. However, a statistically significant association between tenure and outcomes remained after this simple control for individual characteristics. The fact that there was a slightly different result when controlling for residence in the most deprived decile of neighbourhoods and the three most deprived deciles suggests that not all the apparent 'neighbourhood effect' could be accounted for by differences in the Family Advantage Index of children living in different types of neighbourhood.

Figure 14: Modelled test scores for pattern construction at age 5, by child's tenure at 5, with controls for neighbourhood deprivation and Index of Family Advantage, MCS 2006

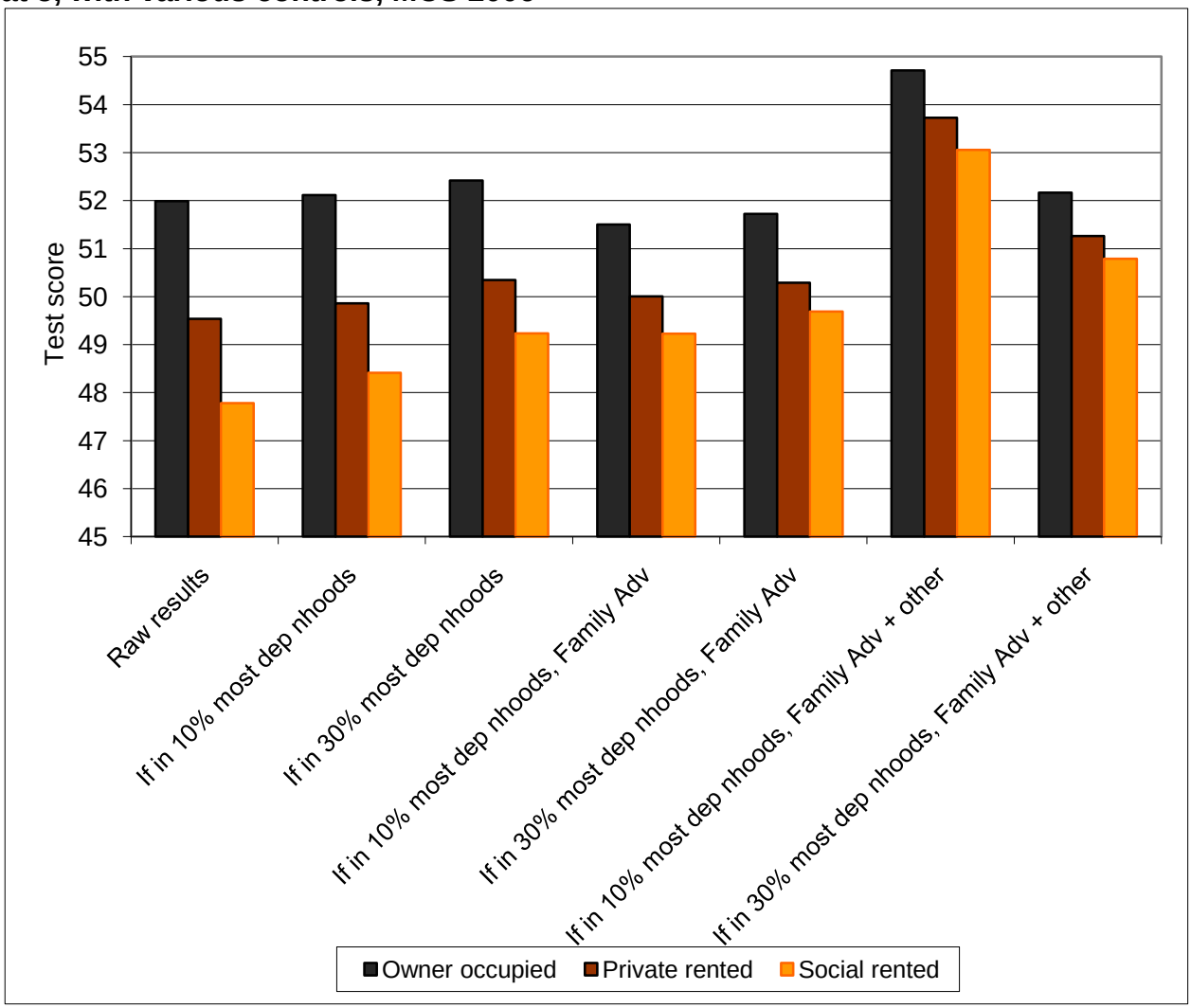


Note: All results statistically significant at the 1% level, ie differences in test scores for these groups are 99% likely not to have been due to chance.

Once both neighbourhood deprivation and Index of Family Advantage were included as controls, the difference in the modelled pattern construction test score between social housing and owner occupation reduced by almost half from the initial level, to 2.3 test points. Notably, taking family advantage into account appeared to have a greater effect than taking into account the deprivation of children's neighbourhoods, according to the summary measures used. In addition the difference between social and private renting was reduced by these controls.

We investigated mothers' age at birth of first child, family structure at age 5 and number of siblings at age 5 (see Figure 15 and Appendix Table 2). In this analysis we used the Index of Family Advantage in a different way, as a categorical rather than continuous variable, so that we could compare those in different quintiles.

Figure 15: Modelled test scores for pattern construction at age 5, by child's tenure at 5, with various controls, MCS 2006

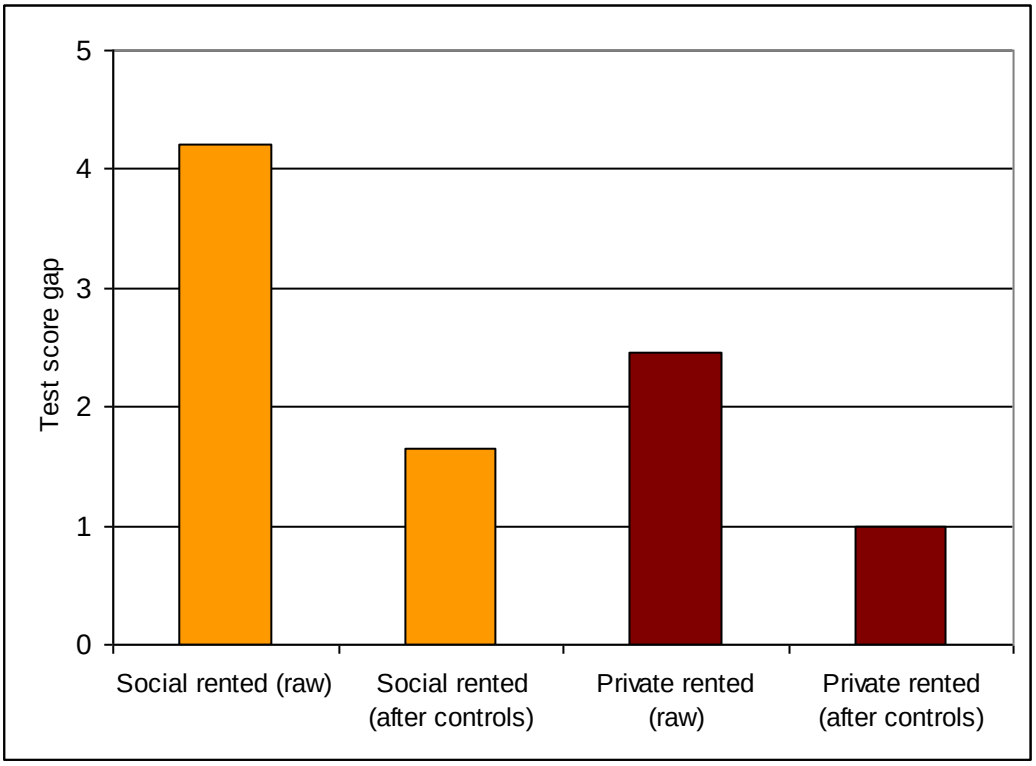


Note: All results statistically significant at the 1% level, ie differences in test scores for these groups are 99% likely not to have been due to chance.

A statistically significant relationship between housing tenure at 5 and test scores at age 5 persisted after these additional controls. However, the modelled gap between scores of children of social renters and those of owner occupiers reduced further.

Figure 16 shows how the size of the gap between the test scores of renting and owning children was reduced by controls.

Figure 16: Gap between test scores for children of owner occupiers those of both types of renters, raw scores and scores after controls (for neighbourhood deprivation, Index of Family Advantage by quintiles, and other family factors), pattern construction test, MCS 2006



Note: The raw score for owner occupiers (from which gaps are calculated) was 51.992. All results were statistically significant at the 1% level, so that differences in test scores for these groups are 99% likely not to have been due to chance.

For children in both rented tenures, more than half the gaps in modelled pattern construction test scores at age 5 has been removed by controlling for a handful of factors:

- whether or not the child lived in a neighbourhood in the most deprived decile of neighbourhoods;
- Family Advantage (composed of parents' educational qualifications and occupation status when the child was born);
- the age of the child's mother when she had her first child;
- whether the child was in a lone parent family at age 5; and
- the number of siblings the child had at age 5.

Because of the relationship known to exist between test scores and ethnicity, we also carried out some regression tests including ethnicity in the model (for pattern construction). This had reduced the size of the link between housing tenure and test scores somewhat father, but did also did not remove the association.

As noted, there is a difference between the gap in raw scores between two sub-groups amongst the children and the degree of variation in scores from highest to lowest across the children. Where most children score close to the median, a 'small' gap in raw scores might be equivalent to a lot of the variation across the population, or visa versa.

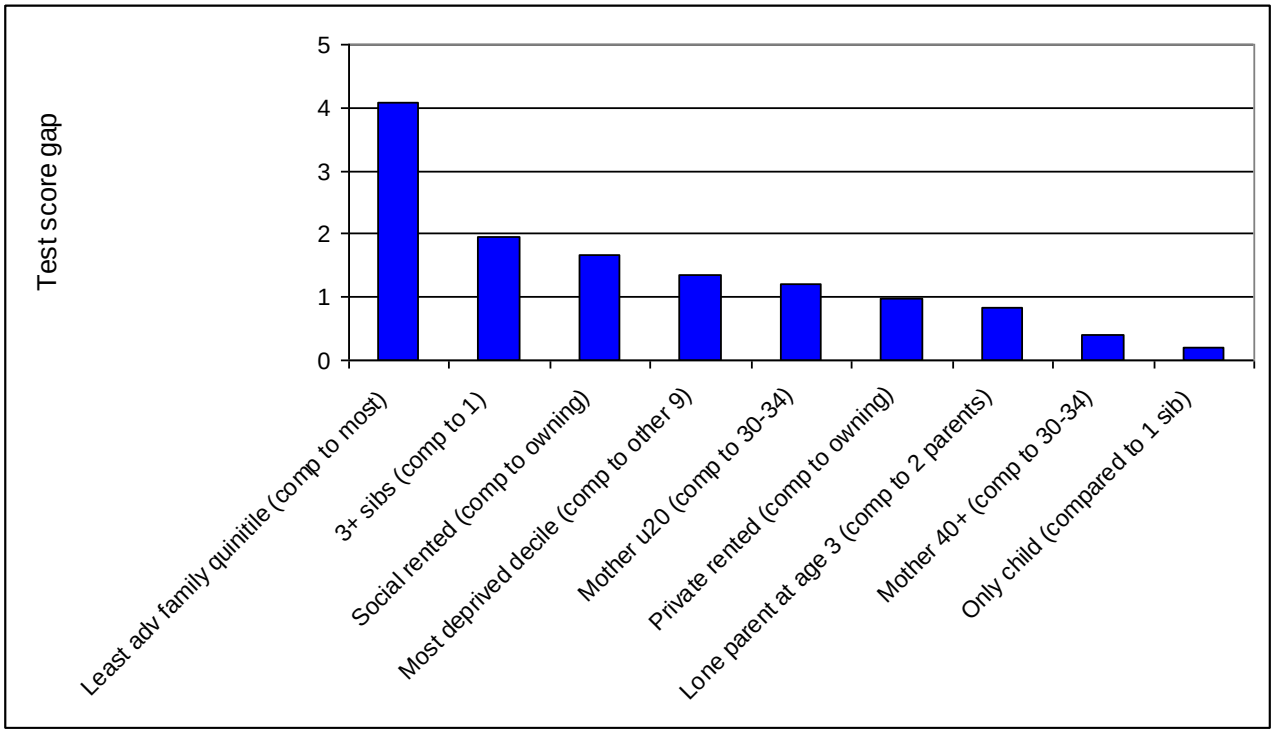
In this case, however, there was quite a lot of variation in scores on early outcome tests. The models fitted were quite 'sparse'. This means that the models and the variables they included – housing tenure as well as neighbourhood characteristics and family

characteristics – all explain only a small proportion of the total variation in test scores (note that the R-squared values in Appendix Table 1 are quite low).

Nonetheless, all of the explanatory variables were highly statistically significant and overall the estimated models represent significant improvements over the null model. In other words, the explanatory variables contribute usefully to explaining the outcome of interest even though they do not account for all the variation in it.

Figure 17 shows how the size of these gaps compares to those for other variables in this model.

Figure 17: Gaps between test scores for children in different situations, after controls (for neighbourhood deprivation, Index of Family Advantage (by quintiles), and other individual and family factors), in test points, pattern construction test, MCS 2006



Note: The modelled score for the comparison categories (eg most advantaged quintile of families, 1 sibling etc) 52.103. Not all results were statistically significant at the 1% level.

Having used the controls listed above, the difference between the modelled scores for children of social renters and children of home owners has not only reduced by more than half but is much smaller than, for example, the difference between those in the most advantaged quintile of families compared to those in the least advantaged, at over 4 test points. The raw gap between those in the most advantaged quintile of families and those in the least advantaged quintile was 5.5 points (Figure 12), and the controls listed above have only managed to reduce the gap slightly to 4.1 points. The modelled gap in scores between children of owner occupiers and those of social renters was also less than the difference between children with one sibling and those with three or more, and similar to the difference between scores for children with a mother of average age (30-34 years old) and a mother under 20 years old at her first birth. Analysis focusing on housing tenure (as seen in Feinstein *et al*, 2008 and Lupton *et al*, 2009) has obscured the connections between many other major social variables and outcomes, which might be at least as important as tenure.

What counts as a 'large' gap, or one which is important for social policy is partly a matter of judgment, and may also be affected by what factors social policy can be expected to influence. However, this evidence suggests that public policy might as at least as plausibly seek to influence gaps in family advantage (by reducing overall inequalities in educational attainment and occupational status), or other factors such as mother's age at first birth, or family size, as to seek to influence housing tenure or characteristics of tenure. In addition, we cannot indentify a 'tenure' or 'family advantage' or 'number of siblings' gap without a theory as to the causal mechanism by which it might operate. It may be harder to suggest potential causal mechanisms for how a child's parents' housing tenure might influence child test scores than, for example, how parental advantage or the number of siblings might do so.

In addition, we have only looked at a very small number of controls here. We can suggest a large number of further controls for individual and family characteristics that would be likely to reduce further or possibly entirely remove the statistical significance or size of the associations between housing tenure and test scores. These could include both factors known to be linked to child test outcomes (for example for ethnicity, financial situation, parenting practices, parents' relationship quality, mother-child relationships and mother's wellbeing and self-esteem (Schoon *et al*, 2010; Jones, 2010, Dearden and Sibieta, 2010), or factors known to be associated with selection into social housing tenure (including poverty or non-working mothers (Bradshaw and Holmes, 2010; minority ethnicity (Ketende *et al*, 2010), and including factors which may be harder to get data for, such as past family relationship breakdown, disability or mental illness or homelessness). For example, the association between minority ethnicity and early outcomes, particularly in test of language, is so important that many studies of early outcomes control for ethnicity.

We also explored parents' views about their neighbourhoods and satisfaction with their children's schools and their relationship with test scores. These measures of parents' views had statistically significant relationships with child test scores, after all the controls listed above. Children of parents who said they were 'neither satisfied or dissatisfied' or 'fairly or very dissatisfied' with their children's education scored 2.8 points fewer on pattern construction (after taking into account all the above variables, as well as views of the neighbourhood as a place to raise children) Children of parents who said where they lived was a 'poor' or 'very poor' area to bring up children scored 1.7 fewer points on pattern construction than those who said the area was good to raise children (see Appendix Table 3). This evidence cannot tell us to what extent parents' attitudes may cause or be caused by their children's development and attainment. They do suggest that that parental dissatisfaction is not merely 'subjective' but is linked to hard evidence of their children's development. These additional variables reduced the size of the association between social housing tenure and test scores slightly more.

We also experimented with the inclusion of formal 'interactions' between the tenure categories and the neighbourhood measures, which reveal if the association between tenure and outcomes is different for differing levels of deprivation. However, we found that interaction terms between tenure and local deprivation were not significant in any models, so neighbourhood deprivation and tenure may have largely separate effects. Thus if a cohort member lives in social housing which is also a deprived neighbourhood (as many do), the two factors will, on average combine to produce predicted scores worse than either alone, but they will not multiply together to produce far worse results.

Discussion and conclusions

In Part 1 this report presented new information about the housing and neighbourhoods of today's young children. In Part 2 it developed and extended the work of two recent reports on the relationship between childhood housing and life chances (Feinstein *et al*, 2008 and Lupton *et al*, 2009).

The homes and neighbourhoods social housing provides for today's children

Evidence from the Millennium Cohort study provides some positive news about the homes and neighbourhoods social housing provides for today's young children, some of which contradicts widespread beliefs about the tenure.

Of the 24% of 5 year olds who lived in social housing at age 5 in 2006:

- 77% lived in houses or bungalows, as opposed to flats or maisonettes. 70% had access to a garden.
- 73% lived in medium sized homes with four or five rooms (usually two or three bedrooms), and 20% lived in homes with six or more rooms (usually three or four bedrooms).
- 79% lived in homes free from any damp or condensation.
- 75% of their parents thought their homes were not 'really disorganised', 82% thought you could 'hear yourself think' at home and 82% said the home atmosphere was 'calm'.
- 82% of social renting parents had friends or family in the area, and 66% lived within 30mins of children's maternal grandmothers.
- 72% of parents said they felt 'safe' or 'very safe' in the area, while 72% of older siblings had not experienced theft and 69% were not worried about being robbed or mugged.
- 72% of the older siblings of cohort members enjoyed living in the area, and 75% said most people in the areas were friendly.
- 93% of parents got their first choice of primary school and 73% were 'very satisfied' with their child's progress at school so far.
- Social housing could offer very good conditions for children and families. Those social renting parents who lived in the least deprived two deciles of neighbourhoods, admittedly a small minority at just 5% of the total, were more satisfied with their areas as places to raise children than most owner occupiers in England.

However, compared to those in other tenures, 5 year olds who lived in social housing in 2006, were more likely to experience living in homes that were either less desirable or possibly less conducive to rearing children: homes that were flats or maisonettes rather than houses or bungalows, that lacked gardens, that were only small or medium-sized homes, which had some damp or condensation, and which parents thought were 'really disorganised', where you could 'not hear yourself think' at homes which were not 'calm'.

Although they made up only 24% of 5 year olds, those in social housing made up a majority of all children in flats rather than houses (65% of the total), those without access to a garden (55%) and of those in homes with just one to three rooms (55%) and in the most deprived neighbourhoods.

Compared to those in other tenures, 5 year olds in social renting were markedly disadvantaged in terms of their neighbourhoods:

- 47% live in the most deprived 20% of neighbourhoods, and only 20% were in neighbourhoods which were less deprived than average.
- Only 46% of social renting parents thought their area was 'excellent or good' for raising children, and 19% thought their area was 'poor' or 'very poor''. For any given level of neighbourhood deprivation, social renting parents were less satisfied with the area as a place to raise children than those in other tenures.
- Social renting parents were more likely to be concerned about crime and racist attacks than those in other tenures.
- The older siblings of these cohort members were also less likely to enjoy living in their areas, more likely to be concerned about crime, and more likely to have been victims of crime and anti-social behaviour than children in other tenures. They were more likely to have more problematic relationships with teachers, despite showing enthusiasm for study.

5 year olds in social housing were likely to be disadvantaged in other ways. In 2006, only 1% of 5 year old children of social renters had parents in the top quintile on the Index of Family Advantage, and only 7% had parents in the top two quintiles combined. 69% of children in social renting had parents whose education and jobs put them in the bottom two quintiles. Bradshaw and Holmes (2010) found that social housing was not only more likely to house lone parents, young mothers and large families, but was more likely to house the poorer families amongst each of these groups. While on average, social renting parents and children had strong social networks, they were more likely to be more isolated. For example, 18% of social renting parents had no friends or family in the area, 29% of social renting 5 year olds children never saw friends outside school, and 8% never saw their grandparents.

Both owner occupation and private renting are quite diverse in terms of the type of families they house and the housing and neighbourhood conditions they provide. There were sub-groups of disadvantaged children amongst those whose parents are home owners and private renters. Amongst the 5 year old children of home owners, for example:

- 30% have parents whose education and employment put them in the most deprived two fifths of cohort families.
- 10% have damp or condensation in their homes.
- 14% are in homes which parents described as 'really disorganised', 14% where you 'can't hear yourself think' and 13% which are not 'calm' in atmosphere.
- 12% have parents with no friends or family the area and 9% have parents who are not friends with any other parents in the area.
- 9% are in the most deprived decile of neighbourhoods and 18% in the most deprived two deciles. Only 46% of owner occupier parents who lived in the most deprived decile of neighbourhoods thought their area was 'excellent' or 'good' for raising children. Amongst all children living in the most deprived two and three deciles of neighbourhoods, there are almost as many in home ownership as in social renting.

New evidence of associations between childhood housing tenure and early outcomes

Past studies by members of the same team found as yet unexplained correlations between being 'ever' in social housing in childhood and worse adult outcomes for a combined

measure of deprivation (Feinstein *et al*, 2008) and across a range of measures (Lupton *et al*, 2009), after using a very large set of more than 50 controls, for those born in 1958 and 1970 (although associations were not found for those born in 1946, and the size of the associations was substantially reduced by controls).

Past studies have obscured differences between private renting and other tenures. In this study, we found that children in private renting were in an intermediate position between social housing and owner occupation in terms of the housing and neighbourhood conditions they offered to children and families, and in their raw test outcomes.

We found very substantial differences in the neighbourhoods children in different tenures were living in, how parents and children used their neighbourhoods, as well as in parents' and children's views of the neighbourhood. When we controlled for whether children lived in the most deprived decile of neighbourhoods, the associations between tenure and lower test scores reduced considerably for social housing and slightly for private renting. Thus at least part of what might appear to be a 'rented tenure' effect on test scores was potentially a 'neighbourhood deprivation effect'. We also found very substantial differences in the education and occupational class of parents for children in different tenures. Controlling for family advantage score showed that at least part of what might appear to be a 'rented tenure' effect on test scores was potentially a 'family disadvantage' effect. Controlling for family advantage had a bigger effect on test score gaps between tenure than controlling fro neighbourhood.

Controlling for just two factors, family advantage and neighbourhood deprivation, reduced the gap in test scores between children in home ownership and those in social renting by almost half.

Adding in further controls for mothers' age at birth of first child, family structure at age 5 and number of siblings at age 5, the difference between the modelled scores for children of social renters and children of home owners not only reduced by more than half but is much smaller than, for example, the difference between those in the most advantaged quintile of families compared to those in the least advantaged,. The modelled gap in scores between children of owner occupiers and those of social renters was also less than the difference between children with one sibling and those with three or more.

Analysis focusing on housing tenure (as seen in Feinstein *et al*, 2008 and Lupton *et al*, 2009) has obscured the connections between many other major social variables and outcomes, which might be at least as important as tenure.

However, importantly, the models and the variables they included – housing tenure as well as neighbourhood characteristics and family characteristics – all explain only a small proportion of the total variation in children's test scores.

This study examined a different generation and looked at early rather than adult outcomes. Nevertheless, it has some implications for the interpretation of the other evidence on the links between childhood housing tenure and adult outcomes in terms of multiple deprivation (Feinstein *et al*, 2008) and across a range of measures (Lupton *et al*, 2009), it suggests that comparing social housing to all other tenures may have obscured differences between and within the other tenures, and focusing on tenure may have obscured differences due to family advantage and other individual and family characteristics. It suggests that neighbourhood characteristics – not just deprivation

measures, but a wide range of other features – may have accounted for part of any unexplained association between tenure and outcomes.

Implications for policy and practice

Implications of any research for policy and practice depend, of course, on policymakers' and practitioners' goals. Both Parts 1 and 2 of this report are important for those who are motivated by equalizing housing and neighbourhood conditions and child and parent satisfaction between different social groups. Those who are solely motivated to equalizing opportunities in terms of early child outcomes and later social mobility should focus on the implications of Part 2.

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Appendix: Regression tables

Not every cohort member survey includes information for every variable. Throughout the analysis, we used the maximum number of cohort members available for particular variables, rather than confining all the analysis to a sub-sample who have information for all the questions we are interested in.

We checked to ensure that this did not have an important effect on results. Appendix Table 1a and 1b demonstrate this comparison .

Appendix Table 1a: Pattern construction test regression models

	(1) Tenure only	(2) Tenure and neighbourhood deprivation	(3) Tenure, neighbourhood and index of Family Advantage
Housing tenure (reference: owner occupation)			
Social housing	-4.210***	-3.704***	-2.275***
Private renting	-2.455***	-2.254***	-1.501***
Whether in most deprived tenth of neighbourhoods on IMD 2007		-2.244***	-1.566***
Index of Family Advantage score			1.248***
Constant term (modelled score on the test)	51.992	52.116	51.505
Number of observations (cohort members)	8973	8973	8973
R-squared	0.0334	0.0383	0.0400

Note: *** = statistically significant at the 1% level, ie differences in test scores for these groups are 99% likely not to have been due to chance

Appendix Table 1b: Pattern construction test regression models, confined to the sample of 8,418 cohort members in Appendix Table A2

	(1) Tenure only	(2) Tenure and neighbourhood deprivation	(3) Tenure, neighbourhood and index of Family Advantage
Housing tenure (reference: owner occupation)			
Social housing	-4.25***	-3.71***	-2.27***
Private renting	-2.56***	-2.34***	-1.50***
Whether in most deprived tenth of neighbourhoods on IMD 2007		-2.32***	-1.57***
Index of Family Advantage score			1.25***
Constant term (modelled base score on the pattern construction test)	52.09	52.21	51.51
Number of observations (cohort members)	8,418	8,418	8,418
R-squared	0.0334	0.0389	0.065

Note: *** = statistically significant at the 1% level, ie differences in test scores for these groups are 99% likely not to have been due to chance

Appendix Table 2: Further regression models for the pattern construction test

	Extreme neighbourhood deprivation, tenure, Index of Family Advantage (by quintiles), number of siblings, family structure, and mothers' age at first birth
Whether in most deprived tenth of neighbourhoods on IMD 2007	-1.355***
Tenure (reference category: owner occupation)	
Social housing	-1.657***
Private renting	-0.986**
Index of Family Advantage *(reference category: Quintile 5- most advantaged)*	
Quintile 1	-4.072***
Quintile 2	-4.173***
Quintile 3	-2.213***
Quintile 4	-1.507***
Number of siblings (reference category: one)	
No siblings in the household	-0.205
Two siblings in household	-0.735***
Three or more siblings in household	-1.957***
Family structure (reference category: two parents)	
Lone parent family (at age 5)	-0.827
Mother's age at first birth (reference category 30-34 years)	
Less than 20	-1.215**
20 to 24	-0.415
25 to 29	0.007
35 to 39	-0.138
40 plus	-0.396
Constant term (modelled base score on the pattern construction test)	54.712***
Number of observations (cohort members)	8418
R-squared	0.0671

Notes: *** = statistically significant at the 1% level, ie differences in test scores for these groups are 99% likely not to have been due to chance

** = statistically significant at the 5% level

No asterisks = differences not statistically significant even at the 10% level

Appendix Table 3: Further regression models for the pattern construction test, incorporating parent's attitudes

	(1) Neighbourhood, tenure, Index of Family Advantage (by quintiles), number of siblings, family structure, and mothers' age at first birth	(2) As (1) and whether a good area to raise children	(3) As (2) and whether satisfied with cohort member's education
Whether in most deprived tenth of neighbourhoods on IMD 2007	-1.355***	-1.140**	-1.228**
Tenure (reference category: owner occupation)			
Social housing	-1.657***	-1.509***	-1.537***
Private renting	-0.986**	-0.966**	-0.920**
Quintiles of Family advantage (reference category quintile five =highest)			
Quintile 1	-4.072***	-3.980***	-4.017***
Quintile 2	-4.173***	-4.097***	-4.119***
Quintile 3	-2.213***	-2.128***	-2.188***
Quintile 4	-1.507***	-1.473***	-1.497***
Number of siblings (reference category: one)			
No siblings in the household	-0.205	-0.219	-0.159
Two siblings in household	-0.735***	-0.722***	-0.702***
Three or more siblings in household	-1.957***	-1.964***	-1.934***
Family structure (reference category: two parents)			
Lone parent family (at age 5)	-0.827	-0.774	-0.767
Mother's age at first birth (reference category 30-34 years)			
Less than 20	-1.215**	-1.158*	-1.018*
20 to 24	-0.415	-0.348	-0.356
25 to 29	0.007	0.034	0.080
35 to 39	-0.138	-0.149	-0.139
40 plus	-0.396	-0.412	-0.489
Whether good area to bring up children (reference category 'good')			
Excellent area		0.173	0.050
Average area		-0.429	-0.338
Poor/very poor area		-1.687***	-1.486***
Satisfaction with education at current school (reference category 'very satisfied)			

Fairly satisfied			-1.178***
Neither satisfied or dissatisfied/ fairly or very dissatisfied			-2.839***
Constant term (modelled base score on the pattern construction test)	54.712***	54.672***	55.064***
Number of observations (cohort members)	8418	8408	8307
R-squared	0.0671	0.0691	0.0727

Notes: *** = statistically significant at the 1% level, ie differences in test scores for these groups are 99% likely not to have been due to chance
** = statistically significant at the 5% level
*= statistically significant at the 10% level
No asterisks = differences not statistically significant even at the 10% level