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# Assessing recall of early life circumstances

## Evidence from the National Child Development Study

**Matt Brown**

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# 1 Introduction

## 1.1 Background

Researchers wishing to gather information from adults about their childhood or earlier periods of their lives often have no choice but to rely on retrospective questions. For example, the English Longitudinal Study of Ageing (ELSA) and the Survey of Health, Ageing and Retirement in Europe (SHARE) are longitudinal studies following adults aged over 50. In recent years both studies have conducted retrospective life history surveys with their members that have sought to gather information about life experiences prior to joining the respective studies (Ward et al., 2007, Borsch-Süpan, A. and Schröder, M., 2011). Other large panel studies such as the Health and Retirement Study (HRS) and the Panel Study of Income Dynamics (PSID) have included retrospective questions in their surveys over the years, many of which have focused on childhood health.

It is generally recognised that using retrospective questions will lead to a degree of recall error. Beckett and colleagues (2001) described four potential sources of error in data collected via retrospective reporting. The first and potentially most important source of error relates to the length of the recall period and there is a general acceptance that a longer recall period results in a reduction of accuracy (see also Sudman and Bradburn, 1973; Cohen et. al., 1983). However this is not universally the case as the second factor affecting recall is salience. Events that hold more significance in people's minds will typically be recalled with greater accuracy. Recall of particularly salient events may not be affected by the passing of time. The third factor discussed by Beckett and colleagues is that of 'telescoping', where events that happened in the past are recalled as having occurred more recently (forward telescoping) or earlier (backward telescoping) than they actually did (see also Bradburn et. al, 1994). Related to this, the fourth potential source of error results from the so-called 'accessibility principle' (Brown et al., 1985), which refers to the phenomenon in which events that respondents can most easily recall are assumed to have occurred more recently (and perhaps more frequently), and conversely events that are more difficult to recall are assumed to have happened longer ago.

The number of studies attempting to assess the validity of retrospective reports of childhood experiences and circumstances are fairly limited, but those that have been conducted typically rely on one of three strategies. The first strategy is to employ some form of test-retest whereby retrospective reports are collected on two occasions and compared for consistency. For example, Haas and colleagues (2007) compared retrospective reports of childhood health (as rated on a scale from poor to excellent) provided on two occasions, two years apart by HRS and PSID study members. They concluded that retrospective measures of childhood health were reasonably reliable.

A second strategy is to assess whether retrospective reports on several measures are logically consistent. For example, Elo (1998) examined the extent to which retrospective reports of overall childhood health provided by HRS study members were correlated with responses to other questions about childhood health limitations, including the amount of school they had missed as a result of ill health, whether they had ever been restricted from participating in sports for lengthy periods and whether they had ever had to remain in bed for

a month or more. Elo found that that the self-reported health measure was highly consistent with these other measures. A variation on this strategy might be to compare the consistency of retrospective reports of the same measure collected by two different studies. For example, Dex and McCulloch (1998) compared retrospective reports of spells of unemployment over a similar period reported by respondents in the second wave of the British Household Panel Survey (1992) and the Family and Working Lives Survey (1994). They found reasonable consistency between the two studies, especially for men.

The third strategy involves the comparison of retrospective reports with some form of administrative data. Auriat (1993) compared retrospective reports of all changes of address since the age of 14, which were collected in a Belgian survey of couples aged between 41 and 57 with the Belgian National Population Register. When focusing on the first three moves after marriage (if applicable) Auriat finds that around 30 per cent misreport the dates of moves by more than three months. Comparing with administrative data is often viewed as the "gold" standard for validating retrospective reports, but Beckett and colleagues (2000) point out that this will not always be the case. For example, health conditions of great salience to respondents but which require little medical intervention, such as arthritis, may be documented poorly in administrative health records and retrospective reports may be the more accurate source of information.

Occasionally the opportunity presents itself to compare retrospective reports with survey data collected contemporaneously. Batty and colleagues (2005) examined the accuracy with which adults could recall their childhood social class some 40 years later. The Aberdeen Children of the 1950s Study, a school-based survey of 12,150 children born in Aberdeen which took place in 1962, contained two measures of childhood socio-economic position: occupational social class at birth (taken from maternity records) and occupational social class in childhood as reported by study members themselves. Between 2000 and 2003 study members completed a second questionnaire that re-collected details about their father's occupation in childhood. The consistency between retrospective and contemporaneous reports was considered 'moderate' and there was a tendency for adults to report a more favourable occupational class than was reported during childhood.

This paper exploits a unique opportunity to examine responses to questions about childhood experiences that were answered by members of the 1958 birth cohort study at the age of 50. These questions re-collected information that was first collected contemporaneously. The paper will assess the accuracy with which individuals can recall these details some 40 years later by comparing the information reported at age 50 with the data captured at age 11. This evidence can be used to inform decisions about the validity of including these kinds of questions in other surveys.

The rich life-history information collected from and about the study members since the beginning of the study also presents an opportunity to investigate the factors that might cause variation in recall error. The paper uses a logistic regression model to assess the impact of a range of factors (sex, education, employment, family life, health) on ability to accurately respond to these retrospective questions. Previous attempts to identify the characteristics associated with poorer retrospective recall have come to inconsistent conclusions. However in terms of reporting previous health conditions, both Hahn (1997) and

Beckett (2000) find evidence that those with higher levels of education provide more accurate responses.

## 1.2 The National Child Development Study

The 1958 British birth cohort study, known as the National Child Development Study (NCDS), started out as a cross-sectional perinatal mortality survey of 17,000 infants born during one week in March 1958 in Great Britain. These children have subsequently been followed into adulthood with surveys at ages 7, 11, 16, 23, 33, 42, 44[i], 46 and most recently at age 50. In childhood, information came from interviews with parents and teachers, medical examinations, and educational tests that the children took themselves. From age 16, the study members themselves were interviewed, and their examination results and other qualifications over the years were collected. Adult sweeps have collected data over a number of domains, including physical and mental health, demographic circumstances, employment, and housing. Over the years there has inevitably been some attrition from lost contact, refusals, emigration and death, but response rates remain high. In the most recent survey, which took place in 2008 when study members were aged 50, and on which this paper is based, just under 9,800 study members were successfully interviewed.

The data collected by the study are made available to researchers via the Economic and Social Data Service: www.esds.ac.uk.

## 1.3 Retrospective questions

Two retrospective questions were included as part of the self-completion section of the 2008 NCDS questionnaire. The questions came at the end of the core interview and were asked of a subset of approximately 30 per cent of those who were interviewed (n=2,912). The questions asked study members to think about the time when they were 11 and to state the *number of people* they lived with and the *number of rooms* in their household at this time. The two questions were selected on the grounds that the responses provided would elicit straightforward numerical responses. These responses could then be directly compared to their parents' (typically their mothers') responses to the same questions in 1969 when the study members were aged 11. Furthermore, the two selected questions were both included in retrospective life history questionnaires put to members of both the ELSA and SHARE studies in recent years. Thus an assessment of the accuracy with which individuals can recall these precise measures was thought to be particularly useful. ELSA and SHARE both recruit individuals who are aged 50, meaning that at the time these retrospective questions were put to NCDS study members they were of comparable age to the youngest members of these two major studies of ageing.

While 2,912 NCDS study members answered the two retrospective questions, there were a number of cases where there was no comparable response from childhood. This was primarily because no interview had been conducted with the parent at the time of the age 11 survey, although in a small number of cases interviews did take place, but this particular information was missing. In total, there were 2,498 cases where valid responses were collected both at age 11 and at age 50 with regards to both the number of people in the household and the number of rooms at age 11.

The wording of the questions was as follows:

> For the next two questions we would like you to think back to your childhood, specifically to the time when you were 11-years-old:
>
> 1. “When you were 11, including yourself, how many people normally lived in your household? Please exclude any children or others who only lived at home for short periods such as school holidays.”
>
>    *The contemporaneous question asked the parent: “Who normally lives in your household?” This question was asked with exactly the same instruction about excluding those who only lived at home for short periods. The interviewer collected the details of each household member (name, age and relationship to study member) and the total number of individuals was recorded.*
>
> 2. “How many rooms did your accommodation have? Please exclude bathrooms, kitchens or sculleries unless they were used as a living room.”
>
>    *The contemporaneous question was exactly the same, but was framed in the present tense.*

# 2 Results

## 2.1 Consistency between retrospective and contemporaneous responses

Figures 1 and 2 summarise the responses to the two questions as collected both retrospectively at age 50 and contemporaneously from parents when study members were aged 11.

**Figure 1: Number of people in household at age 11 (contemporaneous and retrospective responses)**

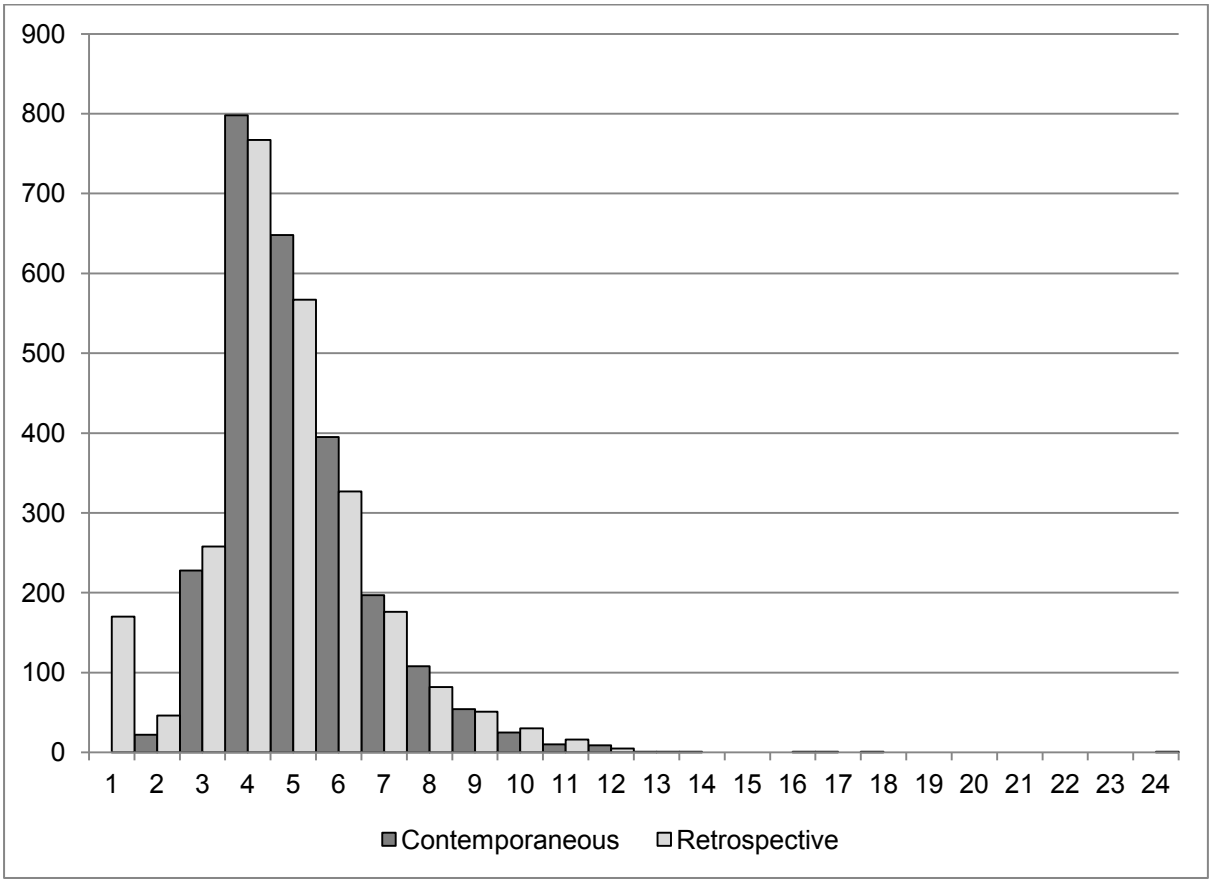
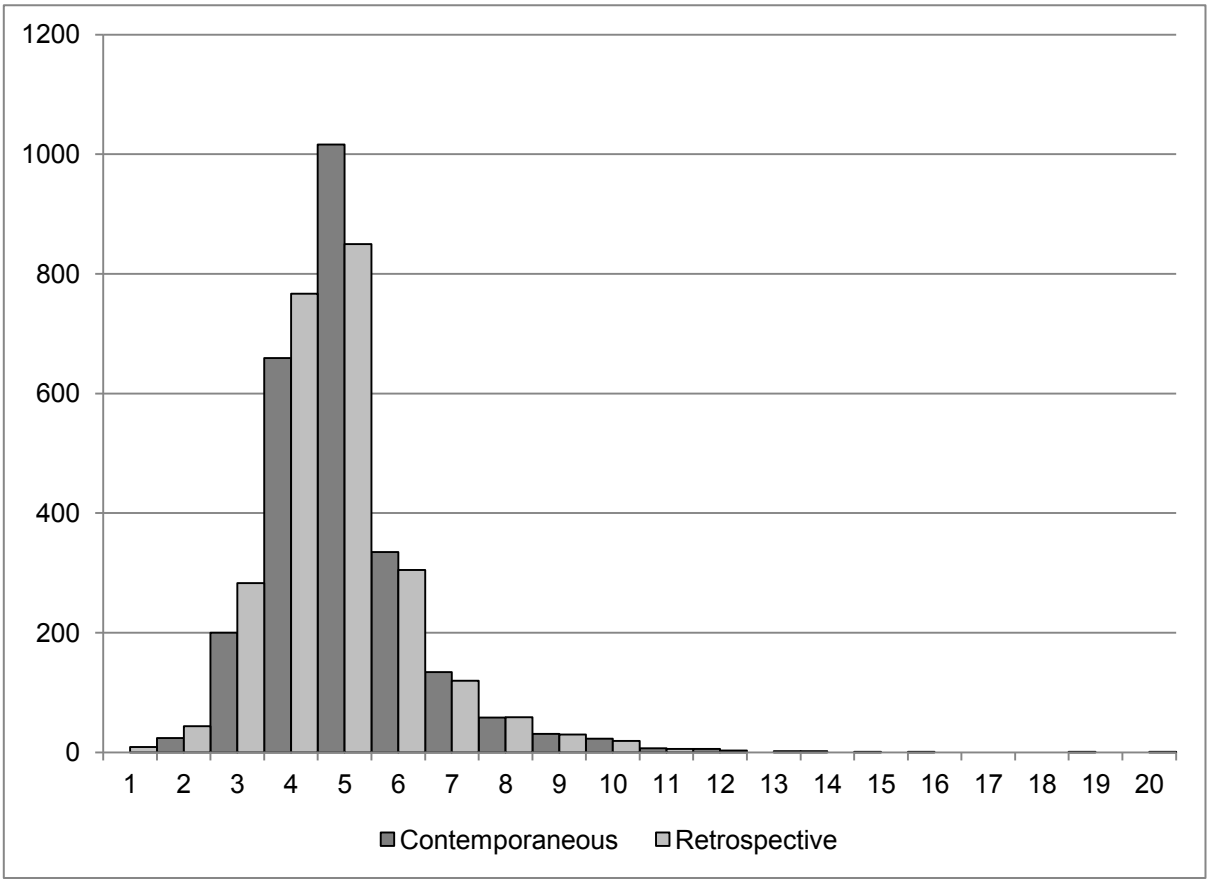


**Figure 2: Number of rooms in household at age 11 (contemporaneous and retrospective responses)**




Contemporaneous estimates (provided by parents) of 'number of people' ranged between two and 18 with the mean response being 5.12 (*SD*=1.647). Three quarters (74 per cent) reported living in households containing between four and six individuals. The distribution in terms of number of rooms at age 11 is very similar with contemporaneous estimates ranging between two and 19 with a mean response of 5.01 (*SD*= 1.452). Seven in ten (70 per cent) reported living in accommodation containing between four and six rooms.

Retrospective responses provided at age 50 ranged between one and 24 for the number of people and between one and 20 for the number of rooms. Retrospective recall produced a mean for the number of people in the household at age 11 and a mean number of rooms of 4.74 (*SD*=1.947) and 4.81 (*SD*= 1.462) respectively. Both estimates are significantly lower than the contemporaneous estimates. Two sample paired t-tests show the differences are both highly significant ($p<0.001$), but the effect sizes are relatively small ($d=0.26$ for number of people and 0.17 for number of rooms). However, retrospective responses were highly correlated with the contemporaneous responses for both number of people ($r=0.69$, $p<0.001$) and number of rooms ($r=0.68$, $p<0.001$). Rounded to the nearest whole, the mean contemporaneous and retrospective responses were consistent.

Consistency between the contemporaneous and the retrospective responses was greater for the number of people measure. Table 1 shows that just over two thirds of individuals (68 per cent) provided a retrospective response, which was consistent with the response provided

by their parents contemporaneously. For number of rooms the analogous proportion was 50 per cent. Just over a third (36 per cent) provided consistent responses on both measures, just under half (47 per cent) provided consistent responses on one measure. One in five (18 per cent) did not provide a consistent response on either of the measures. On both measures we see that retrospective under-reporting was around twice as common as over-reporting (23 per cent compared with 10 per cent for number of people in household, and 32 per cent compared with 18 per cent for number of rooms).

**Table 1: Consistency* between retrospective and contemporaneous responses**

| | |
|---|---|
| **Number of people** | |
| Mean contemporaneous response | 5.12 |
| Mean retrospective response | 4.74 |
| Correlation | 0.69 |
| Proportion giving consistent response | 67.6% |
| Retrospective response > contemporaneous response | 9.7% |
| Retrospective response < contemporaneous response | 22.6% |
| **Number of rooms** | |
| Mean contemporaneous response | 5.01 |
| Mean retrospective response | 4.81 |
| Correlation | 0.68 |
| Proportion giving consistent response | 50.1% |
| Retrospective response > contemporaneous response | 17.6% |
| Retrospective response < contemporaneous response | 32.3% |
| **Summary** | |
| Both questions consistent | 35.5% |
| One question consistent | 46.6% |
| Neither question consistent | 17.9% |

*Consistency is defined here as retrospective and contemporaneous responses being exactly the same.

Figure 3 shows the magnitude of the difference between the two responses for the number of people measure. It is encouraging to observe that even though a significant percentage of study members (32 per cent) failed to provide a response that was exactly the same as the contemporaneous response provided by their parent, it was typically the case that the magnitude of the difference was fairly small. One in five (18 per cent) provided a response that differed from the contemporaneous measure by one person and a further one in twenty (6 per cent) provided responses that differed by two. This left just under one in ten (9 per cent) providing responses that were substantially different (by more than three people) from the contemporaneous response. In cases where the two responses were not consistent, the mean difference between the responses was 2.07.

One clear difference between the retrospective responses and the contemporaneous responses is that seven per cent retrospectively reported that at the age of 11 they lived in one-person households (i.e. they lived alone), whereas there were no reports of one-person households among the contemporaneous responses. One might have suspected that these individuals had misunderstood the question and were perhaps not including themselves in the total, implying they might have actually lived in two-person households. The contemporaneous responses however do not suggest that this was the case, as the parents of these individuals provided a full range of responses from two to 12, the most common responses being four and five.

**Figure 3: Magnitude of inconsistency (number of people)**

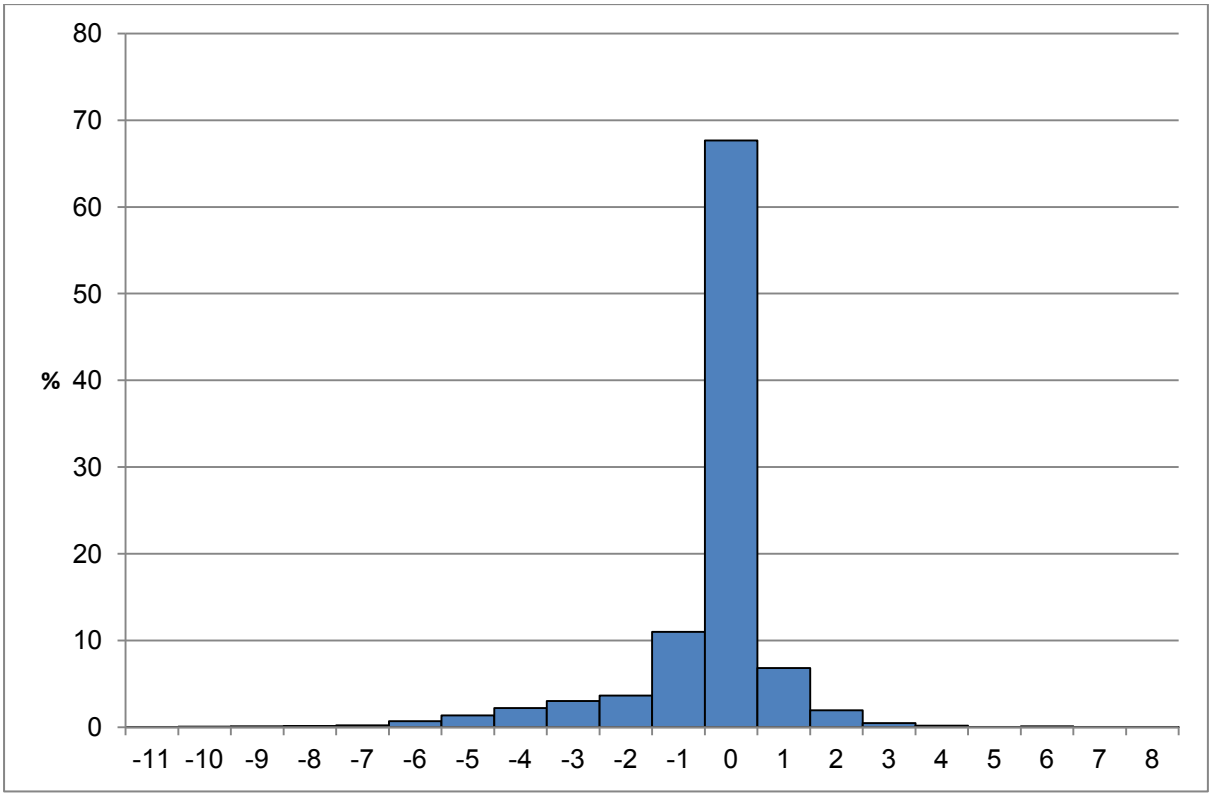
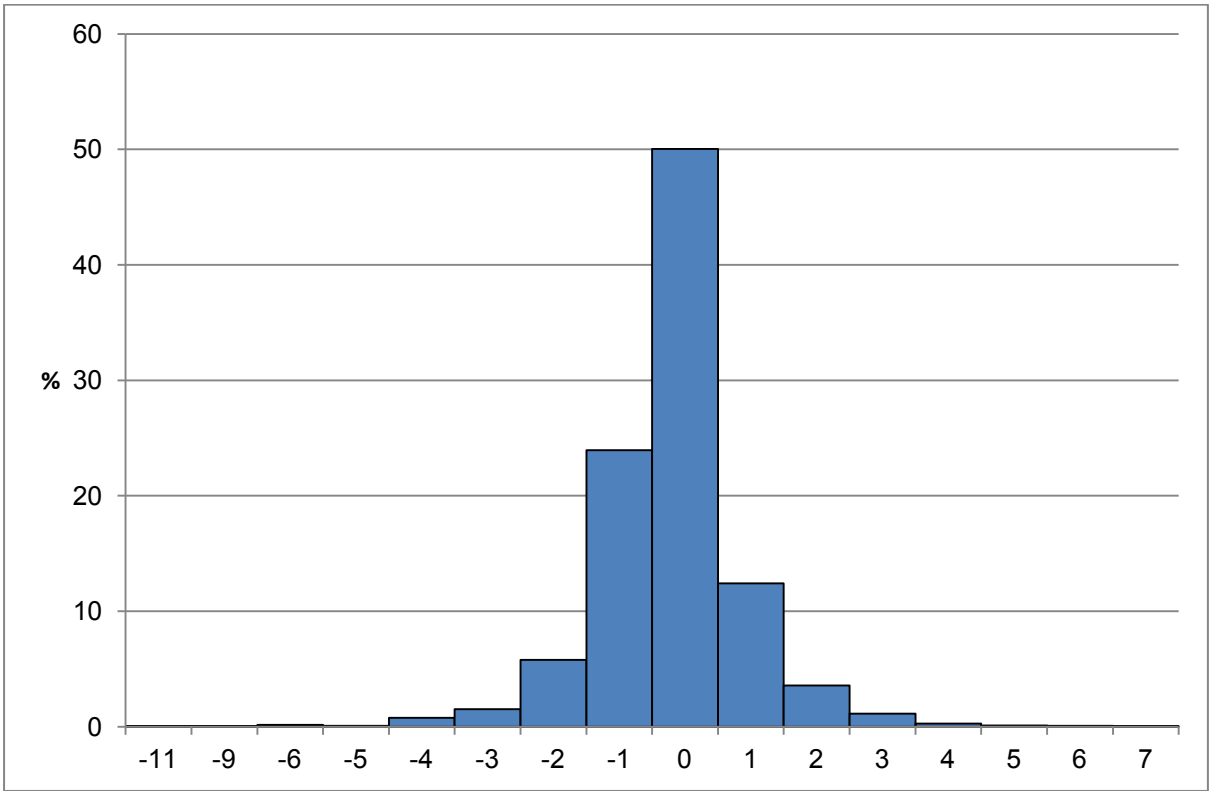


Figure 4 shows the magnitude of the difference between the two responses on the number of rooms measure. The pattern is very similar and it is once again encouraging to observe that differences between the two responses are typically small. Just over a third (36 per cent) provided a retrospective response that differed from the contemporaneous response by one room and a further one in ten (9 per cent) provided a response that differed by two rooms. This leaves just under one in twenty (4 per cent) where the difference between the two responses was fairly substantial (i.e. by more than three rooms).

**Figure 4: Magnitude of inconsistency (number of rooms)**




On the basis of these initial comparisons it is concluded that, at least on these particular measures, an individual in adulthood is typically able to recall childhood circumstances with a reasonable degree of accuracy. Researchers requiring very precise measures would need to approach these retrospective measures with a degree of caution. However researchers who are content with classifying individuals into groups (e.g. large, medium and small households) would be able to fairly confidently identify these groups. There remains a small percentage of respondents whose retrospective and contemporaneous responses are dramatically different[1]. Such individuals would likely be misclassified by a researcher relying solely on retrospective measures.

One practical application of these two measures is to use them in combination to define a measure of overcrowding. Many researchers have looked at the impact of overcrowding in childhood on subsequent adult outcomes. In one example, Marsh et al. (1999) used NCDS data to examine the impact of poor housing during childhood (including overcrowding) on

[1] Just under two per cent gave a retrospective response to the 'number of people' or 'number of rooms measure' that differed from the contemporaneous response by more than 5.

adult health. One way of examining the potential impact of these typically minor inconsistencies between retrospective and contemporaneous responses is to derive a childhood overcrowding variable based on retrospective responses and then use the contemporaneous responses as a validity check.

If we define overcrowding as living in a household with more than one person per room, then using the retrospective responses we estimate the percentage living in overcrowded conditions at age 11 to be 37 per cent. If we use contemporaneous responses it is encouraging to observe that we estimate the percentage to be almost the same at 38 per cent.

However, Table 2 shows that using the two sets of measures does not necessarily result in the same cases being classified as living in overcrowded conditions.

**Table 2: Overcrowding at age 11 as measured by contemporaneous and retrospective measures of number of people and number of rooms in household**

| | | **Contemporaneous** | |
|---|---|---|---|
| | | **Not overcrowded** | **Overcrowded** |
| **Retrospective** | **Not overcrowded** | 1322 (52.2%) | 250 (10.0%) |
| | **Overcrowded** | 224 (9.0%) | 702 (28.1%) |

Overall, one in five are inconsistently classified on the two overcrowding measures with retrospective measures and contemporaneous measures of household size and number of rooms being almost equally likely to inconsistently classify an individual as having lived in overcrowded conditions at age 11.

This potential misclassification might not be considered too problematic if it was fairly random, but if it were systematic it would be a cause for concern. In order to examine this we can look at whether the conclusions we might come to about the associations between living in overcrowded housing during childhood and later outcomes would differ depending on whether we use the contemporaneous measure of childhood overcrowding or the retrospective measure.

Table 3 compares a range of adult outcomes for those who were classified as living in overcrowded conditions at age 11 using the contemporaneous and retrospective measures of childhood circumstances. It is encouraging to note that although a proportion of those defined as overcrowded using the retrospective measure would appear to have been misclassified (if we assume that the contemporaneous responses are ‘correct’), the associations between the two measures of overcrowding and later adult outcomes hardly differ at all.

**Table 3: Comparison of adult outcomes between those defined as living in overcrowded conditions at age 11 in the contemporaneous responses and retrospective responses**

| Adult outcome (age 50) | Contemporaneous | Retrospective |
|---|---|---|
| Lives with a partner | 80.4% | 81.1% |
| Not-working | 21.2% | 21.1% |
| Harmful or hazardous drinking | 14.6% | 14.4% |
| Alcohol dependent | 3.7% | 4.1% |
| Depression | 15.3% | 16.0% |
| Never smoked cigarettes | 48.2% | 48.3% |
| Smokes cigarettes every day | 18.9% | 17.4% |
| Living comfortably (financially) | 40.4% | 40.2% |
| Finding it very difficult (financially) | 3.8% | 3.1% |
| Excellent health (self-rated) | 17.8% | 18.8% |
| Poor health (self-rated) | 5.6% | 5.6% |
| Suffers from asthma or wheezy bronchitis | 12.2% | 10.2% |

## 2.2 Factors affecting recall

### Is an inability to provide accurate reports of childhood circumstances the result of poor memory?

It is probably reasonable to assume that one of the factors associated with being unable to provide accurate reports of childhood circumstances is poor memory. The NCDS age 50 survey included a series of assessments which sought to measure various aspects of cognitive ability, including memory (Brown et al., 2010). Memory was assessed by a word-list recall task where study members were read a list of ten simple words and then asked to recall as many as they could both immediately and after an approximately five-minute delay. Clearly the task of recalling a list of words after a five-minute delay is an entirely different task than recalling circumstances from childhood. Figure 5 shows how the proportion of study members providing inconsistent retrospective responses varied on the two measures by performance in the delayed word-list recall task at age 50. We can see that, at least on the 'number of people' measure, there does seem to be a bivariate association between performance in the delayed memory test and recall ability. Among those with the lowest scores on the delayed memory test (0 to 2) approximately half provided a retrospective response that was not consistent with the contemporaneous response. Among those who scored five on the delayed memory test (the average score), the proportion providing an

inconsistent response was around a third (34 per cent). Among those who achieved a score of nine, less than one in five (17 per cent) provided an inconsistent response. Among those who achieved a maximum score of ten, the proportion was slightly higher (31 per cent), but this score was achieved by only a very small number (n=22). On the 'number of rooms' measure the association is not so apparent. A higher proportion of those scoring zero on the delayed memory test provided an inconsistent retrospective response (69 per cent), but this group was also very small (n=32). Among those scoring one or more on the memory test, the proportion providing inconsistent responses did not vary greatly.

**Figure 5: Inconsistent retrospective responses by delayed memory test score at age 50**

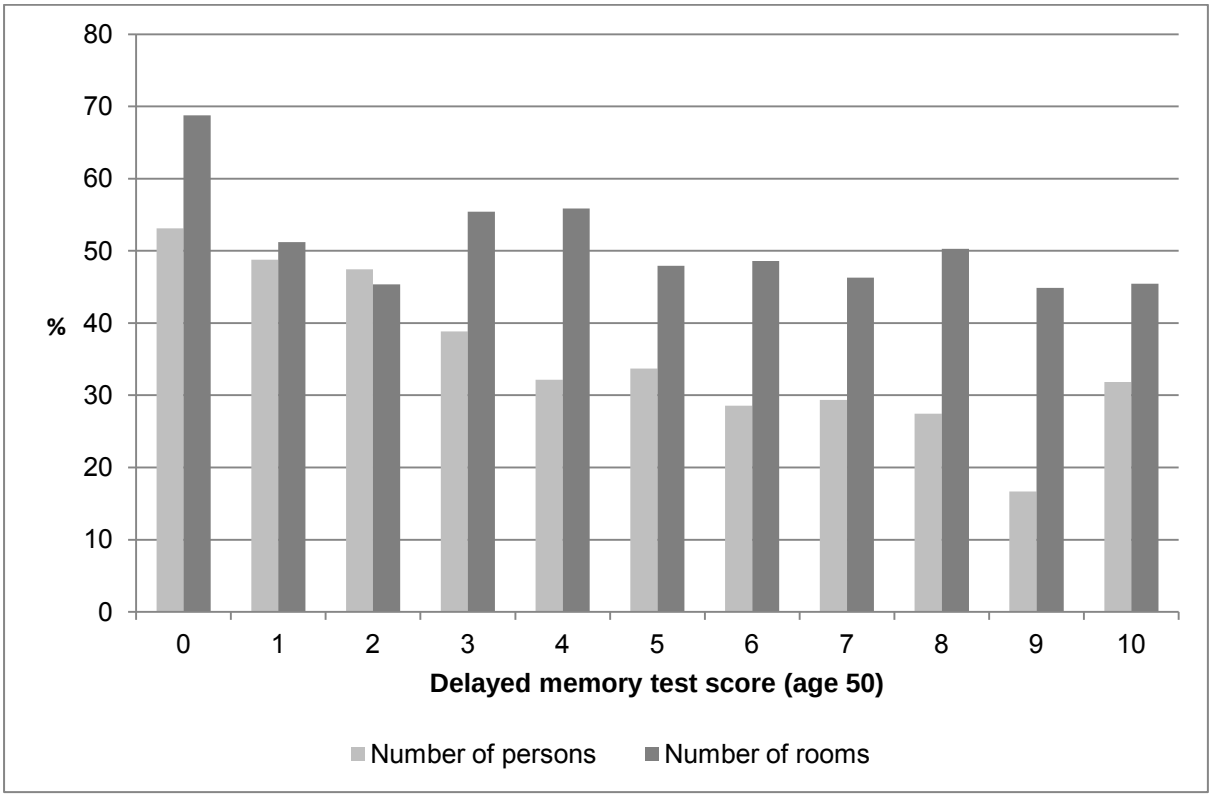



Table 4 shows the mean difference and absolute mean difference (i.e. taking no account of the direction of any discrepancy) between the retrospective responses provided at age 50 and the contemporaneous responses provided by parents for both measures broken down by performance in the delayed memory test. On the 'number of people' measure the mean absolute difference gradually reduces from 1.5 among those who scored zero to 0.3 among those who scored nine. The mean difference reduces from -1.2 to -0.1 suggesting that better performance on the memory test not only reduces the likelihood of providing an inconsistent response (on this measure) but also that where there are inconsistencies, their magnitude tends to be less. On the 'number of rooms' measure those with a score of zero on the delayed memory test provided a retrospective response that differed from the contemporaneous response by 0.9. Among those with scores of one or more, the mean absolute difference fluctuated between 0.6 and 0.8. However, in order to reach any strong conclusions about the impact of memory on ability to recall childhood circumstances, it will

be necessary to control for a range of other factors which could be inter-related (see Section 2.4).

**Table 4: Mean differences between retrospective and contemporaneous responses by performance in delayed memory test score**

| Delayed memory test score | Number of people | | Number of rooms | | N | % |
|---|---|---|---|---|---|---|
| | Mean difference (absolute) | Mean difference | Mean difference (absolute) | Mean difference | | |
| 0 | 1.47 | -1.16 | 0.94 | -0.50 | 32 | 1.29% |
| 1 | 0.90 | -0.51 | 0.66 | -0.32 | 41 | 1.66% |
| 2 | 0.94 | -0.51 | 0.67 | -0.18 | 97 | 3.92% |
| 3 | 0.82 | -0.41 | 0.73 | -0.30 | 193 | 7.80% |
| 4 | 0.67 | -0.41 | 0.84 | -0.32 | 367 | 14.83% |
| 5 | 0.80 | -0.51 | 0.71 | -0.17 | 534 | 21.58% |
| 6 | 0.57 | -0.31 | 0.70 | -0.19 | 539 | 21.79% |
| 7 | 0.55 | -0.26 | 0.62 | -0.16 | 378 | 15.28% |
| 8 | 0.47 | -0.33 | 0.64 | -0.18 | 193 | 7.80% |
| 9 | 0.31 | -0.13 | 0.56 | 0.03 | 78 | 3.15% |
| 10 | 0.55 | -0.27 | 0.59 | -0.05 | 22 | 0.89% |

## 2.3 Is an inability to provide accurate reports of childhood circumstances the result of difficulties in accessing the required information?

One would hypothesise that if one's circumstances throughout childhood had been very stable, then recalling details about a particular period (i.e. age 11) would be a far more straightforward task than for someone who had experienced multiple changes of household composition and housing situation. Additionally, it would also seem likely that those living in smaller households and smaller houses would have an easier task than those living in larger households or houses where one could perhaps understandably overlook a particular individual or room.

Figure 7 shows how the percentage providing inconsistent responses to the 'number of people' and 'number of rooms' questions varied by the number of people and number of rooms which were actually reported at age 11. The lowest proportion of inconsistencies on the 'number of people' measure was found among those whose parents reported that the study member lived in a four-person household at age 11 (which in the main would have been so-called 'nuclear' families of two parents and two children). Among this group just

under a quarter (23 per cent) provided a retrospective response that was inconsistent with the contemporaneous response. As expected, the proportion providing an inconsistent retrospective response increased with the number of individuals contemporaneously reported as living in the household at age 11. Of those in the largest households (10 or more), six in ten (60 per cent) provided an inconsistent response. A very similar pattern is observed for the 'number of rooms' measure where the lowest proportion of inconsistent responses is also found among those reporting four rooms at age 11 (41 per cent) rises steadily with increased number of rooms to over eight in ten (83 per cent) of the small number living in homes with 10 or more rooms (n=41).

**Figure 7: Inconsistent retrospective responses by number of people / rooms in household at age 11**

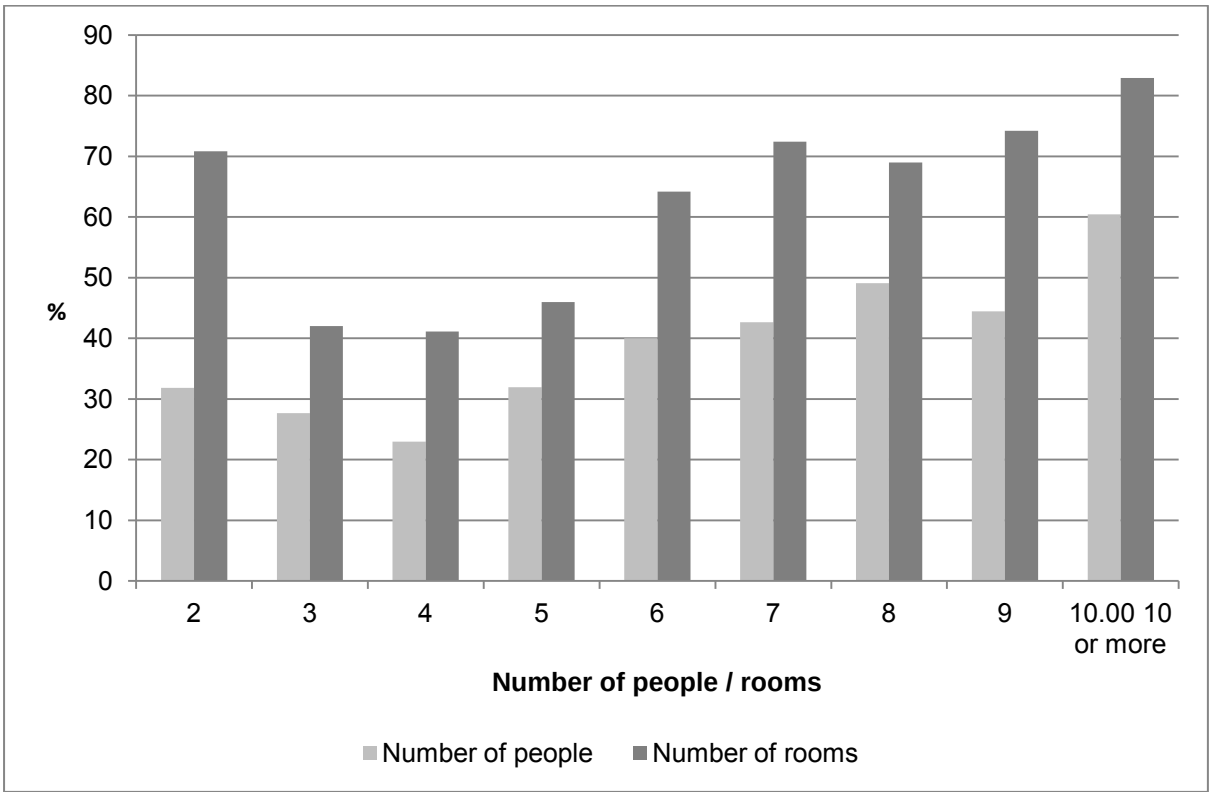
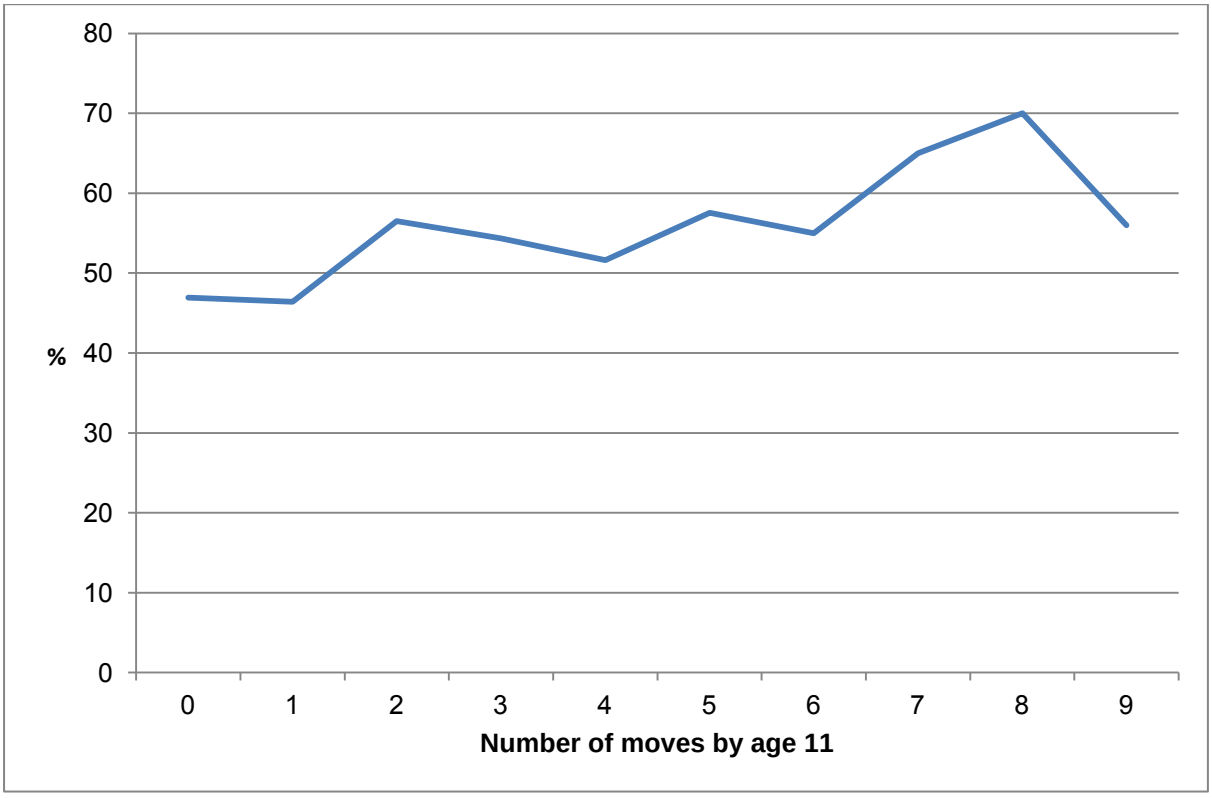



Figure 8 shows how the percentage providing inconsistent responses to the 'number of rooms' question varied by the number of household moves the study member had experienced by the age of 11. As one might expect the tendency is that with an increasing number of moves comes an increasing likelihood of inconsistently reporting the number of rooms at age 11 when asked retrospectively. Less than half of those who have never moved or have only moved once provided an inconsistent answer. Among those who moved eight times the proportion was seven in ten (70 per cent).

**Figure 8: Inconsistent retrospective responses by number of moves by age 11**




These bivariate analyses would seem to confirm that there is an association between the complexity of one's childhood circumstances and the accuracy with which these circumstances can be recalled in adulthood.

In the following section we will use logistic regression models to examine the impact of the factors discussed above (memory and complexity of childhood circumstances) on the levels of consistency observed between retrospective and contemporaneous measures. We will simultaneously control for a host of other factors including education level, social class and a range of health-related behaviours that have previously been shown to be significantly associated with memory.

## 2.4 Logistic regression

Table 5 provides the results for two separate logistic regression analyses examining the factors associated with providing a response on the two retrospective measures that is consistent with the contemporaneous response provided by parents.

The explanatory variables included in the models are:

- sex
- social class
- highest qualification
- memory (as measured by the delayed word-list recall task as described in Section 2.2); scores ranged between 0 and 10)

- whether lived with both natural parents at the age of 11 (included as an additional measure of family stability)
- number of people in the household as contemporaneously reported at age 11 ('number of people' model only)
- number of rooms as reported by parents at age 11 ('number of rooms' model only)
- number of moves by the age of 11
- self-rated health
- smoking
- problematic alcohol consumption as measured by the AUDIT scale (Babor et al., 2001), which classifies individuals as 'unproblematic' drinkers, hazardous drinkers and alcohol dependent
- whether suffers from depression, as measured by the Malaise scale (Rutter et al., 1980)
- letter cancellation task scores at age 50 (Brown et. al, 2010)[2]
- animal naming task scores at age 50 (Brown et al., 2010)[3].

In both models the dependent variable is a binary variable that is coded 1 if the retrospective response provided at age 50 matched exactly the contemporaneous response provided by parents at age 11 and 0 if otherwise.

The Nagelkerke R square values are 0.108 for the 'number of people' model and 0.083 for the 'number of rooms' model.

### Table 5: Logistic regression results

| | Retrospective report of number of PEOPLE at age 11 consistent with contemporaneous report | | | Retrospective report of number of ROOMS at age 11 consistent with contemporaneous report | | |
|---|---|---|---|---|---|---|
| | **Exp (B) (Odds)** | **Sig.** | | **Exp(B) (Odds)** | **Sig.** | |
| **Sex (Ref: Female)** | | | | | | |
| Male | 0.74 | 0.01 | *** | 0.84 | 0.06 | ** |
| **Memory** | | | | | | |
| Delayed memory test score | 1.70 | 0.05 | ** | 1.38 | 0.20 | |
| **Complexity / stability** | | | | | | |
| Number of people / rooms at age 11 | 0.03 | 0.00 | *** | 0.00 | 0.00 | *** |

[2] Respondents were given a grid of randomised letters and asked to cross out as many Ps and Ws as they could in one minute. Speed was measured by the total number of letters scanned. Accuracy was measured by the number of Ps and Ws scanned but missed. Speed scores range from 104 to 780. Accuracy scores range from zero to 38 (with higher scores relating to more inaccuracy).

[3] Respondents were asked to name as many animals as they could in one minute. Scores ranged between 1 and 56.

| | Retrospective report of number of PEOPLE at age 11 consistent with contemporaneous report | | | Retrospective report of number of ROOMS at age 11 consistent with contemporaneous report | | |
|---|---|---|---|---|---|---|
| | **Exp (B) (Odds)** | **Sig.** | | **Exp(B) (Odds)** | **Sig.** | |
| Number of moves by age 11 | 1.59 | 0.07 | * | 0.49 | 0.00 | *** |
| Living with both parents at age 11 (Ref: No) | 2.36 | .000 | *** | 0.97 | 0.82 | |
| **Social Class (Ref: Not working)** | | | | | | |
| Higher managerial / professional | 1.28 | .229 | | 0.95 | 0.76 | |
| Lower managerial / intermediate | 0.85 | .266 | | 0.85 | 0.25 | |
| Small employers / lower supervisory and technical | 0.96 | .823 | | 0.87 | 0.35 | |
| Semi-routine / routine | 0.80 | .238 | | 0.97 | 0.88 | |
| **Highest qualification (Ref: No qualifications)** | | | | | | |
| NVQ1 | 0.95 | .784 | | 1.17 | 0.38 | |
| NVQ2 | 1.48 | .013 | ** | 1.56 | 0.00 | *** |
| NVQ3 | 1.71 | .002 | *** | 1.64 | 0.00 | *** |
| NVQ4 | 1.57 | .007 | *** | 1.84 | 0.00 | *** |
| NVQ5/6 | 1.07 | .831 | | 2.00 | 0.01 | *** |
| **Alcohol consumption (Ref: Does not drink)** | | | | | | |
| Unproblematic drinking | 1.11 | .594 | | 1.01 | 0.96 | |
| Hazardous drinking | 1.27 | .287 | | 0.91 | 0.66 | |
| Alcohol dependant | 1.11 | .723 | | 1.20 | 0.51 | |
| **Self-rated health (Ref: Poor)** | | | | | | |
| Excellent | 1.01 | .971 | | 0.98 | 0.93 | |
| Very good | 1.10 | .659 | | 1.07 | 0.73 | |
| Good | 0.98 | .910 | | 1.03 | 0.87 | |
| Fair | 0.95 | .829 | | 0.90 | 0.62 | |
| **Smoking (Ref: Current smoker)** | | | | | | |
| Never smoked | 1.01 | .924 | | 0.88 | 0.30 | |
| Ex-smoker | 1.08 | .572 | | 1.12 | 0.37 | |

| | Retrospective report of number of PEOPLE at age 11 consistent with contemporaneous report | | | Retrospective report of number of ROOMS at age 11 consistent with contemporaneous report | | |
|---|---|---|---|---|---|---|
| | **Exp (B) (Odds)** | **Sig.** | | **Exp(B) (Odds)** | **Sig.** | |
| Occasional smoker | 1.13 | .671 | | 0.55 | 0.03 | ** |
| **Depression (Ref: No depression)** | | | | | | |
| Depressed | 1.05 | .715 | | 0.89 | 0.38 | |
| **Other cognitive ability scores** | | | | | | |
| Animal naming test score | 1.80 | 0.20 | | 1.72 | 0.20 | |
| Letter cancellation – speed | 2.77 | 0.03 | ** | 1.14 | 0.76 | |
| Letter cancellation – mistakes | 0.29 | 0.03 | ** | 0.89 | 0.83 | |

[1] *p<0.1, **p<0.05, ***p<0.001

[2] The entries associated with continuous variables (number of people at age 11, number of rooms at age 11, number of moves by age 11 and scores on the four cognitive assessments) represent the ratio of the odds associated with the highest values and lowest values.

It is immediately clear that the two models are very similar, suggesting that the factors affecting ability to recall these two different details do not differ greatly. On both measures it is interesting to note that controlling for all other factors in the models, men were significantly less likely to provide retrospective responses that were consistent with the contemporaneous responses collected in childhood. This was particularly the case on the 'number of people' measure, where men were around 25 per cent less likely to provide a consistent response as women.

In section 2.2 we showed a bivariate association between 'memory' (as measured by the delayed word-list recall task) and consistency between retrospective and contemporaneous responses, particularly on the 'number of people' measure. Once we have controlled for the other factors in the model, we see that the effect of performance on this test remains significant on the 'number of people' measure, with those recalling ten words being 70 per cent more likely than those who failed to recall any of the words to provide a retrospective response consistent with the contemporaneous response provided by parents.

The bivariate associations between the complexity and stability of childhood circumstances and consistency between responses at the two time-points remain even after controlling for other factors. On the 'number of people' measure, the odds of someone who lived with both their natural parents at age 11 providing a consistent response were well over twice those of

someone who did not. The previously discussed finding that those living in larger households (in terms of both people and rooms) and those who moved house more often were less likely to provide consistent responses is also replicated here.

Education (as measured by highest qualification) is also found to be highly significant. On both measures the odds of providing consistent retrospective responses are considerably larger for those with higher levels of qualifications than for those with no qualifications. On the 'number of rooms' measure, the odds of providing a consistent retrospective response increased in a linear fashion with each level of education. On the 'number of people' measure however, the highest odds of providing a consistent retrospective response were associated with NVQ level 3 qualifications. Those with the highest level of qualifications (NVQ level 5/6) had lower odds than those with NVQ levels 2, 3 or 4.

Interestingly, scores on the letter cancellation task, a measure of attention to detail, were found to be significantly associated with the consistency of the 'number of people' responses, but not associated with the consistency of the 'number of rooms' responses.

After controlling for other factors, social class was not found to be associated with ability to recall childhood circumstances, nor was self-rated health, general health, depression, alcohol consumption or smoking (with the exception that being an occasional smoker was significantly associated with lower odds of providing a consistent response on the 'number of rooms' measure).

# 3 Summary and discussion

Comparing responses between retrospective questions about childhood circumstances answered at age 50 and questions answered contemporaneously by parents leads us to the encouraging conclusion that 50-year-olds were typically able to recall these particular aspects of their childhood with a reasonable degree of accuracy. Although a significant proportion failed to provide retrospective responses that matched precisely with responses collected contemporaneously, the difference between the two responses was typically small. Collecting retrospective information from adults about these particular aspects of childhood circumstances is therefore proved to be a reasonable approach.

Although recall error was in general found to be fairly minimal, subsequent analyses have shown that there were particular groups who were more likely to provide inconsistent and therefore potentially inaccurate responses than others. The likelihood of providing inconsistent responses was considerably higher among those with less stable family backgrounds, those living in larger households and, as was found by Hahn (1997) and Beckett (2000) when examining retrospective recall of health conditions, the less well educated. Men were also found to be more likely to provide inconsistent responses. Researchers making use of retrospectively collected data on these measures would therefore be advised to use a degree of caution when interpreting the responses of these particular groups.

It must also be noted that recall error may not be the only cause of inconsistencies between contemporaneous and retrospective measures.

Some of the more radical disparities between retrospective and contemporaneous responses may have resulted from data entry errors at one or other time point. It would seem a little unlikely that someone whose parent reported living in a one-room house would genuinely recall living in an eight-room house as a child.

In addition, contemporaneous responses provided by parents and retrospective responses provided by study members will both undoubtedly have been affected by a degree of measurement error. The ‘number of people’ question and the ‘number of rooms’ question both contained fairly detailed instructions that the parent and/or the study member may have misunderstood or interpreted differently[i].

The measures included were also non-static. Contemporaneous responses were collected from parents on one particular date during the year study members were aged 11. The two retrospective questions asked respondents to think back to the “time you were 11-years-old”. A proportion of the retrospective responses which appear to be inconsistent might therefore have been provided in respect of a different period within that same year when a change in housing situation or household composition had occurred[ii]. A greater degree of specificity within the wording of the question may have reduced the amount of inconsistency.

It is highly probable that future follow-ups of NCDS will involve repeated tests of cognition similar to those included at age 50. It will be of interesting to see whether poor retrospective recall at age 50 is predictive of later life problems with cognition.

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## Notes

[i] When responding to the 'number of people' question, respondents were instructed to exclude individuals who only lived at home for "short periods of time such as school holidays". As no precise definition of what was meant by a 'short period' was provided, it was potentially open to multiple interpretations. The 'number of rooms' question asked respondents to exclude "bathrooms, kitchens or sculleries unless they were used as a living room". Again there may well have been rooms in the house that either the parent or the study member may have been unsure whether to include. The 'number of rooms' question put to parents in the age 11 survey was also included (with exactly the same wording) in the age 7 survey. Of the 2,498 cases, there were 619 (25 per cent) who definitely did not move home between these two periods meaning responses to the number of rooms question would have been asked in relation to the same address. Seven in ten (70 per cent) provided the same response in both occasions. In a small number of cases the home could have been modified over this period in a way which increased (or possibly decreased) the number of rooms but this serves to highlight the fact that respondents can be inconsistent in the way they respond to questions. The inconsistencies between responses given at these two time points were typically small. However it is illuminating to note that the level of consistency between responses provided by the same individual on two occasions four years apart is very similar to the level of consistency between the retrospective responses collected from study members at age 50 and the contemporaneous responses collected from parents around 40 years earlier (70 per cent compared with 68 per cent).

[ii] It is possible to identify that just under half (48 per cent) definitely did not move house during the year in which they were age 11, although even among this group it is possible that homes may have been modified during the year in a way that affected the number of rooms. If we compare the consistency between the retrospectively reported and the contemporaneously reported number of rooms for this group with the remaining cases (where it is not possible to tell whether they may have moved), we do indeed see that a greater proportion provided consistent responses (54 per cent compared with 47 per cent). Where inconsistencies were observed they were significantly smaller on average (1.34 compared with 1.48, $p=0.004$). Regrettably it is not possible to identify households that experienced (or did not experience) changes in composition over the period when study members were aged 11.

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