NatCen
National Centre for Social Research

Millennium Cohort Study
Sweep 4
Technical Report

Joanna Chaplin Gray, Reg Gatenby, Nadine Simmonds and Yachien Huang

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Acknowledgements

We would like to thank all of the cohort members and their families who generously gave their time to participate in this project and without whom this survey would not have been possible.

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We would also like to thank our colleagues at the Northern Ireland Statistics and Research Agency (NISRA) who were responsible for the data collection in Northern Ireland.

We also wish to express our thanks to the interviewers who worked on this survey, and on whom so much of the success of the fieldwork depended.

1 Introduction

The Millennium Cohort Study (also known as the Child of the New Century Survey), is one of Britain's world famous national longitudinal birth cohort studies, three of which are run by the Centre for Longitudinal Studies at the Institute of Education, University of London.

Britain has a unique tradition of carrying out national birth cohort studies, following the same group of people from birth into and through adulthood, and providing a picture of whole generations. There are four such surveys, of which the Millennium Cohort Study is the fourth:

- National Survey of Health and Development (started in 1946)
- National Child Development Study (started in 1958)
- 1970 British Cohort Study (started in 1970)
- Millennium Cohort Study (started in 2000)

Each follows a large number of individuals born at a particular time through the course of their lives, charting the effects of events and circumstances in early life on outcomes and achievements later on. The questions on health, education, family, employment and so on are put together by academic researchers and policy makers to understand and improve life in Britain today and in the future.

The study is funded by the ESRC (the Economic and Social Research Council) and a consortium of other government departments led by the Office for National Statistics. The government departments involved in the study are the Department of Health (DoH), Department for Children, Schools and Families (DCSF), the Department for Work and Pensions (DWP) and all of the devolved administrations (Welsh Assembly Government, the Scottish Government, and the Northern Ireland Executive).

Following competitive tender, the Centre for Longitudinal Studies commissioned the National Centre for Social Research (NatCen) to carry out the instrument development, data collection and initial data preparation for the third and fourth sweeps of the Millennium Cohort Study (MCS3 and MCS4). Fieldwork in Northern Ireland was sub-contracted by NatCen to the Northern Ireland Statistics and Research Agency (NISRA).

1.1 The first sweep

The first sweep of the Millennium Cohort Study (MCS1) was conducted during 2001 to 2002 and laid the foundations for a major new longitudinal research resource. Information was collected from co-resident parents of almost 19,000 babies aged nine months. The first survey covered the circumstances of pregnancy and birth, as well as those of the all-important early months of life, and the social and economic background of the family into which the children were born. NatCen was involved in the first sweep of MCS in 2000 to 2001. The data from the first study is now being used by researchers and policy-makers and a book covering the main findings was published in October 2005[1].

[1] Shirley Dex and Heather Joshi (eds) (2005) *Children of the 21st Century: from birth to nine months*. Bristol: Policy Press

1.2 The second sweep

The second sweep (MCS2) took place during 2003 to 2004 when the children were three. Interviews were conducted with the co-resident parents and there were some additional questions about older siblings and, in England, a self-completion questionnaire for siblings aged 10 to 15. The cohort children were also involved directly in the study for the first time: they completed a cognitive assessment and had their height and weight measured by interviewers. A saliva sample was also taken (by parents) from the children in order to measure exposure to common childhood infections. The saliva was not used for DNA or genetic testing. Interviewers were asked to record some observations about the home environment and the neighbourhood.

The data from this sweep were deposited at the UK data archive in the summer of 2006, and a report on the results was published in June 2007[2].

1.3 The third sweep

The third sweep (MCS3) took place when the children turned five and were starting primary school. Fieldwork started in February 2006 and finished in January 2007. Interviews were conducted with the co-resident parents and, as in the second sweep, there were questions about older siblings and, in England, a self-completion questionnaire for siblings aged 10 to 15. The cohort children completed four cognitive assessments and had their height, weight and waist measurements taken. Information about the children was also collected from the cohort children's teachers in Wales, Scotland and Northern Ireland. In England, the equivalent information was provided by accessing the 'Foundation Stage Profile' data collected through routine records.

The data from this sweep were deposited at the UK Data Archive in December 2007, and a report on the results was published in October 2008[3]. A book covering the main findings from the first three sweeps was published in February 2010[4].

1.4 The fourth sweep

The fourth sweep (MCS4) was carried out when the children were aged seven and in the third year of primary schooling. Fieldwork started in late January 2008 and finished in February 2009.

Interviews were conducted with the co-resident parents. The cohort children were asked to participate in four cognitive assessments; had their height, weight and body fat and waist measurements taken and filled in a paper self completion questionnaire. In addition, the cohort children were asked to take part in two projects led by the Institute of Child Health (ICH): physical activity monitoring, in which children's levels of physical activity during the course of a week were measured using an activity monitor, and "Every tooth tells a story", which involved the collection of children's shed milk teeth in order to test them for exposure to lead in the environment. Information about the children was collected from the cohort children's teachers in each country.

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[2] Kirstine Hansen and Heather Joshi (eds) (2007) *Millennium Cohort Study second survey: a user's guide to initial findings.* London: Centre for Longitudinal Studies, Institute of Education, University of London

[3] Kirstine Hansen and Heather Joshi (eds) (2008) *Millennium Cohort Study third survey: a user's guide to initial findings.* London: Centre for Longitudinal Studies, Institute of Education, University of London

[4] Kirstine Hansen, Heather Joshi and Shirley Dex (eds) (2010) *Children of the 21st Century: the first five years.* Bristol: Policy Press.

In addition to this, main and partner respondents were asked to consent to routine health and economic records being accessed, and permission was also sought to access the cohort children's and any eligible siblings' routine health and education records (see section 3 for further details on all elements)

The data from this sweep were deposited at the UK Data Archive in March 2010.

1.5 Follow-up studies

Since the study started there have also been a number of small-scale follow-ups of particular groups of respondents. After sweep one, there was a postal survey of mothers who reported receiving fertility treatment for the birth of their child, which was led by the National Perinatal Epidemiology Unit at the University of Oxford. Since sweep two a team of specialist researchers, also from the University of Oxford, have, with the parents' permission, visited some of the nurseries attended by cohort members in order to evaluate the quality of care provided.

2 The sample

2.1 Introduction

The design of the sample for the Millennium Cohort Study has a number of important features:

- The cohort was born over a 12-month period in order that the effect of season of birth can be taken into account when looking at the results. This is one of the ways in which the Child of the New Century is different from the other British birth cohorts, which all follow a group of people born in one week.
- The cohort covers the whole of the UK (unlike the other cohort studies which do not include Northern Ireland) and has proportionally greater numbers of families in Scotland, Wales and Northern Ireland. These 'boosted samples' were paid for by the devolved administrations in order to ensure that there were sufficient numbers to compare families *within* the same country as well as to make comparisons between countries.
- The sample was geographically clustered by electoral ward in order to facilitate analysis using geographical indicators (such as whether families live in urban or rural areas) and in order to investigate the effect that the area in which people live has on their lives.
- The cohort has an over-representation of children from minority ethnic groups in order that sufficient numbers were included in the study to make comparisons between different groups.
- The cohort has an over-representation of children from deprived areas in order that the effect of disadvantage can be better understood. In addition, it is known that families from deprived areas are more likely to drop out of the study over time.

The design was implemented through the selection of the electoral wards in the study. All of the electoral wards in the UK were allocated into one of three 'sampling strata':

- 'Ethnic' (defined as wards in England in which 30% of more of the population were 'Black' or 'Asian' according the 1991 Census of the population)
- 'Disadvantaged' (defined as wards that were not classified as ethnic that had a value on the 1998 Child Poverty Index which put them in the bottom 25% in England and Wales. The Child Poverty Index is based on the proportion of children living in families in receipt of certain state benefits)
- 'Advantaged' (all other wards not classified as 'Ethnic' or 'Disadvantaged')

The next stage was to sample the electoral wards for the study. A total of 398 were chosen with proportionally more chosen in Scotland, Wales, Northern Ireland and from those classified as 'Ethnic' and 'Disadvantaged'.

The sample of children was selected from Child Benefit Records held by the Department of Work and Pensions (DWP). The DWP sent opt-out letters to all families claiming Child Benefit at an address in one of the selected wards for a child born between the following dates:

- 1st September 2000 and 31st August 2001 in England and Wales
- 24th November 2000 and 11th January 2002 in Scotland and Northern Ireland

In order to be eligible for the study the child had to be living in one of the selected wards when aged 9 months.

A total of 21180 families (who did not opt-out) were issued to the field for the first sweep and 18552 families (containing 18818 cohort children) were recruited to the cohort at age 9 months.

Of the 18552 families recruited into the original cohort, 14898 took part again in the second sweep of the study (MCS2) when the children were aged three years old. In addition, during MCS2 an extra 692 families were recruited to the cohort. These were families that had a child eligible for the study (according to the criteria above) but were not sampled at sweep one because they were not on the Child Benefit register.

The cohort for the study totals 19244 families and comprises the 18552 families interviewed at sweep one and the 692 families recruited at sweep two. The cohort children in these families are eligible for inclusion in the study for as long as they are alive and living in the UK. 18528 families were issued to field for the third sweep (MCS3), and 15246 of these took part.

Following MCS3, CLS reviewed all of the refusals that had been received during fieldwork, and classified them as 'permanent refusals' or 'non-permanent refusals' depending on the information provided by interviewers about the nature of and reasons for refusal, and also taking into consideration the outcome at MCS2. Most, but not all, of the families that refused at MCS2 and MCS3 were classified as "permanent refusals'. In addition, families that could not be traced at MCS2 and MCS3 were classified as 'permanently untraced'.

2.2 Issued sample at MCS4

The issued sample for MCS4 was all families except those that were ineligible (died or emigrated), those that had permanently withdrawn from the study, and those that had been classified as 'permanent refusals' or 'permanently untraced' by CLS (unless they opted back into the study or CLS found new address details for them).

The issued sample for MCS4 was 17031 households.

2.3 Serial numbers

Each family within the cohort was issued a unique serial number at the start of the study, and these were used for MCS4. Each member of the family was also allocated a two-digit 'person number'.

2.4 Allocating the sample to waves

The timing of MCS4 was planned so that almost all of the cohort children would be in their third year of compulsory schooling when the interviews took place, i.e. Year 2 in England and Wales, and Primary 3 in Scotland and Northern Ireland.

In each country, the sample was divided into two waves, determined by the date of birth of the cohort children and their school year.

A summary of the wave structure can be found in Table 2.1.

Table 2.1 Summary of wave structure for MCS4

Wave name	Country	Timetabled fieldwork dates	Dates of birth	Date due to start Year 2/ Primary 3
E1	England	January - April 2008	1 September 2000 - 28 February 2001	September 2007
E2	England	April - July 2008	1 March 2001 - 31 August 2001	September 2007
W1	Wales	January - April 2008	1 September 2000 - 28 February 2001	September 2007
W2	Wales	April - July 2008	1 March 2001 - 31 August 2001	September 2007
N1	Northern Ireland	April - July 2008	24 November 2000 - 1 July 2001	September 2007
N2	Northern Ireland	September - December 2008	2 July 2001 - 11 January 2002	September 2008
S1	Scotland	April - July 2008	24 November 2000 - 28 February 2001	August 2007
S2	Scotland	August - December 2008	24 November 2000 - 28 February 2001	August 2008
			1 March 2001 - 11 January 2002	August 2008
			1 September 2001 – 11 January 2002	August 2009

2.4.1 England and Wales

All of the cohort children in England and Wales are in the same school year, and were due to start Year 2 in September 2007.

Children born between 1st September 2000 and 28th February 2001 were assigned to the first wave of fieldwork, scheduled to take place between January and April 2008, and children born between 1st March 2001 and 31st August 2001 were assigned to the second wave of fieldwork, which was scheduled to take place between April and July 2008.

2.4.2 Scotland

Unlike in England and Wales, the cohort children in Scotland did not all start school in the same academic year. In Scotland, children born between September and February are able to start school in the August before or the August after their fifth birthday; children born between March and August start school in the August after their fifth birthday (or the August they turn five, in the case of August births).

The cohort children were born between 24th November 2000 and 11th January 2002. The majority of the children born between 24th November 2000 and 28th February 2001 had started school in August 2005, and were therefore due to start Primary 3 in August 2007; these children were assigned to the first wave of fieldwork in Scotland,S1, which was scheduled to take place from April to July 2008.

Those cohort children born between November 2000 and February 2001 who had not started school until the August after their fifth birthday, and those born between 1st March 2001 and 11th January 2002 were due to start Primary 3 in August 2008. These children

were assigned to the second wave of fieldwork, S2, which was scheduled to take place from August to December 2008.

A small number of cohort children born between September 2001 and January 2002 had not started school until August 2007, and so were not due to start Primary 3 until after the fieldwork for MCS was finished. These children were assigned to S2, and the interviews took place when the children were in Primary 2.

2.4.3 Northern Ireland

Like Scotland, the cohort children in Northern Ireland did not all start school in the same academic year. Children born between 24th November 2000 and 1st July 2001 were due to start Primary 3 in September 2007. These children were assigned to wave N1.

Children in born between 2nd July 2001 and 11th January 2002 were due to start Primary 3 in September 2008; these children were assigned to N2.

2.5 Changes to wave allocations

Although date of birth is not subject to change, it was possible that country of residence could change. This meant that after the initial sample allocation to waves, some cases had to be moved from one fieldwork period to another. For example, some changes in country of residence meant that a case had to be delayed until a later fieldwork period, and some changes in country of residence meant that the case had to be brought forward to an earlier fieldwork period. It was possible for a change in country of residence to be discovered by CLS or by interviewers in the field.

Changes in country of residence discovered by interviewers in the field were dealt with by NatCen on a case-by-case basis according to NatCen's usual procedures for transferring movers between interviewers.

Where a change in country of residence was known by CLS prior to the delivery of the sample information to NatCen, CLS assigned a new 'current wave'.

After a case was delivered to NatCen the fieldwork wave it was assigned to was fixed i.e. the 'current wave' was not updated again, even when the case was conducted in another wave. So, for example, if at the start of fieldwork a cohort member was living in Wales and had been assigned to wave W1, but moved to England, their wave would still appear in the data as W1: it was not changed to E1.

Where CLS discovered a change in country of residence which implied that a case that had already been issued should be delayed to a later fieldwork period, CLS sent the new address to NatCen and it was processed according to NatCen's usual procedures for transferring movers between interviewers. For example, if a family with a child born in September 2000 and living in England (hence assigned to E1 and due to be interviewed in January to April 2008) told CLS that they had moved to Scotland after wave E1 was issued, CLS would tell NatCen and the interview would be delayed to April to July 2008 which was the fieldwork period for wave S1.

2.6 The sample files

CLS was responsible for providing sample information for families that are part of the Millennium Cohort Study to NatCen and for ensuring that this information was as accurate and up-to-date as possible.

The sample information that was provided to NatCen was split into two types: fixed sample, and live sample. The fixed sample file contained details of all sample members, and contained information that was not subject to change, such as:

- serial numbers
- survey outcomes from previous sweeps
- information from previous sweeps
  - date and time of last interview
  - address at last interview

Live sample files were produced for each wave, and included the following information:

- serial numbers
- survey status code (i.e. whether or not the family was eligible for inclusion in MCS4)
- cohort child details
  - full name
  - sex
  - date of birth
- resident parent details
  - title
  - full name
  - details of the type of interview each parent did in MCS3, or, if the household did not take part in MCS3, MCS2, in MCS1, either main, partner or proxy, or that parent was not eligible for interview last time (e.g. if they were not resident in the household at the time of the last interview).
  - whether translations were required in previous sweeps, and if so, which language
- contact details
  - the last known address and telephone numbers for the household.
  - stable address details, one for each parent if possible i.e. the contact details of another family member not resident in the household - these details could be used for tracing if required (see section 5.9).

Two additional fields relating to the contact details were also given: an address status, and the date this status was assigned. The address status was determined by CLS, and related to whether or not the household was confirmed as resident at the address provided, and the date at which this was confirmed. Prior to the start of fieldwork, it was estimated that in approximately 3.7% of the issued cases, CLS would know prior to fieldwork that the family was no longer resident at the address provided for them but had been unable to find a new address.

2.6.1 Delivery of sample files to NatCen

The fixed sample file was delivered to NatCen before the start of fieldwork; the live sample file for each wave was delivered to NatCen about six weeks before the start of each wave.

Once the sample was delivered to NatCen it was loaded onto NatCen's fieldwork management systems. This was then used to produce the paper documents containing

the sample information for interviewers and advance letters; details of these can be found in sections 5.4 and 5.8. The information was also loaded into the CAPI programme.

2.6.2 Other sample information

In addition to the fixed and live sample files, a single 'feed-forward' file was also delivered to NatCen before the start of fieldwork. This contained the answers respondents had given to some of the questions in previous interviews.

These answers were loaded or 'fed-forward' into the current CAPI questionnaire. For example, the previous school the cohort child had attended was fed-forward into the question about the name of the school currently attended and the respondent was asked if the cohort child was still attending that school. Similarly the respondent's job title given at the previous interview was fed forward and the respondent was asked if that was still their job.

As well as information from previous interviews being added to question text, it was also used in question routing. For example, a question such as, "Has the child ever had measles?" would be routed past if the respondent has said at a previous interview that the child had had measles.

2.7 Sample updates

CLS continued to trace families until the start of fieldwork for each wave. In some cases, CLS received information about cohort families after the sample had been sent to NatCen. Sample updates were sent to NatCen on a weekly basis. These sample updates consisted of three types:

- changes in classification information: eligibility status, participation status, status of address
- changes to contact information: change of address, telephone numbers, names, sex, dates of birth, stable address details, etc.
- other information

The action taken as a result of the sample updates depended on the type of sample update and the progress of the case, that is, whether the case had been issued to an interviewer or not, and if it had been issued to an interviewer whether the interviewer had started working on a case or not.

For details of how sample updates were handled by NatCen, please see section 5.12.1.

2.8 Return of sample to CLS at end of fieldwork

NatCen was responsible for updating sample information for families that are part of MCS4 during the fieldwork period and transferring this updated sample information to CLS at the end of fieldwork.

3 Overview of the elements of the study

The content of the fourth sweep of the Millennium Cohort Study was very similar to the third sweep and consisted of the following elements:

- household questionnaire
- main respondent interview (CAPI and CASI)
- partner interview (CAPI and CASI)
- child cognitive assessments
  - Sally and Anne
  - Word reading or Our Adventures
  - Progress in Maths
  - Pattern Construction
- child physical measurements
  - height
  - weight and body fat
  - waist
  - physical activity monitoring
- interviewer observation of the conditions in which the cognitive assessments were conducted
- child self-completion questionnaire
- Every tooth tells a story
- collection of consents
  - data collection
  - information from other sources (i.e. permission for the teacher survey, and release of education, health and economic records)

This chapter contains a brief description of each element of the study. Details of the development work for the study are contained in Chapter 4.

A survey of the cohort children's teachers was also conducted, the technical report of which will be published separately.

In the first pilot of the study, a child cognitive assessment called Number Skills was used, but this was dropped (and replaced with Progress in Maths) before the Dress Rehearsal and main stage. Details of this assessment can be found in Chapter 4.

3.1 Household questionnaire

This was the first part of the CAPI, and was completed by the main respondent or partner from a previous sweep. If neither was living with the cohort child, interviewers were instructed to complete the household questionnaire with any resident parent.

The household questionnaire collected information about the household members, and checked availability for interview.

3.1.1 Selection of main and partner respondents

At the end of the household questionnaire the CAPI determined which parent was to be the main respondent, and which the partner respondent.

The selection of main and partner respondents was based exclusively on relationships between household members. Parents (including step, foster and adoptive) of the cohort child and any partners (including same-sex partners) of parents were selected for interview. In general, the mother was selected for the main interview and the father or father-figure for the partner interview. The main exception was when the father was the natural parent of the cohort child and the mother was not the cohort child's natural parent. If there were no parents living with the child, the CAPI selected the main carer and his or her partner for interview.

Interviewers were able to overwrite the initial CAPI selection and complete the main interview with the person CAPI selected for the partner interview and vice-versa. This would be done if, for example, the father was the main carer of the child or if the mother did not wish to take part.

Interviewers were only able to conduct the main and partner interviews with the people identified by CAPI as main and partner respondents at the end of the household questionnaire.

3.2 Main respondent interview

The main respondent was asked a series of CAPI questions, supplemented with showcards where appropriate. The CAPI modules covered the following areas:

- family context
- early education, schooling and childcare
- child and family activities, and child's behaviour
- parenting activities
- child health
- parent's health
- employment, income and education
- housing and local area
- other matters
- self-completion section

3.3 Partner interview

As for the main respondent, the partner interview consisted of a series of CAPI questions, supplemented with showcards where appropriate. The questions for the partner were a subset of the main respondent questions, and covered the following areas:

- family context
- early education, schooling and childcare
- parenting activities
- parent's health
- employment, income and education
- other matters
- self-completion section

3.3.1 Proxy partner interview

If a household contained an eligible partner who was away for the entire fieldwork period or incapable of completing an interview themselves, then the main respondent was asked to complete a very short interview about their partner. There were questions in the household questionnaire that determined whether or not a proxy partner interview should be done. Proxy interviews were only required if the circumstances mentioned above applied to the partner; they were not required in cases where the partner simply did not want to take part in the survey. The proxy partner interview covered the following topics:

- family context
- parent's health
- employment, education and income

3.4 Child cognitive assessments

Four cognitive assessments were included in the main stage of the study. These assessments are all educational assessment tools that are well respected and widely used. They are used to examine cognitive development and educational attainment and are normally employed by educational psychologists in a classroom or clinical setting.

Each assessment was adapted for use in a survey setting, and modified to be administered with the help of a CAPI programme so that the interviewer did not need to memorise a complex set of rules for routing children through each assessment. The basic principles of each assessment were retained.

The cognitive assessments included in the main stage were:

- The Sally and Anne task
- two assessments from the British Ability Scales: Second Edition (BAS II)
  - Word Reading
  - Pattern Construction
- Progress in Maths (developed by the National Foundation for Educational Research)

3.4.1 The Sally and Anne task

The Sally and Anne task was used in MCS3 and was repeated in MCS4 because only about 20% of children got this correct at age five. By repeating the same assessment, we could know whether their belief system has changed since the last time we interviewed them.

The task is based on a social cognition, or false belief, task developed by Wimmer and Perner (1983)[5] and subsequently modified by Baron-Cohen et al (1985)[6] for use with preschool and school age children. Baron-Cohen et al's version of the Sally and Anne task has become the standard version of the task; in this version, two puppets are used to act out a story for the child. The child is introduced to a character, Sally, who leaves a desirable object such as a ball in her basket, before leaving the scene. In her absence, another character, Anne, removes the object and places it in a box. Children are asked to predict, on Sally's return to the room, where Sally will look for the object (or, sometimes, where she thinks the object is). In addition, children are asked two control questions: a reality question (where is the object, really?) and a memory question (where did Sally put the object at the beginning?)

The Sally and Anne task in MCS4 was also used to train the child and develop rapport. The task was adapted for use in a survey setting: instead of puppets, pictures were used, and the interviewers followed a script that was written in the CAPI. In MCS3, the Sally and Anne task was mainly used to train the child and develop rapport between the interviewers and children. However, a much lower proportion of children than expected gave the correct answer at age five, so the task was included again in MCS4 to see if children's belief systems had changed since the last time they were interviewed.

Procedure for the Sally and Anne task

Picture 1

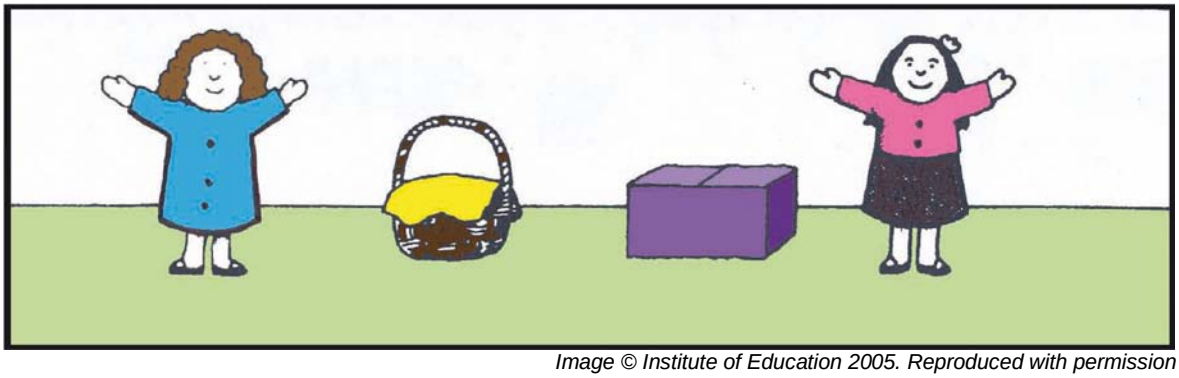


Image © Institute of Education 2005. Reproduced with permission

The interviewer points to the girl on the left of the picture, wearing the blue dress, and says, "This is Sally." Then, pointing to the basket, says, "Sally has a basket."

Next, the interviewer points to the girl on the right of the picture and says: "This is Anne," followed by pointing to the box and saying, "Anne has a box."

If the child appears to have understood the picture, the interviewer moves on to the next picture, but if the child seems uncertain, or asks the interviewer to explain the picture a

[5] Wimmer, H., & Perner, J. (1983). Beliefs about beliefs: representation and the containing function of wrong beliefs in young children's understanding of deception. *Cognition*, *13*, 103-128.
[6] Baron-Cohen S, Leslie AM, Frith U (1985). Does the autistic child have a 'theory of mind'? *Cognition*, *21* (1): 37-46

second time, the interviewer is allowed to repeat the story. This same principle applies to the subsequent pictures.

Picture 2

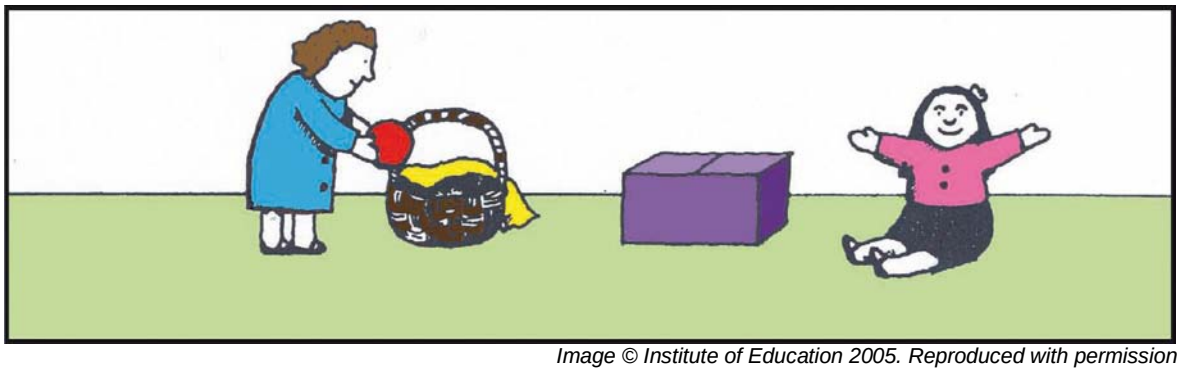


Image © Institute of Education 2005. Reproduced with permission

The interviewer points to Sally, and says, "Sally also has a ball. She puts the ball into her basket."

Picture 3

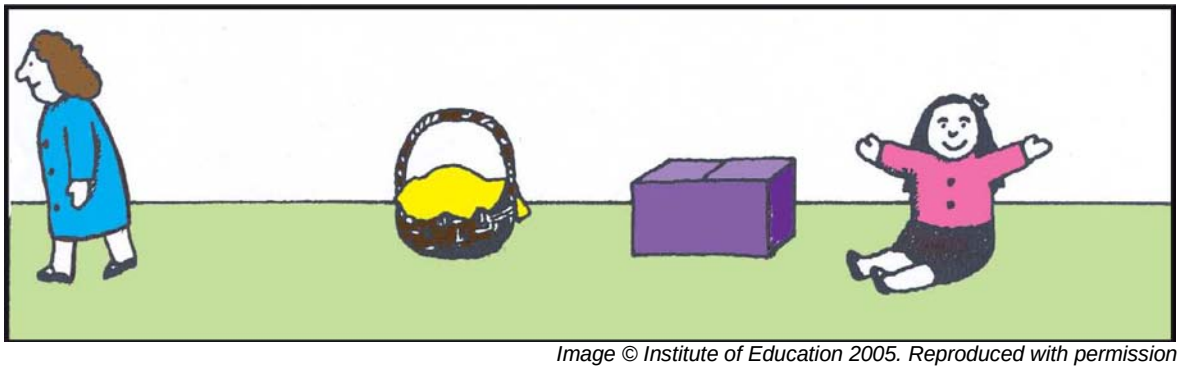


Image © Institute of Education 2005. Reproduced with permission

The interviewer points to Sally and says, "Sally goes out for a walk."

Picture 4

Image © Institute of Education 2005. Reproduced with permission

The interviewer points to Anne and says, "Anne takes the ball out of Sally's basket and puts it into her box."

Picture 5

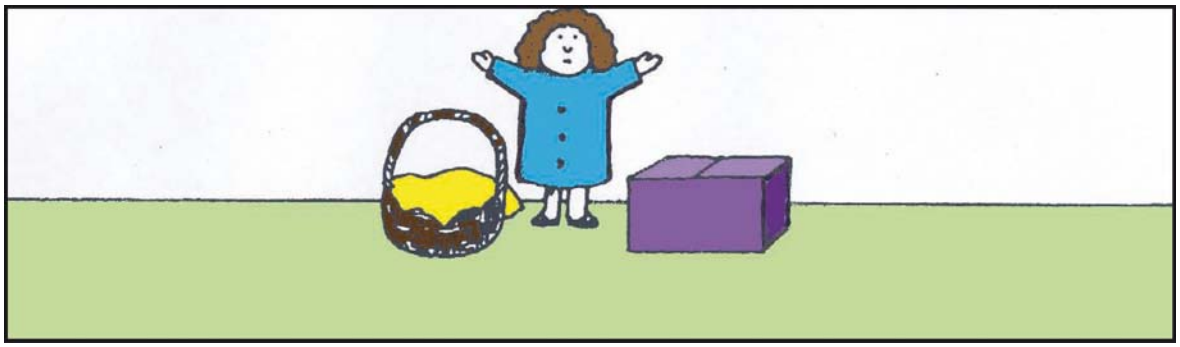


Image © Institute of Education 2005. Reproduced with permission

The interviewer points to Sally, and says, "Now Sally has come back."

"Sally wants to play with her ball. Where will Sally look for her ball?"

The child's response is recorded in the CAPI programme. If the child gave an answer other than the basket or the box, then the interviewer was instructed to record the child's verbatim response. The correct response is in the basket, because Sally left the room and does not know that Anne has moved her ball.

Two final questions are asked to establish whether or not the child understood the assessment.

The first is a reality question: "Where is the ball really?"

The second is a memory question, which is asked after removing the cards from the child's view: "Where did Sally put the ball at the beginning?"

3.4.2 Word Reading

Word Reading is an assessment from the British Ability Scales: Second Edition (BAS 2) which assesses children's English reading ability.

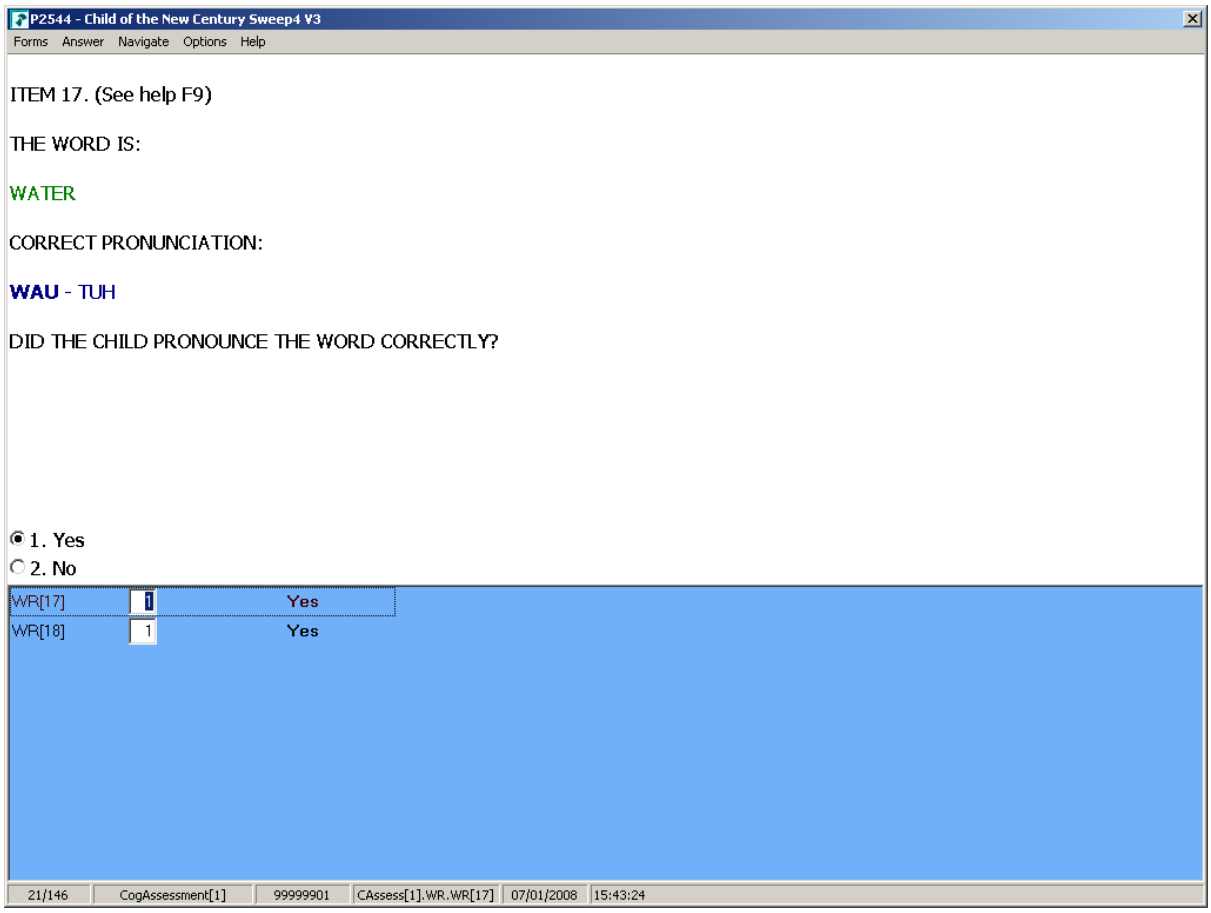
The child reads aloud a series of words presented on a card. The assessment consists of 90 words in total; the words are organised into nine blocks of 10 words in ascending order of difficulty. The child is asked to read each word in a block out loud to the interviewer; the number of blocks of words the child is asked to attempt to read is dependent on the child's performance during the assessment. This assessment is designed to be used with children aged from five years to 17 years and 11 months. All of the children in MCS4 started at the first item, as this was the starting point for children of their age.

Summary of procedure

The interviewer presents the Word Reading card to the child and says: "Here is a card with a lot of words. Let's see how many you can read. The words get more difficult as you go on. Most children your age do not get all the way to the bottom of the card. Please try your best. Please read them out loud to me." All children start at the first word printed on the card, which the interviewer points to as they tell the child what to do, and a piece of paper is used to cover the rows of words that are not being read.

As the child reads the words, the interviewer records whether or not the child pronounced each word correctly in the CAPI. An example of the CAPI screen is shown in Figure 1.

Figure 1 Example of CAPI screen for Word Reading



The child's response is coded as 'correct' if it is pronounced correctly, read as a complete word, and if the emphasis is placed on the correct syllable. The most commonly used correct pronunciations are given on the CAPI screen for each item. For some of the words there is more than one correct pronunciation, and interviewers were fully briefed on these both during the interviewer briefing, and in the interviewer instructions. Regional pronunciations are coded as correct if the word is pronounced within locally accepted standards

This assessment has no designated teaching items, that is, the interviewer does not correct any of the child's answers. However, there are phrases interviewers can use to maintain the child's motivation and get their best performance. After each row of words, interviewers say either "Thank you" or "OK" even if the child has got some words wrong. If the child appears to be losing confidence, or appears to need reassurance, interviewers can say "Thank you" or "OK" after each word, then "Please try the next word" to encourage the child to move on. If the child does not know or refuses to read a word, the interviewer encourages them to read it by saying, "What do you think it might be?" or "Why don't you give it a try?" If the child reads the word correctly but hesitantly or in a halting manner, the interviewer is instructed to say, "That was a good try. Please read it again." If the child still refuses to read the word, then the interviewer codes the word as incorrect and says, "Please try the next word."

All words should be read out in the order in which they are presented on the card. If a child misses a word, the interviewer takes the child back to the missed word and asks the child to read it. If a child does not read the words from left to right across the page, the interviewer asks them to do so.

A child's progression through the assessment is dependent on the number of words they read correctly. If a child makes eight errors in a block of 10 words, then the assessment stops.

3.4.3 Our Adventures (Wales only)

Our Adventures is part of the All Wales Reading Test, which was developed in Wales to assess the reading skills of children in Welsh schools. The test is available in Welsh and English.

In MCS4, parents of children in Wales were given the option of having their child's reading skills assessed in either Welsh or English. The Welsh version of Our Adventures was used for children whose parents opted for the Welsh medium to be used, and the Word Reading assessment was used for children whose parents opted for the English medium to be used.

It was decided to use the Welsh medium All Wales Reading Test, rather than a Welsh translation of the Word Reading assessment because the Word Reading assessment is designed only to assess English reading ability and if translated the results are not valid.

The Our Adventures assessment is a paper booklet that shows a story in pictures and words; underneath each picture is a sentence that has one missing word, and a list of words that can complete the sentence. The child has to circle the word that best completes the sentence. There are a total of 59 items, and the assessment has a time limit of 30 minutes. The assessment continues until the time limit has been reached, or the child completes the last item.

This assessment is designed to be used with children from age 6 years 10 months to 9 years and 9 months.

Summary of procedure

In MCS4, the Our Adventures assessment was completely paper-based; the script for the interviewers was printed onto a showcard, a copy of which can be found in the appendix. The whole assessment is administered in Welsh.

The first three items that are administered in the assessment are 'teaching items', which are designed to ensure that the child understands the task. These items are administered by the interviewer, who reads the relevant text off the showcard. If the child's response at these items is correct, then the interviewer is instructed to say, "That's right. Now let's try another one." If the child's response is incorrect, the interviewer says, "That's not quite right; this picture shows a [name of item]" and points to the correct response. The interviewer then asks the child to complete the rest of the items on the page alone, and does not give feedback on whether the child's response is correct or not. Two further practice items are then administered by the interviewer, giving feedback as for the previous practice items. After these final two practice items, the child is asked to complete the rest of the assessment alone.

3.4.4 Progress in Maths

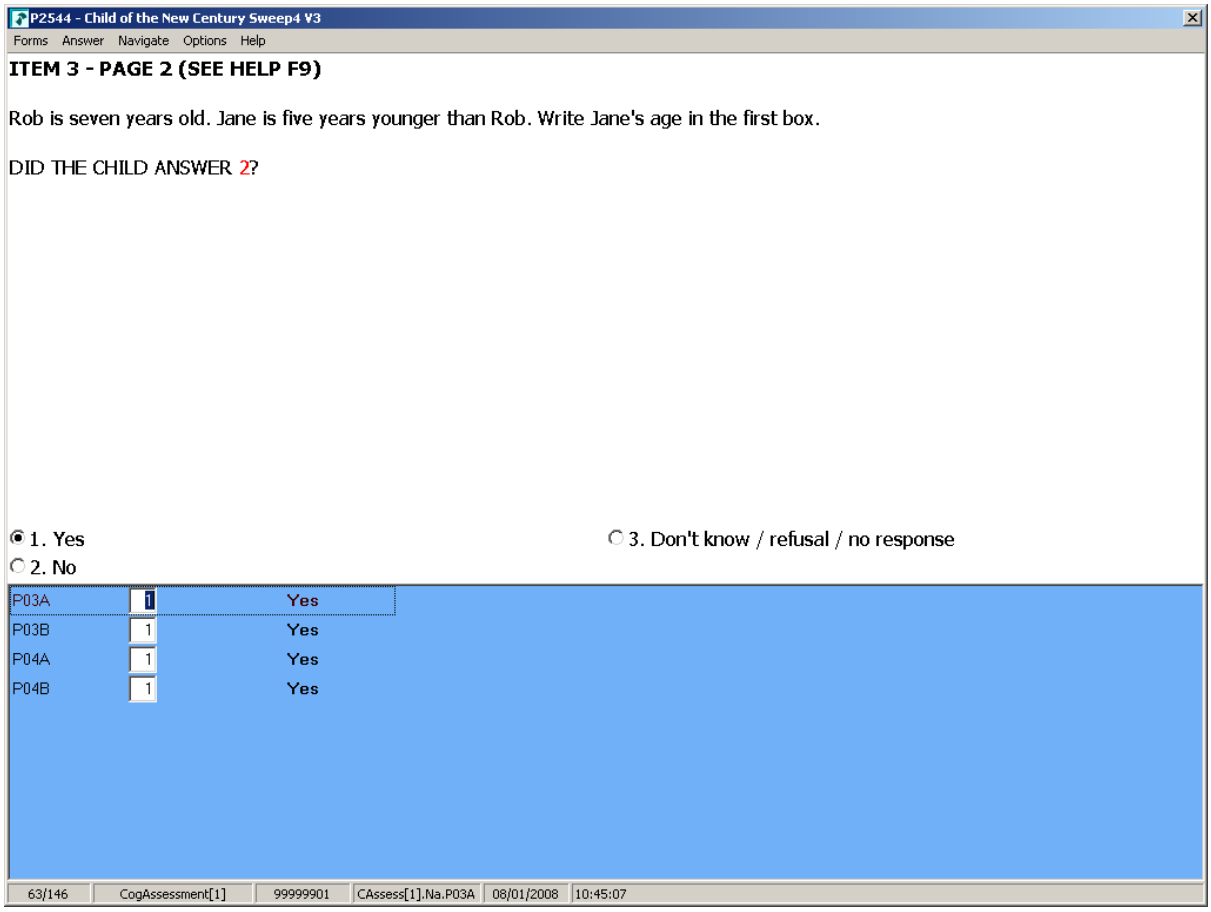
Progress in Maths is a series of assessments developed by NFER for use in schools to assess children's mathematical ability. The assessment used in MCS4 was specially adapted for the study by NFER from Progress in Maths 7, which is designed to be used in the third year of compulsory schooling to assess levels 1 to 4 of the National Curriculum in England, Wales and Northern Ireland, and levels A to C in Scotland.

Progress in Maths: Millennium Cohort Study edition consists of 20 questions covering the topics of numbers, shape, space and measures, and data handling. The questions are grouped into four sections; and a maximum of two sections are administered to each child.

Summary of procedure

For each item, the interviewer reads out the question, either from the CAPI or, if the assessment is being administered in Welsh, from the Progress in Maths Welsh showcard, and the child is asked to respond by drawing, circling, joining items, or writing a number or word in an allocated space in the Progress in Maths answer booklet as appropriate. Once the child has responded, the interviewer records whether the child gave the correct response in the CAPI. An example of the CAPI screen is shown in Figure 2, and a copy of the Progress in Maths booklet can be found in the appendix.

Figure 2 Example of CAPI screen for Progress in Maths



All children start at item 1 and are asked all of the questions in the first section, which is a mixture of easier and more difficult questions. Their performance in this section determines which of the three remaining sections they are routed to.

The assessment has no designated teaching items, but interviewers are expected to answer any questions about procedure or conduct of the assessment, and explain any non-mathematical words or expressions, and may repeat the question if necessary. Interviewers can also read out any printed text in the answer booklet if necessary. Interviewers are, however, not allowed to help with the mathematical content of individual questions.

Interviewers were given full instructions on what to do in various scenarios, for example interviewers were able to repeat the questions if they felt it would be helpful to the child, or if a child asked them to do so. If a child asked for help on an item, the interviewer was instructed to read the question again, and to also say, "Do whatever you think is best." If a child said that they did not know how to do a particular item or refused to attempt the item, then the interviewer encouraged them to try by saying, "What do you think it might be?" or "Why don't you give it a try?" If the child still refused to attempt the question, or spent some time on a question without making any progress, the interviewer said, "Let's try the next question."

Sometimes children would give more than one response to a question. At questions which had an answer line, interviewers were instructed to accept only the answer that was written on the answer line in the booklet, and to ignore any other responses; if the answers were not written on the answer line, then the interviewer was instructed to accept an unambiguous correct answer written anywhere within the answer section. For all questions, if both a correct and incorrect response was given interviewers were instructed to ask the child which was their final response, and code that response accordingly.

For numerical responses, unless the question specifically stated that numerals should be used, responses written in words or in a mixture of words and numbers could be accepted. Reversals of individual numerals and mirror images of compound numbers were also acceptable, unless the question stated otherwise. Example of acceptable numerical responses can be found in Figure 3.

Figure 3 Example of acceptable numerical responses for Progress in Maths

3	can be accepted if it is written as	Ɛ
30	can be accepted if it is written as	0Ɛ
	but not if it is written as	03
43	can be accepted if it is written as	Ɛ4
	but not if it is written as	34

Two of the questions required children to write an amount of money in pence. The units, 'p', are given on the answer line. A pound sign was not required, but if children used it then any unambiguous indication of the distinction between pounds and pence was acceptable.

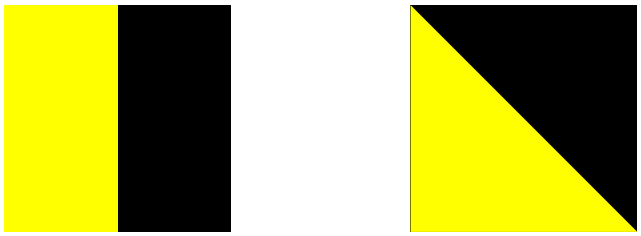
3.4.5 Pattern Construction

Pattern Construction is another assessment from the British Ability Scales: Second Edition (BAS 2) which assesses children's non-verbal reasoning and spatial visualisation by presenting children with a pattern, and asking them to replicate the pattern using flat foam squares or plastic cubes. This assessment was also used in MCS3.

The assessment comprises 23 items and four example items, and is designed to be used with children from age 3 years until 17 years 11 months. The number of items administered during the assessment is dependent on the age of the child, and their performance during the assessment. All of the children in MCS4 started the assessment at Example C, which is the starting point appropriate for children of their age.

Summary of procedure

For each item, the child is presented with a pattern, and asked to construct the pattern using foam squares or plastic cubes. The patterns increase in complexity as the assessment progresses. The first few items are made using identical solid plastic cubes with one black face, one yellow face, and four patterned faces as shown below:

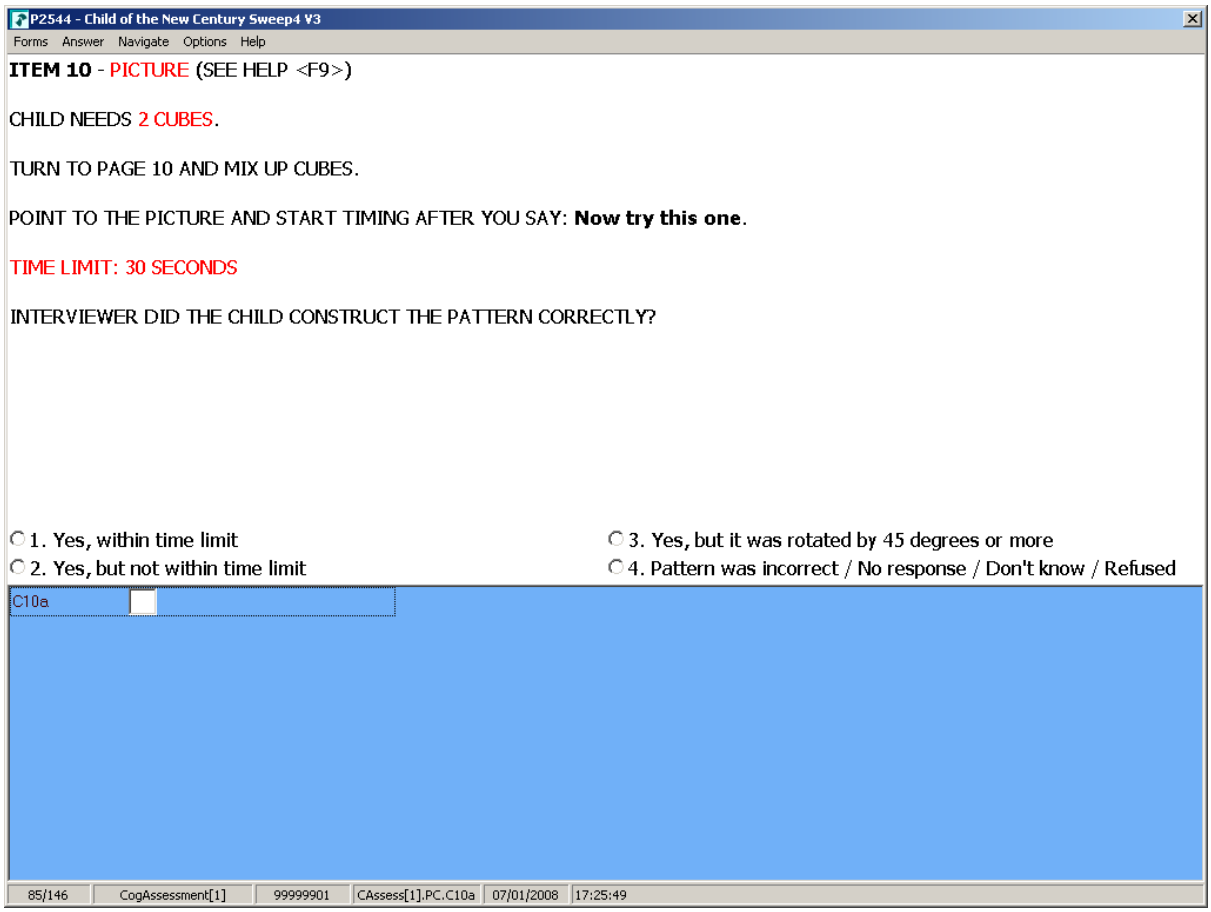


Only if the child performs poorly with the cubes are they routed back to the simpler foam squares, which have one black side and one yellow side. The patterns are presented to the child as a picture in the BAS easel. In addition, at some items the interviewer is required to 'demonstrate' the pattern, and at others to 'model' the pattern. These methods of presentation are described below. The child is given the correct number of pieces needed to replicate the pattern, and asked to construct the pattern using his or her pieces. Instructions to the interviewer are included in the CAPI programme, and all interviewers were trained to follow the instructions as they appeared in the CAPI, and to pay close attention to the presentation method.

The interviewer measures the time taken to construct the pattern using a stop-watch, and the outcome of each item is recorded in the CAPI. An example of the CAPI screen is shown in Figure 4.

All of the children in MCS4 started the assessment at the beginning with Example C, as this is the appropriate starting point for children of this age. Example C is a 'teaching item', designed to ensure each child understands what they are supposed to do in the task. Additional teaching items appear at several different points throughout the assessment.

Figure 4 Example of CAPI screen for Pattern Construction



At Example C, the interviewer gives the child two plastic cubes, and shows the child that they have different patterns on each side, and that all of the cubes are the same. The interviewer then turns to the Example C picture in the easel and creates the pattern shown there with a different two cubes. The interviewer leaves these two cubes in place and asks the child to create the pattern shown in the picture and model. The interviewer times this. This method of presenting the design is referred to as 'modelling'. If the child correctly replicates the pattern within the time limit (30 seconds), the interviewer moves onto the next item; if the child does not correctly replicate the pattern, or does not appear to understand the task, the interviewer demonstrates how to put the pieces together to form the pattern using the child's pieces, then mixes up the pieces, hands them to the child, and asks the child to try again. This method of presenting the pattern is referred to as 'demonstration'.

For all of the other items, the pattern is presented to the child as a picture in the BAS easel. Each time the number of cubes increases, the interviewer is also required to use the 'demonstration' method to present the design, to ensure that the child understands the task.

Each item has a specific time limit, and interviewers start timing, using a stop-watch, as soon as they finish saying the instructions for the item. The interviewer stops timing either when the child indicates they have completed the item, or when the time limit is reached. If the time limit is reached and the child is not close to completing the pattern or is showing signs of distress, the interviewer says, "Let's try another one". However, if the time limit is approaching and the child is near to correctly constructing the pattern, the child is allowed to exceed the time limit in order to experience success. In these

circumstances, it would be recorded in the CAPI that the child had constructed the pattern correctly, but not within the time limit.

Once the child has finished constructing the pattern, the interviewer codes whether or not the pattern was constructed correctly, and whether or not the pattern was constructed within the time limit. Once the assessment has progressed, interviewers are asked to enter the time in seconds when CAPI instructs them to do so.

At the end of each item, the interviewer removes the child's pieces, and mixes them up before giving them back to the child for the next item. Interviewers were given specific instructions on how to mix the pieces so that they did not inadvertently present the pieces to the child in such a way that the task of completing the pattern was made easier, i.e. that the way the pieces were presented to the child did not resemble the pattern they were being asked to construct.

From the start of the assessment the exact length of time taken for the child to construct the pattern is recorded; however the children are only told they are being timed part way through the assessment.

As with the other cognitive assessments, interviewers were given full instructions on what to do in various scenarios. For example, interviewers were able to repeat the general instructions if asked to do so or if the child did not appear to understand the instructions the first time.

If a child correctly completed a pattern, but did not immediately indicate that they had finished, interviewers were instructed to make a note of the timing on a notepad, but not to stop the timer. This was because the child may not have actually finished: he or she could have been considering their response, and decide to amend the pattern. If the child did proceed to change the pattern, interviewers were instructed to ignore the initial completion time. If, however, the child did not amend the pattern, the interviewer was instructed to enter the child's original completion time.

Sometimes, children constructed the pattern correctly but left small gaps between the squares or cubes. In these cases, the interviewer was instructed to code the construction as correct, but if the gaps between the pieces were particularly large, then the interviewer was instructed to push the pieces together and say, "Try to put them together so they touch like this". If the child continued to leave large gaps between the pieces, subsequent patterns were coded as incorrect.

If the sides of the cubes distracted the child, interviewers were instructed to point to the cubes and say, "The sides don't matter. Make the <u>tops</u> look like this."

If the child tried to build their pattern on or against the picture or model, interviewers were instructed to point to the area in front of the easel and say, "Make your pattern down here."

If a child constructed a pattern correctly, but it was rotated by 45 degrees or more, the interviewer was instructed to say, "To make a pattern just like this, you should make it straight like this," and then turn the child's model so it was correctly orientated.

Each item is scored according to the speed and accuracy with which the pattern is constructed, and children's progression through the task is dependent on the speed and accuracy with which they construct the patterns. The assessment stops automatically if a child makes four errors in five consecutive items. As the assessment progresses, and the patterns increase in complexity, it is necessary for children to have achieved the maximum score for the majority of the items in order to progress to the next level.

When the assessment stops, and when the assessment reaches item 14, the CAPI asks the interviewer if the child is suitable for timing i.e. should the child's score be determined by how quickly they respond within the time limit as well as how accurately they construct the pattern. Interviewers were instructed to code that a child was not suitable for timing in rare circumstances, such as if the child has:

- a motor impairment that slows their handling of the squares / cubes;
- a behavioural condition (such as ADHD) which leads them to exhibit extreme compulsiveness and results in the child 'tinkering' excessively with their response; or
- if there is other evidence that indicates that the child does not respond well to speeded tasks due to a health or behavioural condition.

If an interviewer codes that a child is not suitable for timed scoring, the CAPI uses an alternative scoring structure for the assessment which is based upon whether or not the child constructs patterns within the time limit for the items, but the actual length of time taken to construct the pattern is not taken into account. In addition, three extra items are included in the assessment, which do not appear in the standard assessment. As with the standard assessment, CAPI stops automatically if a child makes four errors in five consecutive items, or if a child reaches the end of the assessment.

3.5 Child physical measurements

All children for whom consent was obtained and who could stand unaided were eligible for the child physical measurements: height, weight and body fat and waist circumference. Height and weight are used to calculate the child's Body Mass Index, and the waist circumference is a measure of central fat and body fat is a measure of the overall fat in the body. These values can be compared with population reference data to identify children who are overweight or obese, and therefore at risk of a number of short and long term physical and psychological consequences.

Before taking the measurements, the child's parent or guardian was asked to remove the child's shoes and socks, to ensure that the child was wearing light, indoor clothing, and to remove any items the child had in their pockets, and remove any hair ornaments that could affect the measurements.

The following sections contain an overview of the measurement protocols.

3.5.1 Measuring height

Heights were measured using a Leicester stadiometer, which consists of a base-plate, measuring rod, and a head-plate. All interviewers were trained in the use of this equipment during the briefing.

The interviewer was responsible for ensuring that the child was correctly positioned for measuring the height, by moving the child's head so that the Frankfort Plane (an imaginary line passing through the flap of skin in the ear and the bottom of the eye, an illustration of which can be found in the appendix) was in a horizontal position, parallel to the floor, and then firmly, but gently, stretching the child to their maximum height. The child's parent or guardian was asked to assist in the measurement by moving the head-plate when required, and by ensuring the child did not lift their feet when the interviewer performed the stretch.

Once the head-plate was lowered into position, the child was asked to relax and breathe out, and then step off the stadiometer, which it was possible to do without ducking if the

measurement had been taken correctly. The interviewer then read the height to the nearest completed millimetre, and entered it into the CAPI programme. If the interviewer was not happy with the accuracy of the measurement, they could repeat it as long as the child and parent or guardian were happy for them to do so.

3.5.2 Measuring weight and body fat

The weight and body fat measurements were taken using Tanita BF-522W scales. At the same time as measuring weight, the scales calculate body fat percentage by sending a weak electrical current through the body via the feet and measuring the amount of resistance encountered by the current as it travels through the body. The electrical current is safe, and cannot be felt at all, though it can cause medical devices such as pacemakers to malfunction. While such devices are extremely uncommon among seven year olds, interviewers were asked to check with the parents before taking the measurements.

The scales can also be used in 'weight only' mode, which does not involve an electrical current. This mode was used if the parent or child did not want the child's body fat percentage to be measured but was happy to have their weight measured, or if it was not possible to take the child's body fat measurement, for example if the child had a pacemaker.

Ideally, for the measurements the scales were placed on a firm, level surface. If only a soft, carpeted surface was available, interviewers were asked to make a note of this in the CAPI program. Before asking the child to step on the scales, it was necessary for interviewers to enter the child's age, gender and height (in whole centimetres) into the scales; this information was displayed in CAPI. This information was needed in order to calculate the body fat measurement, and it was therefore necessary for weight and body fat measurements to be taken after the height measurement. If the scales were used in 'weight only' mode, it was not necessary for the interviewer to enter the child's age, gender or height.

Once the scales were ready to use, the interviewer asked the child to step onto the scales with their feet in the correct position. It is essential for the measurement of body fat that the child is barefoot as the electrical current is sent around their body through their feet. Once the weight and body fat measurements were displayed, the interviewer immediately recorded them in the CAPI programme. As with the height measurement, interviewers were allowed to repeat the measurement if they were not happy with the first one.

Each set of scales was checked before being sent out to interviewers by placing the scales on a concrete paving slab and then, with the scales in 'weight only' mode, placing three 20 kilogram weights on the scales. Scales which displayed between 59.8 kilograms and 60.2 kilograms inclusive were accepted, but scales that displayed outside this range were sent to an outside contractor for recalibration.

3.5.3 Measuring waist circumference

To take the waist measurement, interviewers were provided with a SECA tape measure calibrated in millimetres, stickers and a pack of pens.

Ideally, the interviewer would take the waist measurement without parental help in order to ensure consistency, but the interviewer was permitted to involve the child's parent or guardian in the waist measurement if preferred by the interviewer or the parent/ guardian.

The waist measurement could be taken against the skin, which was preferred for accuracy, but it was also permissible to take the measurement over clothing if necessary,

for example if that was the parent's preference. If the measurement was taken over clothing, then it was necessary for the parent or guardian to assist the interviewer.

Before taking the waist measurement, the interviewer explained to the child and parent or guardian that they would have to get close up to feel the child's ribs and hip bones to do the measurement. If the measurement was taken against the skin, the child was asked to help by holding their vest or t-shirt up with both hands.

The waist measurement was measured midway between the costal margin (lower ribs) and iliac crest (hip bone) on the mid-axillary line, an imaginary vertical line running down from the middle of the armpit. At this vertical line the interviewers gently located the costal margin with their fingers, and keeping one finger at this point, found the iliac crest with the others. Next, they visually estimated the mid-point between the two and marked this position with either a pen or a sticker if measuring against bare skin, or by asking the parent or guardian to put their finger at the mid-point if measuring over clothing, The tape-measure was then passed round the child, and the measurement taken at the mid-point.

The interviewer read the measurement to the nearest completed millimetre, and then repeated the whole procedure once more. If the difference between the two measurements was two centimetres or more, a third measurement was taken.

3.5.4 Physical activity monitoring

This part of the study was run in collaboration with researchers at the Institute of child Health (ICH).

The purpose of this element of the study was to take a direct measurement of the children's levels of physical activity using an activity monitor. The Actigraph activity monitor is a small, lightweight device that is designed to measure physical activity by measuring and recording people's movements. The cohort children were asked to wear the activity monitor every day during their waking hours for seven continuous days, except when swimming or bathing. The activity monitor was worn on a belt around the waist, usually on top of indoor clothing, though it could also be worn against the skin if preferred.

The physical activity monitoring was explained in the leaflet to parents about their child's participation in the study and the leaflet for children about their participation in the study (see sections 5.10.1 and 5.10.2 for more details about these leaflets).

During the physical measurements module of the questionnaire interviewers were prompted to check that parents had read and understood the information in the leaflet about the activity monitor, and to gain consent for this element of the study using Consent 2 (see section 3.9). Assent was also sought from the cohort child.

Interviewers were provided with a dummy activity monitor and belt, which they used to explain to parents how the activity monitor should be worn. Parents were then asked to fit the activity monitor to the child, and the interviewer ensured this was done correctly. The interviewer was also asked to explain when the monitor should be worn. Families were given a physical activity monitoring fridge magnet, which served as a reminder to wear the activity monitor once received.

The contact details of families that agreed to take part in the activity monitoring were sent to ICH weekly. ICH posted a physical activity monitor pack directly to each family within six weeks of the interview (unless a later start date was requested, for example if the family were going on holiday). This pack contained a detailed information leaflet, a physical activity monitor attached to a belt, a timesheet on which to record the dates and times when the activity monitor was worn, a letter to give to the child's class teacher

explaining why the child was wearing the monitor and a pre-paid return envelope. Copies of the materials contained in the physical activity monitor pack can be found in the appendix. The pre-paid return envelope was to be used to return the monitor at the end of the seven day monitoring period; families were asked to return the activity monitors as soon as possible after the end of their monitoring period. Once the monitor was returned, the child was sent a feedback certificate summarising their activity levels.

3.6 Observation of conditions in which cognitive assessments were administered

This element comprised nine questions about the condition in the home at the time the cognitive assessments were administered. The questions covered the following topics:

- level of background noise, such as television, background conversation, other children
- presence of potential disturbances, such as people entering or leaving the room or house
- interruptions to the cognitive assessments by other people
- child's level of awakeness at start of the assessments

Interviewers were asked to complete this section at their own home, as soon as possible after the interview.

3.7 Child self-completion questionnaire

For the first time the cohort children were asked to complete a paper self-completion questionnaire which covered the following topics:

- hobbies
- their relationship with their friends
- their feelings, e.g. how often they feel happy or sad
- what they do at school

It was anticipated that the questionnaire would take 10 to 15 minutes to complete. If a child needed help with any of the questions, or was unable to fill in the questionnaire on their own, then the interviewer was able to help them. It was preferred that interviewers helped children with the questionnaire rather than a family member so that the children's answers remained confidential.

A copy of the questionnaire can be found in the appendix.

3.8 Every tooth tells a story

'Every tooth tells a story' is an add-on project that is aiming to collect shed milk teeth from the cohort children in order to test them for exposure to lead in the environment. The project is being carried out by the MRC Centre of Epidemiology for Child Health at University College London and the Small Area Health Statistics Unit at Imperial College in collaboration with the Health Protection Agency and the Centre for Longitudinal Studies. It is expected to be completed in 2013.

As part of the pre-notification mailing for MCS4 (see section 5.5), families who had taken part in MCS3 were sent a letter and information leaflet about 'Every tooth tells a story' and were asked to send one or more of their child's shed milk teeth in a plastic zip-lock bag in

a reply-paid envelope to the Institute of Child Health, and to mark on a chart which tooth it was. Children were given a badge to thank them for donating a tooth.

In the main respondent interview in MCS4, a question was included to remind respondents to send back one of their child's teeth if they wanted to take part and had not already done so.

If the main respondent requested an information pack about this project, either because they had mislaid the original materials or had not received any information about this project (because they had not taken part in MCS3, or had moved) then this was recorded in the CAPI, and the request sent to CLS so that an information pack could be sent to the respondent.

3.9 Collection of consents

3.9.1 Data collection consents

An important requirement for this survey was that all adult respondents had to give informed consent in writing to take part in the study. Written consent was also required from a parent or guardian for the participation of a child.

Information about the main respondent CAPI and CASI, partner CAPI and CASI, child assessments and measurements (including the physical activity monitoring), and child self-completion was given to the respondent in the advance leaflet, and the leaflets "What would we like your child to do?" and "What would we like you to do?" More details about these leaflets can be found in sections 5.10.1 and 5.10.2, and copies of the leaflets can be found in the appendix.

Interviewers were prompted to collect the data collection consents at the end of the household questionnaire. It was possible for interviewers to leave the collection of some of the data collection consents until later in the interview, and prompts were built into several places within the CAPI questionnaire.

3.9.2 Information from other sources consents

In addition to the data collection consents, consent was sought to obtain additional information about the cohort children from their teachers and about the family from records that are routinely collected by government departments or agencies, and other public sector organisations. A leaflet called "Information from other sources" was produced which explained in detail what information was being sought. Interviewers gave, or sent, this leaflet to respondents when the appointment was made so the respondent could read the information before the interview. More details about this leaflet can be found in section 5.10.2, and a copy of the leaflet can be found in the appendix.

The routine records that permission was sought to access are described below.

Information from routine records on education

Consent was sought to collect information from routine records on education for the cohort children and their siblings aged under 14 from the start of their compulsory education up until the end of their compulsory education at age 16.

The routine records include:

- results gained in national tests or assessments, such as Key Stage assessments and GCSEs in England, Wales and northern Ireland, and 5 – 14 levels and Standard Grades in Scotland;

- characteristics of pupils in the cohort children's (and their siblings') schools, such as ethnicity, special educational needs/ additional support needs, eligibility for free school meals, absences, home postcode and date pupils first entered and left the school.

In England, this information is held by the Department for Children, Schools and Families (DCSF), and in Wales by the Local Government Data Unit of the Welsh Assembly. In Northern Ireland, some of this information is held by schools themselves, and some is held by the Department of Education; from 2009 onwards, some of this information was held by a new statutory organisation, the Education and Skills Authority. In Scotland, some of this information is held by local education authorities, and some is held by the Education Directorate of the Scottish Government.

Information from routine medical and other health related records

Consent was sought to access routine medical and other health-related records held by the National Health Service (NHS) about the main respondents, partners, the cohort children from birth up to their 14th birthdays, and the cohort children's siblings aged under 14 from birth up to their 14th birthdays..

The NHS maintains information on all patients accessing health services; these health records are held within statistical health databases, which may record information about:

- admissions or attendances at hospital, including dates of admission, discharge or attendance, diagnoses received, treatments given and surgical procedures
- visits to family doctors or other health professionals, for example midwives,
- records of specific conditions, such as cancer or diabetes
- prescriptions given

Information from routine records of economic circumstances

Consent was sought to access the main respondent and partner's routine records of economic circumstances held by the Department for Work and Pensions (DWP). This information includes information about:

- benefits, e.g. Child Benefit, Income Support, and other DWP programme activity, such as New Deal for Lone Parents, New Deal 25 plus since April 1999
- employment, earnings, tax credits and occupational pensions data since April 1998 and Nation Insurance Contributions (NICs) since the early 1970s. This information comes from Her Majesty's Revenue and Customs (HMRC) records

The DWP holds this information for the whole of the UK, although in Northern Ireland benefits and programs are administered through the Social Security Agency of the Department for Social Development in Northern Ireland.

3.9.3 The consent forms

The consent forms were carbon-backed and printed in triplicate. One copy was retained by the respondent, and the other two copies returned by interviewers to NatCen's operations department. Copies of the consent forms can be found in the appendix.

Consent 1 : Main respondent

The purpose of this form was to gain consent to administer the survey, and also to gain permission to access information from other sources for the main respondent.

The consent form was split into two parts. Part A was used to gain consent to administer the CAPI and CASI for the main respondent, and it was necessary for this part of the form to be completed before the interviewer started to administer the CAPI to the main respondent. Part B was used to gain permission to release the main respondent's routine health and economic records; this part was completed at the end of the main respondent interview.

Consent 2 : Cohort child data collection

This form was used to gain consent from either the main respondent or partner for the administration of the cohort child data-collection elements: cognitive assessments and physical measurements, physical activity monitoring and child self completion questionnaire. All sections of this consent form had to be completed by the same parent or guardian.

There were several opportunities to complete this consent form. Consent for the assessments and measurements was asked immediately after the household grid and again at the end of the main questionnaire (if not collected after the household grid). CAPI also asked interviewers to confirm that written consent had been obtained prior to administering each of the child elements.

For the child self-completion questionnaire, interviewers were asked to collect consent immediately after the household grid or at the end of the main questionnaire. For the activity monitor interviewers were prompted to explain it and collect consent after the physical measurements were taken.

Consent 3 : Cohort child - information from other sources

In the main respondent questionnaire there were many questions about the cohort child's experiences at school and their health and education. To supplement this information, permission was asked to send a questionnaire to the cohort child's school teacher, and to access information held in routine records on education and health.

Part A of this consent form sought consent to administer the teacher questionnaire. Details of the Teacher Survey are contained in a separate technical report.

Part B of this consent form asked for parental consent to access information held in routine records on education and health

Interviewers were prompted to collect this consent at the end of the main respondent interview, although the form could be signed by either the main respondent or the partner.

Consent 4 : Siblings - health and education records

This form was used to gain permission from either the main respondent or partner to access the routine heath and education records of the cohort child's siblings in order to gain further insights into the cohort child's development in relation to their siblings.

All types of siblings were eligible to be selected (natural, step, foster, adoptive, half) and up to four children were selected by the CAPI, and their names and other details will be shown on the consent screen. If there were more than four siblings, the four youngest were be selected.

Interviewers were prompted to collect this consent at the end of the main respondent interview, although the form could be signed by either the main respondent or the partner.

Consent 5 : Partner respondent

The purpose of this form was to gain consent from the partner to administer the survey, and also to gain permission to access information from other sources.

Part A of this form was used to obtain consent from the partner respondent to administer the survey (CAPI and CASI), and interviewers were prompted to collect this consent before administering the CAPI to the partner. Part B was used to gain permission to release the partner's routine health and economic records; this part was completed at the end of the partner interview.

4 Development work

4.1 Scope of the development work

The pilot and development stages of MCS4 were conducted over a 12 month period from January to December 2007.

The programme of development work was based two pilot studies, and subsequent CAPI program testing. In addition, design work was done on the associated survey documents.

4.2 Ethical approval

Ethical approval for both the pilot surveys and the main survey were obtained by CLS. Approval was given by the Northern and Yorkshire Research Ethics Committee (MREC) of the NHS. Further details can be found in 'Millennium Cohort Study First, Second, Third and Fourth Surveys: A Guide to the Datasets', Fourth Edition, edited by K. Hansen (March 2010), Centre for Longitudinal Studies, Institute of Education.

4.3 First pilot survey

The first pilot survey was conducted between 20th March and 12th April 2007. The main aims of the first pilot were to:

- test the content and flow of the questionnaire, indicating how acceptable and comprehensible the questions were for respondents
- estimate how long the interview would take in a home setting
- assess the ease and appropriateness of administering the cognitive assessments and to check whether they were working according to standard rules
- check whether the protocols developed for height, weight and waist measurement were appropriate
- identify any difficulties that might be encountered by interviewers
- help evaluate the CAPI and paper instruments (including showcards), briefing, and interviewer instructions

Although feedback from the pilot was intended to provide useful information about the content of the questionnaire, it was not designed, or able, to provide a thorough and complete assessment of the validity or reliability of specific modules of questions. The final choice of content was guided by the research team at CLS in consultation with collaborators.

4.3.1 Elements included in the first pilot

The following elements were included in the pilot:

- household questionnaire
- main respondent interview (CAPI and CASI)
- partner interview (CAPI and CASI)
- child cognitive assessments
  - Sally and Anne
  - Word Reading
  - Number Skills
  - Pattern Construction
- child physical assessments
  - height
  - weight and body fat
  - waist
- physical activity monitoring
- cohort child self-completion
- Teacher survey consent
- interviewer observation of the conditions in which the cognitive assessments were conducted

4.3.2 Pilot briefing and debriefing

A group of ten interviewers from a wide range of urban and rural locations in England, Wales and Scotland were briefed by NatCen researchers, with extensive contributions from members of the CLS research team. The briefing took place on the 20th, 26th and 27th March 2007. Each interviewer was asked to carry out two practice sessions of the cognitive assessments and physical measurements between the first and second day of the briefing, based on what was briefed during the first day.

A two-day debriefing took place on the 11th and 12th April 2007.

4.3.3 Pilot sample

The original specification for the sample for the first pilot for MCS4 was that NatCen would recruit the sample. However, it was decided that some of the families recruited for the first pilot for MCS3 would be re-approached for MCS4 pilot 1 and additional families recruited in order to achieve a target sample size of 50. This approach was adopted as it enabled some of the more complex elements of the study, such as feed forward data and sample management, to be tested at an earlier stage in the development process than would be possible if the sample was newly recruited.

All families who took part in the first pilot for MCS3 were included in the sample for the MCS4 pilot 1 unless they had died, emigrated, refused in the last pilot, moved out of the area or were outside the required age range. This sample was known as the longitudinal

sample. In total, 40 out of the 49 families from MCS3 pilot 1 were issued for MCS4 pilot 1. Interviewers were supplied with name and address details of these families on an Address Record Form (ARF), and were provided with additional information about these families, on a sample information sheet attached to the ARF.

The remainder of the sample was recruited from the general population. Each interviewer was asked to interview six families in total (including those who were issued from the longitudinal sample). The new sample was required to have a child who was:

- aged six or seven; and
- in Year Two at school (Primary Three in Scotland)

In total, including the longitudinal sample, interviewers were asked to attempt to recruit:

- at least two boys and two girls
- at least one family from a minority ethnic group

Interviewers approached new families on the doorstep, or by 'snowballing' from respondents and other contacts. Those who agreed to take part were given a letter explaining the study and an appointment was made for a later time. Everyone who completed the interview was given a £10 gift voucher as a token of appreciation, and the children were given a fun pack and a pencil case to thank them for their participation.

A total of 38 families were interviewed; of these, 26 were longitudinal sample families, and 12 newly recruited families.

Interviewers had difficulty achieving the required number of interviews; this was attributed to the fact that the fieldwork period was short, and took place in the run-up to Easter, meaning there were more difficulties with contacting families than there would normally be.

A total of 36 main respondent interviews were conducted. Thirty of these had an eligible partner: 19 partner interviews were conducted, one of which was a proxy interview.

4.3.4 Key findings and changes

The length of the MCS4 interview

The interview was perceived to be very long by interviewers and respondents, although on the whole the interview was well received. The time taken for each element of the survey was calculated by the CAPI, and this showed that the mean interview length in the pilot was 36 minutes longer than the target length. However, it was noted that this may be due in part to the proportion of the sample that was new to the study and therefore did not have data from previous sweeps available to them, which would have had an effect on the length of the interview.

Main respondent and partner CAPI and CASI interview

In general, all of the modules of the questionnaires worked and there were no parts of modules that were resisted by respondents. At the individual question level, most questions appeared to work well, including most of the new questions. There were clear suggestions from interviewers on how to improve a number of questions, including typographical errors, grammar, and clarifications.

Child cognitive assessments

Only two of the cognitive assessments included in the first pilot survey, Sally and Anne and Pattern Construction, had been used in MCS3; Number Skills and Word Reading were new to MCS4.

Each assessment was adapted for use in a survey setting, and modified to be administered with the help of the CAPI programme, so that interviewers did not need to memorise a complex set of rules for routing children through each assessment.

An overview of the Sally and Anne task, Word Reading and Pattern Construction can be found in sections 3.4.1, 3.4.2 and 3.4.5.

Number Skills is used to establish whether children can recognise printed numbers and complete mathematical problems. Children complete various number based tasks, such as written calculations and indicating whether they recognise numbers.

Interviewers found the assessments interesting and enjoyable, and felt that their previous experience of administering the MCS3 assessments was useful for the MCS4 pilot. Parents and children also enjoyed the cognitive assessments and most parents observed their child's performance. The interviewers did not report any problems with controlling the child's behaviour during the assessments.

There was universal agreement among the interviewers that children experienced the most difficulty with the Number Skills assessment, and that children were unhappy at the end of the assessment. The assessment was regarded as too long for children that obviously found it difficult. There was also a general feeling that this assessment did not provide a true reflection of the children's ability as some children were unfamiliar with the format of the sums.

Some specific suggestions were made in order to improve the ease with which interviewers could administer the assessments, for example producing clear guidelines on how and when to give neutral praise and acceptable forms of pronunciation for Word Reading.

Suggestions were also made about how to improve Number Skills, but following the first pilot, the Number Skills assessment was replaced with Progress in Maths.

Child physical measurements

Every child's height, weight and body fat and waist circumference was measured. The procedures for the height and waist measurement used were the same as those used in MCS3, and are described in sections 3.5.1 and 3.5.3. No problems were reported with the height or waist measurements.

The procedure for the weight and body-fat measurement was also the same as that used in the main stage (see section 3.5.2), but the scales used for taking the measurement were different: the scales used in the first pilot were mains-operated Tanita BF-350 scales.

The majority of cohort children and their parents were quite happy to have their weight and body fat percentage measured, and were interested in the results as many of them had never had their body fat measured before. Interviewers reported that parents did not ask how the measurement worked, and gave their consent quite willingly.

Most interviewers were positive about the body fat measurement itself, but many concerns were raised about the scales' reliability and accuracy and the practicality of using the scales in field.

There were some children for whom it was impossible to get a measurement: in several instances the scales came up with an error reading, or no reading at all, and when this happened the scales had to be reprogrammed from scratch again, which was extremely time-consuming.

Interviewers also had doubts about the accuracy of the scales because some children's measurements seemed abnormally low, while others increased or decreased significantly when more than one measurement was taken.

The scales were mains-operated, and while respondents did not mind interviewers plugging the scales in, interviewers reported that it could be difficult to find a suitable socket in a room with hard flooring because the lead was not long enough if the plug sockets were high, for example in a kitchen.

The main concern, though, was with the weight of the scales (7.5 kg). The scales were significantly heavier than those used in other studies, and interviewers found it very difficult to lift and carry the scales. It was felt that it would be absolutely impossible to take the scales on public transport, especially given the amount of other equipment needed for the study. Half of the interviewers said they would refuse to use the scales or work on the study if the scales were used in the main stage of fieldwork.

It was therefore recommended that the Tanita BF-350 scales not be used in the main stage of the study, and that lighter scales should be sourced, which was done following the first pilot.

Physical activity monitoring

The procedure for explaining and gaining consent for the placement of the physical activity monitor was the same as that used for the main stage, which can be found in section 3.5.4.

In general, the activity monitor was well received by parents and children, although some minor concerns were raised by parents that the child's wearing of the monitor would place a burden on the child's teacher. However, the majority of children and parents were excited about receiving the monitors. The feedback received about the materials explaining this element of the study was positive, although some specific suggestions were made, for example, making the materials more child-friendly. Some improvements to the text and layout of the leaflet and timesheet were subsequently made.

Cohort child self-completion

In general, the feedback received about the cohort child self-completion questionnaire was positive. The children enjoyed filling in the questionnaire, and, in the majority of cases, children were able to understand and complete most of the questionnaire on their own.

There were two questions in particular that children had trouble understanding, and these were reviewed prior to the dress rehearsal.

Teacher survey consent

The parent was asked to give signed consent for the child's class teacher to be approached later and asked to complete a questionnaire about the child's progress at school. No problems were reported with gaining consent.

Home observation

The home observation used in MCS4 pilot 1 was the same as that used in MCS3; No problems were reported with this element of the study.

Other issues: briefing

As mentioned previously, the briefing for the pilot took place over three days. All of the interviewers who worked on the pilot had worked on MCS3, and all thought there was too much detail in the briefing, given that most of the content of the briefing was not new to them. It was suggested that the briefing be shortened for interviewers who had worked on MCS3, but it was acknowledged that interviewers who were new to the study would need the detail that a three-day briefing would provide.

The briefing structure for interviewers had worked on MCS3 was subsequently amended before the dress rehearsal.

4.4 Pilot two: dress rehearsal

This dress rehearsal was conducted between 10th July and 16th August 2007. The main aim of the dress rehearsal was to test the whole survey process including:

- contact procedures
- administration of the survey, including assessments
- distribution of paper questionnaires
- consent forms, ARFs and other administrative paperwork

The secondary aim was to test the questionnaires for:

- content
- comprehension
- flow
- length

An additional objective of the dress rehearsal was to find out what NatCen could do to ensure that the cognitive assessments and physical measurements were carried out according to the protocols to ensure that the results were consistent across all of the interviews, and comparable with data from other studies using the same measures.

Feedback from the dress rehearsal was intended to provide useful information about the content of the questionnaires, but it was not designed, or able, to provide a thorough and complete assessment if the validity or reliability of specific modules of questions. The final choice of content was guided by the research team at CLS in consultation with collaborators.

4.4.1 Elements included in the dress rehearsal

The dress rehearsal included the following elements:

- household questionnaire
- main respondent interview (CAPI and CASI)
- partner interview (CAPI and CASI)
- cohort child self-completion
- child cognitive assessments
  - Word Reading
  - Progress in Maths
  - Pattern construction
- child physical measurements
  - height
  - weight and body fat
  - waist
- physical activity monitoring
- interviewer observation of the conditions in which the cognitive assessments were conducted
- teacher survey consent
- collection of consents

4.4.2 Dress rehearsal briefing and debriefing

A group of fourteen interviewers from a wide range of urban and rural locations in England, Wales, Scotland and Northern Ireland were briefed by NatCen researchers, with extensive contributions from the CLS research team. The briefing took place on the 10th and 17th July 2007 in London. Each interviewer was required to carry out two practice sessions of the cognitive assessments and physical measurements between the first and second day of the briefing, based on what was briefed during the first day.

A two day debrief took place on the 15th and 16th August 2007.

4.4.3 Dress rehearsal sample

The sample for the dress rehearsal consisted of families sampled from 14 wards across the UK; the wards were selected to reflect the mix of wards in the main stage fieldwork, and all of the dress rehearsal wards were included in the main stage. The sample comprised a mixture of families that had taken part in previous dress rehearsals for the Millennium Cohort Study and new sample that had been selected, but not used, for MCS3. All children in the dress rehearsal sample were born between 1st May 2000 and 22nd July 2000.

175 families were eligible for the dress rehearsal for MCS4. Of these:

- 107 were productive in the dress rehearsal for the MCS3
- 11 were productive in the dress rehearsal for MCS2, but unproductive in the dress rehearsal for MCS3
- 57 were sampled for the dress rehearsal for MCS3 but were not issued.

Each interviewer point varied in size from seven to 15 families. This is because the point size was affected by the number of unproductive interviews from the last dress rehearsal.

Fieldwork in Northern Ireland was subcontracted to the Northern Ireland Statistics and Research Agency (NISRA).

All of the families who had taken part in the dress rehearsal for MCS3 in 2005 were sent a feedback mailing by CLS in December 2006 containing a covering letter and a leaflet with findings from MCS2. A reply slip was also included so the families could update their contact details if necessary.

In June 2007 a pre-notification mailing was sent out to all members of the dress rehearsal sample. Families that had taken part in the MCS3 dress rehearsal were sent a letter and the 'Every tooth tells a story' documents (see section 3.8 for details of this element). Families that had not taken part in the MCS3 dress rehearsal were sent a letter and the leaflet with findings from MCS2. There were different versions of the pre-notification letter for the two types of sample, and a different version in Northern Ireland.

In total interviews were achieved at 102 households.

4.4.4 Key findings and changes

The length of the MCS4 interview

NatCen asked interviewers to report the time taken for each element of the survey and compared these with the time calculated by the computer to provide two measures of interview length. These reports agreed well and showed that the interview needed to be cut by approximately 35 minutes to reflect the interview time planned for the full survey, and to reduce the overall burden on households. Many areas needed to be cut, but the main respondent CAPI and CASI, and one of the child cognitive assessments were perceived as particularly long.

Main respondent CAPI and CASI interview

In general, interviewers felt there were few problems with the main interview, and there were no parts of modules that were resisted by respondents. The structure of the questionnaire worked, and all modules were programmed successfully.

At the individual question level, most questions worked well, including most of the new questions. Many clear suggestions were given on how to improve a number of questions (including typos, grammar and clarifications), and there were only a few questions that needed more substantial improvement.

Overall, the questionnaire was considered to be a good basis for the main stage, but the length of the questionnaire needed to be addressed.

Partner CAPI and CASI interview

As in the first pilot, the partner interview comprised a sub-set of the main interview questions. Interviewers felt this was thorough, and not excessively detailed or long.

Cohort child self-completion

The cohort child self-completion questionnaire was well received on the whole; most parents were happy to allow their child to complete the questionnaire, and did not express any concerns about this element of the survey.

However, the interviewers reported that many of the children needed help filling in the questionnaire, and generally interviewers read the questions and answer options out to the children and the children ticked the answer boxes.

The section on school took up half the questionnaire, and interviewers felt this caused confusion as some children thought the entire questionnaire referred only to when the child was at school. It was recommended that for the main stage the interviewers should show the different sections of the questionnaire to the children before they start, so that the children realise the questionnaire is not just about school.

The interviewers liked the appearance of the information leaflet for the child. Most interviewers posted this leaflet to respondents after making the appointment, and many found that often the parents had not given the leaflet to the child. It was recommended that in the main stage interviewers should be instructed to give the leaflet to the child at the beginning of the interview and not to send it by post beforehand.

It was also recommended that CLS consider shortening the questionnaire. For the main stage about a fifth of the questions were subsequently cut, and the sections were re-ordered, in particular so that the school section was the last section of the questionnaire rather than the first section as it had been for the dress rehearsal. Child cognitive assessments
On the whole, interviewers did not encounter any major difficulties when administering the assessments.

Almost all of the interviewers expanded on the introduction for the Word Reading assessment provided in the CAPI and explained to the children that they may find some of the words more difficult as the assessment progressed because the assessment was designed for a wide range of ages. It was recommended that the CAPI introduction should be amended for the main stage to take account of this, and this change was implemented for the main stage.

It was found that some children in Northern Ireland and Wales who attended Welsh or Irish language schools had not yet been taught to read English and were therefore unable to complete the Word Reading assessment, so it was recommended that consideration should be given to translating this assessment.

For the dress rehearsal, the Number Skills assessment was replaced with Progress in Maths. In this assessment children complete various number-based tasks, covering the topics of numbers, shapes, space and measures, and data handling. The version of the assessment used in the dress rehearsal contained 21 questions, some of which had more than one part, and all children started at the beginning of the assessment and attempted to complete all items in the assessment.

Of all the assessments, the Progress in Maths assessment took the longest to complete, in some cases taking up to 45 minutes.

Some changes were suggested by interviewers in order to improve the ease with which interviewers could administer the assessments, which included minor changes and improvements to the CAPI script, and more emphasis in the briefings on parts of the cognitive assessments.

Following the dress rehearsal, consideration was given to translating the Word Reading assessment so that it could be administered in Welsh and Irish. However, Word Skills is an assessment of *English* reading ability, and if translated the results would be meaningless.

In Wales, a standardised reading test, the All Wales Reading Test, was in use in schools in Wales, and offered a Welsh medium version as well as an English medium version. Following investigations, the Welsh language version of this test was included in MCS4, to be offered as an alternative reading assessment for children in Wales whose parents wanted their children's reading skills to be assessed in Welsh; details of this assessment can be found in section 3.4.3.

Unfortunately, standardised Irish Gaelic reading tests were not available, so it was not possible to offer a similar alternative reading assessment in Northern Ireland. Instead, the CAPI was amended so that if interviewers were not able to administer the Word Reading assessment because the child could not yet read English, this could be recorded in the CAPI and the assessment skipped.

During fieldwork, because of the length of the Progress in Maths assessment, CLS proposed a reduction in the number of items administered. Following the dress rehearsal NFER adapted the assessment specifically for MCS. The total number of items was reduced from 21 to 20, and the items were grouped into four sets, with only two sets of items being administered to each child, reducing the number of items administered to each child to a maximum of 12. Details of the revised Progress in Maths assessment can be found in section 3.4.4.

Child physical measurements

Following the first pilot, a different model of the weight and body fat scales was sourced. The model used in the dress rehearsal, Tanita BF-522W was much lighter than the one used in the first pilot, and was also battery operated, rather than mains-operated. Interviewers were happy with the weight of the new scales, and it was decided to use these in the main stage.

No problems were reported with the physical measurements, but interviewers made some suggestions for improving the instructions and briefing for some aspects of the weight and body fat measurement.

Physical activity monitoring

In general there were no particular problems with the activity monitor. It was well received by most parents and children.

Interviewers requested that more information be provided about how the physical activity monitor worked so they would be better prepared to answer parents' questions.

Observation of conditions in which the cognitive assessments were administered

No problems were reported with this element.

Teacher survey consent

There were no problems gaining consent to contact the cohort children's teachers and in getting their contact details.

Collection of consents

For the dress rehearsal, eight different consent forms were used. For details of the background of the consent forms, and of how they were administered in the interview, see section 3.9.

The consent forms used in the dress rehearsal were as follows:

- Main respondent interview and self-completion
- Partner interview and self-completion
- Child data collection
- Information from routine records (4 separate consent forms)
- Teacher questionnaire

In general, interviewers disliked the part of the interview when they had to get the respondents to sign the consent forms, as they felt that there were too many of them, each had too much information on it, and they took far too long.

In particular, concerns were raised about the 'Information from routine records' consent forms. An accompanying leaflet was produced for these, which most interviewers gave to respondents in advance of the interview. All interviewers got the impression that most respondents had not read the leaflet, and that the few that did read it did not seem to understand it, and they therefore felt that respondents were not giving informed consent to the release of their records. It was recommended that if retained, the leaflet needed to be considerably shorter and simpler.

Following the dress rehearsal the number of consent forms was reduced from eight to five. The leaflet explaining why this information was needed was long, and for the main stage it was decided to add a summary table of what was required and why was added to its front page.

4.5 Post dress rehearsal changes

Following the dress rehearsal debriefing, a summary of recommended changes was prepared. Question cuts were necessary to reduce the questionnaire length by about 10 minutes for the main interview, and about three minutes for the partner interview. NatCen provided timings for individual questions so that the impact of cuts could be accurately estimated.

The research team at CLS consulted with sponsors about changes to be made to the study prior to the main stage.

Cuts were duly agreed for the questionnaire to achieve the target interview lengths of 62 minutes for the main interview, and 21 minutes for the partner interview.

5 Conduct of fieldwork

Interviewing in England, Wales and Scotland was carried out by NatCen's interviewers. Interviewing in Northern Ireland was subcontracted to NISRA.

A total of 442 interviewers worked on the study: 382 from NatCen (254 in England, 53 in Wales, and 75 in Scotland) and 60 from NISRA.

5.1 Briefings

All interviewers were required to attend a briefing before starting work on the study. A total of 19 briefings were conducted, starting in January 2008, and finishing in August 2008. All briefings were led by researchers from NatCen and CLS.

All briefings for NatCen interviewers had a Briefing Manager from NatCen's field force. The role of the Briefing Manager was to oversee and control the briefing, ensure its smooth running, deal with any inappropriate behaviour, including unnecessary interruptions and digressions by interviewers, and monitor the quality of the dummy interviews. In addition they were responsible for covering all interviewer administration. The Briefing Manager was also responsible for carrying out the risk assessment for the venue. In Northern Ireland, the role of Briefing Manager was fulfilled by staff from NISRA's head office. Some of the briefings were also attended by members of staff from the funding organisations and other members of staff from CLS as observers.

In total, 442 interviewers were briefed. Among these, 330 had worked on MCS3 and attended the two-day refresher briefing; 112 who had never worked on MCS attended a three-day new interviewer briefing. The size of briefings varied between regions. In general, refresher briefings were attended by 30 to 40 interviewers and new interviewer briefings had 15 interviewers.

The topics covered in two-day refresher briefings and three-day new interviewer briefings are detailed in Table 5.1and Table 5.2. Both formats allowed a week gap between day 1 and day 2 of the briefing. During the gap week, interviewers were required to conduct two practice sessions with children aged 7 years old, whom they had recruited before attending briefing. The purpose of these sessions was for interviewers to familiarise themselves with the cognitive assessments and physical measurements, and to be able to practice them in a real-life setting with children of the same age as the cohort children. In addition, it gave interviewers the opportunity to discuss their experiences of the cognitive and physical measurements with each other, and to clarify any issues arising from the practice sessions before they started work on the study.

Training videos were used in day 1 and day 2 to demonstrate how to build rapport with children, and how to administer the different cognitive assessments and physical measurements.

As the CAPI questionnaire in MCS4 was very similar to the one used in MCS3, interviewers in the refresher briefing were not asked to go through CAPI questionnaire during briefing. Instead, they were given CAPI Homework, a paper document that highlighted changes and attention points at the end of day 1. They would then read the document during the gap week and came back with queries on day 2 of the briefing. New interviewers on MCS had to practice the CAPI questionnaire on day 3 of the briefing.

Table 5.1 Topics covered in two-day refresher briefing

Day 1	Day 2
Overview of the Millennium Cohort study ➢ Background to study ➢ Overview of sweep 4 Introduction to cognitive assessments ➢ Brief description of content and purpose of each assessment ➢ General administration points Cognitive assessments ➢ Outline of assessments ➢ Demonstration of administration (video) ➢ Overview of administration ➢ Cognitive assessments practice and dummy interviewing in breakout sessions Physical measurements ➢ Demonstration of how to use and care for equipment ➢ Re-cap of general administration points ➢ Demonstration of administration (videos) ➢ Practice taking measurements Activity Monitor ➢ Introduction and background ➢ Process ➢ Video CAPI ➢ Structure of interview ➢ Overview of CAPI structure ➢ Description of homework task ➢ Highlights of specific areas Practice sessions ➢ Overview and explanation	Feedback on cognitive and physical measurements (in breakout sessions) ➢ Individual feedback ➢ Quiz The Sample ➢ Who the cohort members are ➢ Cohort maintenance ➢ Feedback and pre-notification mailings including details of “Every tooth tells a story’ Contacting sample members and tracing ➢ Planning work ➢ Contact procedures ➢ Arranging appointments ➢ Movers and tracing Conducting the interview ➢ Order of administering survey tasks ➢ Consents ➢ Child’s paper self completion ➢ Information from routine records ➢ Teacher questionnaire ➢ Updating contact information ➢ Translations

Table 5.2 Topics covered in three-day new interviewer briefing

Day 1	Day 2	Day 3
Overview of the Millennium Cohort Study ➢ Background to study ➢ Overview of sweep 1-4 ➢ Quiz of CNC findings Introduction to cognitive assessments ➢ Brief description of content and purpose of each assessment ➢ General administration points Cognitive assessments ➢ Outline of assessments ➢ Demonstration of administration (video) ➢ Overview of administration ➢ Dummy interviewing in pairs ➢ Cognitive observations Physical measurements ➢ Demonstration of how to use and care for equipment ➢ Demonstration of administration of physical measurements (video) ➢ Overview of protocols for taking physical measurements ➢ Practice taking measurements Activity Monitor ➢ Introduction and background ➢ Process ➢ Video Set up for practice sessions ➢ Overview and explanation	Feedback on cognitive and physical assessments ➢ Training ➢ Administration ➢ Quiz on administration points The Sample ➢ Who the cohort members are ➢ Cohort maintenance ➢ Feedback and pre-notification mailings including details of "Every tooth tells a story' Contacting sample members and tracing ➢ Assignments and serial numbers ➢ The ARF - labels, sample information sheet ➢ Contact procedures ➢ Pre-notification mail out ➢ Advance letters/ leaflet ➢ Telephone/ personal visits ➢ Tracing Arranging appointments ➢ Introducing the survey ➢ Persuading respondents to take part ➢ Answering questions about the survey ➢ Organising the interview in the household ➢ Interviewing children ➢ Translations Conducting the interview Child Self-completion ➢ Background and objectives ➢ Procedure Teacher questionnaire ➢ Background and objectives ➢ Procedure Consent forms Updating contact information	CAPI - household questionnaire and main respondent interview CAPI - partner interview CAPI - Admin block Returning work and other admin

5.2 Materials for interviewers

Interviewers were supplied with the following materials for use on the study:

Advance materials to be sent to respondents

Advance letters (and postage-paid envelopes)
First leaflet - to be sent to respondents with advance letter
Laminated copy of pre-notification letters (two versions, printed back to back)

Contact documents

Address Record Form (ARF) - single cohort child
ARF - multi-cohort children
Sample Information Sheet (attached to back of ARF)
Tracing letter (plus post-paid envelope and reply paid envelope)
Occupier letter (plus envelope and reply paid envelope)
'What would we like your child to do?' leaflet (and envelope)
Child leaflet: 'What would you like me to do?'
Information from other sources leaflet

Consent forms

Pad 1 – Parent and cohort child consents

Consent 1: Main respondent
Consent 2: Cohort child - data collection
Consent 3: Cohort child - information from other sources
Consent 4: Siblings – health and education records
Consent 5: Partner respondent

Pad 2 – continuation sheets for multi-child households

Consent 2: Cohort child - data collection
Consent 3: Cohort child - information from other sources

Child self-completion questionnaire (Welsh version available)

Child self-completion questionnaire
Child self-completion questionnaire – Welsh version
Blank envelope

Showcards

Interviewer instructions

Project instructions
Child Assessment and Measurement Instructions

Equipment

Sally and Anne showcards
Word Reading card
Our Adventures comic
Progress in Maths booklet
Progress in Maths booklet: Welsh language version
Pencils, eraser and ruler for Progress in Maths
BAS easel (Pattern Construction)
Squares for Pattern Construction
Cubes for Pattern Construction
Stopwatch
Stadiometer
Frankfort plane card
Scales
Pack of 4 A4 batteries for scales available on request
Tape measure
Stickers for waist measurement
Skin pens for waist measurements
Activity monitor on short belt
Activity monitor on long belt
Calendar

Gifts

Puzzle trays for children[7]
Sticker packs
Physical activity monitoring fridge magnet[8]

Miscellaneous

Child of the New Century leaflet sent with age 6 feedback by CLS
Child of the New Century leaflet sent with age 7 pre-notification by CLS
Every tooth tells a story leaflet
Every tooth tells a story chart
Every tooth tells a story badge
Envelopes for return of work
Appointment cards

5.3 Interviewer assignments

In England, Wales and Scotland, within each wave (see section 2.4 for description of waves) the sample was grouped into interviewer assignments, or points. These points were defined in consultation with NatCen's fieldwork managers to reflect local geography, but addresses in some, particularly rural, areas were widely spread. The size of the assignments varied from less than ten to over 20 addresses.

[7] Initially flashing balls were used as gifts, but these were withdrawn very early in fieldwork because of concerns about their manufacturing quality and safety. These were replaced by puzzle trays, which were available to interviewers from the beginning of April 2008.
[8] Fridge magnets were not available at the start of fieldwork, but were available from the beginning of April 2008.

In Northern Ireland, the sample within each wave was grouped by District Council and ward. The sample was then allocated to interviewers working in those areas. The size of the assignments depended on the number of interviewers available to work in each area.

In terms of productive interviews, each interviewer on average achieved 31 productive interviews (see Table 5.3). Eight per cent of interviewers achieved 10 or fewer interviews, and four per cent achieved 61 or more.

Table 5.3 Number of productive interviews per interviewer

Number of productive interviews	Number of interviewers	% of all interviewers
1 to 10	35	8
11 to 20	89	20
21 to 30	119	27
31 to 40	93	21
41 to 50	57	13
51 to 60	31	7
61 or more	18	4
TOTAL	**442**	**100**
Mean	31	

5.4 Issuing sample to interviewers

NatCen's interviewers were issued with their assignment at the beginning of each wave. In Northern Ireland, the interviewers were issued with their sample on a monthly basis during each wave.

Sample information was provided on an Address Record Form (ARF), supplemented with a Sample Information Sheet (SIS), copies of which can be found in the appendix. The information printed on these documents came from the sample files provided by CLS (see section 2.6 for details).

All interviewers were instructed to review their assignments when they received them in order to plan their work. They were advised to prioritise the contact of some cohort families, such as those who were not interviewed in MCS3 and may therefore have needed tracing, those who were known to no longer be living at the address given, and so would require tracing, and those whose addresses were furthest away from where the interviewer lived, or who were most isolated from others in the point.

5.4.1 The Address Record Form (ARF)

Two versions of the ARF were produced: one for families containing a single cohort child, and one for families containing more than one cohort child.

The sample information on the ARF was provided in two labels attached to the front. Details of the layout and content of these labels is shown in Figure 5.
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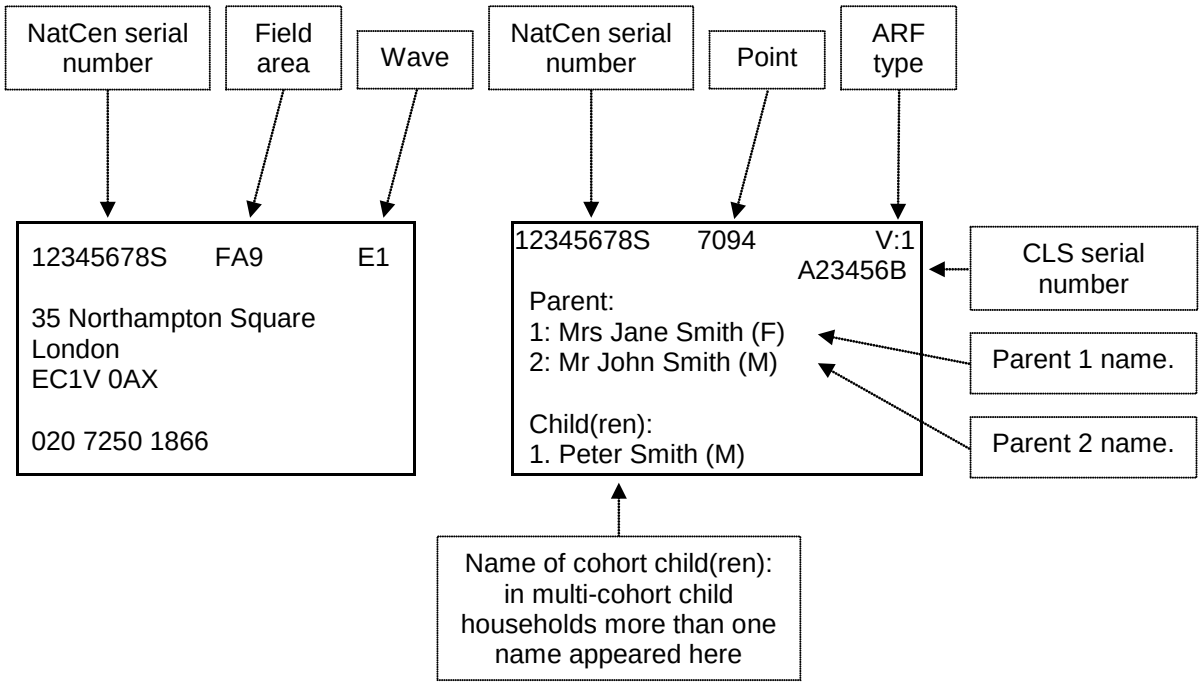
Figure 5 Sample information provided on the ARF (fictitious example)



The first label was printed with NatCen's serial number, NatCen's field area, and the allocated wave, together with the last known address of the family, and a contact telephone number.

The second label was printed with both the NatCen and CLS serial numbers, the point number (see section 5.3), ARF type (whether it was an ARF for a family with a single cohort child or for a family with two or more cohort children), and the names of the parents and cohort child or children.

The parents were labelled as Parent 1 and Parent 2 (if there was more than one parent in the household). Parent 1 was usually the main respondent from the last sweep of the study that the family had participated in, and Parent 2 the partner respondent. In some cases the partner respondent, and not the main respondent, was labelled as Parent 1, and vice versa; this usually happened when CLS had been asked to address correspondence to the partner.

As well as the sample information, the ARF contained space for interviewers to record all attempts made to contact the respondents, including any tracing done, interview outcomes, and the neighbourhood observation.

Copies of the ARFs can be found in the appendix.

5.4.2 The Sample Information Sheet

The Sample Information Sheet included the following information:

Contact details

This contained the last known address for the household. It also contained two additional fields: address status, and the date that status was assigned. This indicated that on the date shown, the household had either been confirmed as being resident at that address, or that they had been confirmed as not living at that address.

Cohort child details

This contained each cohort child's full name, sex and date of birth. In addition, it contained the preferred name for the child, if known, such as Tony for Anthony or Katie for Katherine.

Resident parent details

This contained each resident parent's title, full name and preferred name, if applicable, sex, date of birth, and the relationship to the cohort child. The relationship to the cohort child was indicated as 'grandparent', 'natural parent', 'step parent', aunt/uncle, etc.

It also contained details of the type of interview they last did, either main, partner or proxy, or it indicated if they were not eligible for interview last time (e.g. if they were not resident in the household at the time of the last interview).

Resident parent contact details

This contained the last known telephone numbers for the resident parents. It also contained any known email addresses so that interviewers could confirm they were correct, but interviewers were not permitted to contact the resident parents by email.

Notes

This contained useful interviewer notes from MCS3, e.g. address directions, best time to contact respondents, etc.

Information to be used for tracing

This contained stable address details, i.e. contact details provided by respondents, usually of a close relative. The email address was also provided in order that the interviewer could confirm it was still correct, but interviewers were not permitted to contact the stable addresses by email.

Information from previous surveys

This section contained the following information:

- household outcomes from the first, second and third sweeps of the survey
- date, day and time of last interview
- individual outcomes for the parent(s):
  - the outcome last time
  - whether or not any of the questionnaire had to be translated, and if so, into which language, and by whom.
- address at last interview
- Total number of people in household at last interview

Office notes/ updates

This space was used to record any new information received between the sample file being received at NatCen and the start of fieldwork, such as sample updates.

5.5 Pre-notification of cohort families

All cohort families were sent a pre-notification letter from CLS before the start of fieldwork. The letters were sent in January 2008 (to sample issued in January 2008), February 2008 (for sample issued in April 2008) and June 2008 (for sample issued in August/ September 2008).

The purpose of this letter was to introduce the Age 7 Survey and explain NatCen's role. Two versions of the pre-notification letter were produced: one for families that had taken part in MCS3 and one for families that had not taken part in MCS3. The version for families that had taken part in MCS3 contained information about and materials for the 'Every tooth tells a story" project; for more details about this project, see section 3.8.

Copies of the letters are included in the appendix.

5.6 Informing the police

A letter was sent out to all of the Chief Constables in the UK informing them that the study was taking place.

NatCen's interviewers were required to check in at the local police station before they started work. They were asked to tell the police what the survey was about, give them a copy of the police letter and the advance letter, and explain how long they would be working in the area. Interviewers were also asked to make a note of the name of the officer to whom they spoke and the date of their call so that they were fully covered in the event of any query or complaint to the police.

The reason interviewers were asked to contact the police is that it is reassuring for suspicious families, as well as other people interviewers come into contact with, to be told that the police are aware the interviewer is working in the area.

In Northern Ireland, NISRA provided District Commanders with details of all interviewers (i.e. name and vehicle information) working in their respective sub-divisional areas. Each

District Commander was asked to forward these details to all local police stations under their sub-divisional command, so that in the event of any queries from the public, the interviewers' identity could be authenticated immediately and the member of the public assured that they were working on official business.

5.7 Who to contact

The method of contacting respondents, and the person whom interviewers were instructed to attempt to contact in the first instance, was determined by the respondents' participation status in previous sweeps of the study.

If there were two parents listed on the Sample Information Sheet, and both took part in MCS3, then interviewers were instructed to attempt to make initial contact with the person who was the main respondent in MCS3. If they were not able to contact this person, then they were to attempt to contact the person who was the partner respondent last time.

If there were two parents listed on the Sample Information Sheet, but only one of them took part in MCS3, then interviewers were instructed to attempt to contact that person first.

If two parents were listed, but neither took part in MCS3, then interviewers were asked to contact either parent.

In cases where the cohort child's parents were no longer living together, interviewers were asked to try to find out who the child now lived with and interview at that address. If the child lived with both parents for some of the time, interviewers were asked to try to establish where the child mainly lived and interview at that address. If residence was shared equally between the two parents, then interviews were usually conducted in the household that contained the main respondent from last time.

5.8 Contact procedures

5.8.1 Stage 1: Advance letter and first leaflet

An advance letter was produced for each family in the sample. Each letter was pre-printed with name(s) and address of the cohort child(ren)'s parent(s). In England, Scotland and Wales, a space was provided at the bottom of the letter for interviewers to write in their name.

A leaflet describing the study was also produced.

There were three versions of the advance letter: one for families in England and Scotland, one for families in Wales, and one for families in Northern Ireland.

Copies of the advance letters and leaflets can be found in the appendix.

NatCen's interviewers were asked to send out an advance letter and leaflet to each of the families in their assignment within three days of receiving their workpacks.

In Northern Ireland, the advance letters for each month's assignments were sent directly from NISRA's office to the families. These were posted at least three days prior to the interviewers commencing work on their assignment. The interviewer name was not included on these advance letters.

5.8.2 Stage 2: Telephone contact with cohort families

If a family had participated in MCS3 and a telephone number for that family was available (on the sample information sheet), then interviewers were required to attempt to make first contact with the family by telephone.

In the majority of cases, only one telephone number per family was available, but if more than one was available then interviewers were instructed to try to contact the mother first, and then the partner.

If interviewers were unable to successfully arrange an appointment by telephone, they were required to make a personal visit to the address before accepting the case as a refusal.

5.8.3 Stage 3: Personal visits

For those for whom first contact by telephone was not appropriate, or where telephone contact was unsuccessful, interviewers were required to make one or more personal visits.

If no one was at home, interviewers were instructed to leave a NatCen appointment card to inform the residents of their visit, and try again at a later date.

If when contacting a household interviewers were greeted by a child or young person who said there were no adults present or available for the interviewer to talk to, the interviewer was instructed to leave the household, and not to ask a child or young person for information about household residents, or their likely availability, or for a telephone number.

If interviewers were not able to contact respondents by telephone or through the personal visit, then they were expected to make reasonable attempts to trace the respondents, as outlined in the next section.

5.9 Tracing cohort members

If an interviewer found that a cohort family had moved, they were expected to attempt to find their new address, and there were several steps they had to follow before returning a case to NatCen or NISRA for further tracing by CLS.

In order to learn a new address, asked the current residents of the original address or neighbours. It was anticipated that these people might not know the whereabouts of the cohort family, but that they might be able to direct interviewers to friends or relatives nearby who would know how to contact the cohort member.

If this means of tracing was unsuccessful, then interviewers were required to contact the stable address if they had been provided with a telephone number on the Sample Information Sheet, or if the stable address was in their area.

If interviewers were successful in finding a new address for a family that had moved, then they would manually update the sample details on the ARF and in the CAPI. If the address was in their area, they would follow the contact procedures outlined in section 5.8 at the new address. If the new address was outside of the interviewer's area, the interviewer would return the case to NatCen's operations department or NISRA's office so it could be reallocated to another interviewer.

When tracing, interviewers were not to mention the cohort child's name to anyone other than the cohort child's family; they were therefore instructed to say they were looking for the parent or parents. However, it was reinforced to interviewers that it was the cohort child who was the subject of the survey, and that if their investigations revealed that the cohort child was no longer living with their natural parents, they were to try to find out where the child was now living. This meant that if the child was living with adoptive parents, it was the adoptive parents that should be interviewed.

5.9.1 Tracing letter

In instances where interviewers found someone who knew where the cohort family was living but was unwilling to give this information to the interviewer, a tracing letter could be used.

This letter explained that MCS4 was taking place, and that an interviewer had tried to contact the respondent. The respondent was asked to send their new address to CLS. Interviewers completed these letters, and placed them in an envelope containing a blank post-paid envelope, and asked the person who knew the cohort family's whereabouts to post or pass on the letter to the cohort family.

Copies of the tracing letter can be found in the appendix.

5.9.2 Occupier letter

If interviewers were not able to make contact with anyone at the last known address of the cohort family, and were not able to establish their whereabouts from neighbours or the stable address, then they were asked to post an occupier letter through the letterbox at the last known address of the cohort family.

This letter explained that CLS was trying to contact a person who was part of a very important research project, and that this was the last known address for that person. The letter asked the recipient of the letter to contact CLS, or to forward the letter to the addressee, if their new address was known.

Copies of the occupier letter can be found in the appendix.

5.9.3 Incomplete addresses

If any of the addresses provided were incomplete, or could not be found, interviewers were asked to check the address with local residents, maps, directories, the police, etc to seek to find the correct address.

5.10 Making appointments and use of leaflets

Interviewers were aware before they started work that it might be necessary to make more than one appointment to cover all elements of the survey, depending on the availability of the survey respondents.

Once an appointment was made, interviewers were asked to complete an appointment card, and to give leaflets to the respondent that contained further information about different elements of the study. Interviewers were advised to give these leaflets to respondents before the appointment so respondents could read the information beforehand. If interviewers contacted a respondent and made the appointment by

telephone, then they were required to post the leaflets to the respondent along with a NatCen appointment card. If the timing of the appointment meant there was not enough time to post the leaflet to the respondent before the appointment, interviewers were asked to explain the content of the leaflets to the respondent, and to allow extra time during the interview for the respondent to read the leaflets fully. However, there were some circumstances in which interviewer could choose not to give the leaflets to respondents in advance, which are described below.

Copies of all the leaflets can be found in the appendix.

5.10.1 'What would we like your child to do?' leaflet

This leaflet contained information about the child cognitive and physical measurements, physical activity monitoring, and the child self-completion questionnaire. Interviewers were expected to give, send or explain the contents of this leaflet to the respondent before the interview as it contained information that was useful in helping the parent to prepare the child for the physical measurements, for example it explained how the child should ideally be dressed for the physical measurements.

5.10.2 Child leaflet: 'What would you like me to do?'

This leaflet was prepared for the cohort children, and provided information about the study in child-friendly language. It was recommended that this leaflet be given directly to the child unless the interviewer was very confident that the parent would give the leaflet to the child, in which case it could be given or sent to the parent before the interview.

5.10.3 'Information from other sources' leaflet

Information from other sources' contained information about the additional information that CLS wanted to collect from the cohort children's teachers and from records routinely collected by government departments or agencies and other public sector organisations. (More information about this can be found in section 3.9.2.)

Ideally, interviewers would give or send this leaflet to the respondent in advance of the interview. However, if an interviewer had some doubts about whether a household would participate, they could choose to withhold this leaflet until the actual interview.

5.11 Return of work

Interviewers recorded the progress of each case on the ARF, and in the CAPI. Once interviewers had finished with a case, an outcome code was assigned to the case, the interviewer transmitted the case electronically to NatCen or NISRA, and returned all the associated paperwork.

Details of the outcome codes used can be found in the appendix.

NatCen and NISRA checked each case individually once it was returned, and then processed the case as described in the following sections.

5.11.1 Productive and partially productive cases

These were checked to ensure that all necessary consent forms had been returned and were correctly completed and also that cohort child self-completion questionnaires were returned where applicable and were correctly completed. The information written on the forms was cross-checked with the sample data contained in the CAPI to ensure that the forms were signed by the correct respondents.

If any problems came to light during the checking, the interviewer was contacted so the problems could be rectified as soon after the case was completed as possible.

Once NatCen Operations was satisfied a case was complete and in order, the data was coded and edited. This process is described in section 7.

5.11.2 Unproductive cases

The course of action taken when cases were returned with unproductive outcomes was dependent on the type of unproductive outcome.

- Refusals: these were checked to ensure that interviewers had made face-to-face contact with the respondents. Interviewers were not allowed to accept refusals over the telephone. If a case was returned to NatCen's operations department as a refusal, but face-to-face contact had not been made, the case was returned to the interviewer. As part of a methodological experiment, refusals were divided into four treatment groups. The first group was sent a leaflet, to encourage response, and received the NatCen standard reissue procedure, whereby refusals are examined on a case-by-case basis and those judged 'soft' or circumstantial refusals are reissued. The second group received no leaflet, and the standard reissue procedure. The third group receive a leaflet, and instead of the standard NatCen procedure all eligible cases were reissued. The fourth group received no leaflet, and all eligible cases were reissued.

- Non-contacts: these were checked to ensure interviewers had tried hard enough to make contact with the family, that is that they had tried to make contact by telephone and in person, and had called on different days of the week and at different times of the day. If this had not been done, the case was reissued to the interviewer.

- Movers - no address found: these cases were checked to ensure that interviewers had done sufficient tracing before returning the case to NatCen's operations department. If the interviewer had not followed all of the tracing steps outlined in section 5.9, the case was reissued to them for further tracing. If sufficient tracing had been done, then the case was referred to CLS's tracing team for further tracing.

- Movers - new address found: if the interviewer had located a new address, but it was outside his or her area, then the address was checked to ensure it was complete. If it was complete, the case was reallocated to another interviewer. If the address was not complete, then the case was returned to CLS for further tracing by CLS's tracing team.

Data about untraced movers was collated in a 'mover file', and this was sent to CLS on a weekly basis. CLS returned any updated information in the weekly sample update file, which is described in the next section. The first 'mover file' was sent to CLS on the 1 May 2008. Details of the number of movers sent to CLS can be found in Table 5.5 and details of tracing success in Table 6.8.

5.12 Sample management during fieldwork

5.12.1 Sample updates from CLS

As mentioned in section 2.7, CLS ceased active tracing of cohort members once the sample file was sent to NatCen prior to the start of fieldwork for each wave. However, information was sometimes received by CLS once the sample had been sent to NatCen.

CLS provided NatCen with a file containing sample updates once a week during fieldwork. How the information was handled depended on the type of information received, i.e. whether it was a change in eligibility or participation status, or a change in contact information, and the progress of the case, i.e. whether the case had been issued to an interviewer and whether the interviewer had started working on the case.

Table 5.4 summarises the actions taken by NatCen's operations department as a result of sample updates from CLS.

Changes to other contact information, such as names, sex, dates of birth, etc. were not normally notified to NatCen.

Respondents sometimes contacted NatCen's head office or operations department with information. This information was handled in the same way as the sample updates from CLS.

Table 5.4 Actions taken as a result of sample updates

	Status of case		
Type of update	**Not yet issued to interviewer**	**Issued to interviewer, but not yet returned to NatCen**	**Issued to interviewer and returned to NatCen**
Change in eligibility status, i.e. death or emigration of cohort child	NatCen assigned the appropriate outcome code, and the case was not issued to an interviewer.	NatCen notified the interviewer of change of status, and the interviewer assigned the appropriate outcome code and returned the case to NatCen.	If the case had been returned with a productive outcome code, no action was taken. If the case had been returned with an unproductive outcome code, a new survey outcome code was assigned
Change in participation status	As above	As above	No action, but NatCen ensured cases with unproductive outcomes were not reissued
Change in status of address, i.e. it became known that the cohort family was no longer living at the address, but the new address was not known	NatCen manually amended the Sample Information sheet, and the case was issued to an interviewer for tracing.	NatCen notified the interviewer of the change, the interviewer manually updated the ARF/ Sample Information Sheet, and attempted to trace the family	No action
Change to contact information	As above	As above	If the case had been returned with a productive outcome code, NatCen stored the new address as the most recent address until the case was returned to CLS. If the case had been returned with an unproductive outcome code but the interviewer had made contact with the respondent, NatCen stored the new address as the most recent address until the case was returned to CLS If the case had been returned with a non-contact outcome code the case was reissued.

The following table shows the number of cases that were sent to CLS in the 'mover file' (see section 5.11.2 for details) and the number of cases sent to NatCen in the sample update file.

Table 5.5 Number of cases in 'mover file' and sample update file, by month

Month	No of cases in Mover file sent to CLS	No of cases in Sample Update file sent to NatCen
January	0	47
February	0	231
March	0	66
April	0	235
May	295	37
June	167	58
July	152	239
August	127	214
September	120	456
October	54	70
November	38	79
December	22	95
TOTAL	975	1827

5.12.2 Updating sample information by interviewers

Interviewers were responsible for updating the contact information for all the cases issued to them.

For productive cases, the sample information was checked, and updated if necessary, during the interview. For unproductive cases, interviewers would sometimes obtain updates to the sample information during the course of contacting the respondents, and this information was recorded on the ARF/ Sample Information Sheet, and in the CAPI.

All updates and changes made to the sample information by interviewers were recorded in such a way that the new information was distinguishable from the original information.

5.13 Fieldwork progress

Fieldwork was initially due to run from November 2007 to December 2008. However, in the development stages of the study it became clear that a fieldwork start date of November did not allow enough time for development of the study, and the quality of the data collection instruments would be compromised if more time was not allowed for development and testing.

The start of fieldwork was therefore delayed until January 2008. After the dress rehearsal, delays in agreeing final changes to the questionnaire meant that fieldwork had to be further delayed to allow for sufficient testing of the final questionnaires. The first briefing was moved to the end of January 2008, and fieldwork started at the end of January.

Each wave of fieldwork started on time, but a number of the waves finished later than originally timetabled. Table 5.6 shows the timetabled and actual fieldwork dates.

Table 5.6 Proposed and actual fieldwork dates

Wave name	Timetabled fieldwork dates	Actual fieldwork dates
E1	January - June 2008	January 2008- January 2009
E2	April - August 2008	April 2008- February 2009
W1	January - June 2008	February - November 2008
W2	April - August 2008	April - November 2008
S1	April – August 2008	April - December 2008
S2	August - December 2008	August 2008 - February 2009
N1	April - August 2008	April – October 2008
N2	September- December 2008	September – December 2008

Table 5.7 shows the interviews achieved each month, with the timetabled fieldwork dates highlighted, and Table 5.8 shows the proportion of interviews that were delayed.

Table 5.7 Interviews achieved by month

	E1	E2	W1	W2	S1	S2	N1	N2	Total
	N	N	N	N	N	N	N	N	N
January-08	10	0	0	0	0	0	0	0	10
February	593	0	104	0	0	0	0	0	697
March	1232	0	196	1	0	0	0	0	1429
April	1214	620	252	78	164	0	94	0	2422
May	656	1041	210	135	132	0	178	0	2352
June	453	852	123	122	29	0	287	0	1866
July	177	789	55	203	16	0	84	0	1324
August	72	685	37	233	8	73	51	0	1159
September	45	327	20	142	1	388	9	86	1018
October	6	86	15	44	0	375	1	207	734
November	0	7	1	7	1	247	1	297	561
December	2	5	0	0	1	130	1	81	220
January -09	1	8	0	0	0	52	0	0	61
February	0	1	0	0	0	3	0	0	4
TOTAL	4461	4421	1013	965	352	1268	706	671	13857

Table 5.8 Proportion of interviews delayed

	E1	E2	W1	W2	S1	S2	N1	N2
	%	%	%	%	%	%	%	%
Conducted within timetabled fieldwork dates	93	90	87	80	99	96	98	100
Delayed, but conducted in same school year	6	0	9	0	0	4	2	0
Delayed to next school year	1	10	4	20	1	0	0	0

The majority of interviews were conducted within the timetabled fieldwork periods. Overall, only a small proportion of interviews was delayed to the next academic year.

England had over 90% of interviews achieved within the timetabled fieldwork period. However in E2, all 10% of the delayed fieldwork took place in the next school year. This delay had further impact on the Teacher Survey[9].

Wales had the lowest rates of interviews being carried out during the timetabled fieldwork period. Especially in W2, about one-fifth of interviews were delayed until the next school year.

The fieldwork did, however, finish strongly in Scotland and Northern Ireland, with over 96% of interviews being completed in the timetabled fieldwork period, and those few interviews that were delayed were still conducted in the same academic year. The short over-run at the very end of fieldwork had no impact on the overall survey timetable, including data delivery.

5.14 Progress reporting

Fieldwork progress reports were sent to CLS weekly, and more substantial progress reports monthly. The weekly reports were at household level and comprised a breakdown of survey response (broadly, into categories of productive, non-productive, ineligible and outstanding cases) by fieldwork wave. The monthly reports had additional household level breakdowns (by prior response, country of issue, sample-type), response to the different survey elements, and an analysis of movers. Example progress tables can be found in the appendix.

The first weekly report was provided on April 8th 2008, and the first monthly report in June 2006, with reports continuing throughout fieldwork.

[9] Please refer to the separate MCS4 Teacher Survey technical report for details of the impact from the fieldwork delay.

5.15 Translations

The advance letters, leaflets and consent forms were available in the following languages:

- Welsh
- Urdu
- Punjabi
- Gujarati
- Hindi
- Bengali
- Somali
- Tamil
- Turkish
- Kurdish
- Arabic

Where respondents could not understand English sufficiently to take part in the interview but were able to understand the questions through an interpreter, interviewers had to find someone suitable to act as an interpreter and conduct the interview through them. Ideally the interpreter should have been an adult household member, but in some households the adult members spoke little or no English whereas the resident children were fluent English speakers and used to translating on their parents' behalf.

For NatCen surveys a child may be asked to assist in this way only where:

- both parent(s) and child are willing to participate and
- the child is of an age to properly comprehend the questionnaire content.

If the household contained no suitable person to interpret, interviewers were instructed to contact the office so that an interpreter could be found from another source.

In Wales, Welsh-speaking interviewers were provided where requested.

If an interview was conducted in translation, the self-completion section could be administered by the interviewer. Where this was done, some questions were skipped because of their sensitive nature.

At the end of the interview, interviewers recorded whether or not the interview was conducted in translation in full or in part, and in which language. The number of interviews conducted in languages other than English is shown in Table 5.9.

Table 5.9 Number of interviews conducted in languages other than English

Language	Main respondent	Partner respondent
	N	N
Welsh	4	1
Urdu	61	52
Punjabi	78	49
Gujarati	11	10
Hindi	5	5
Bengali	53	40
Sylheti	2	1
Cantonese	0	0
Somali	13	5
Tamil	12	8
Turkish	1	1
Kurdish	0	2
Arabic	18	9
Other	18	13
Translated - no information which language	4	4
Total translated	280	200

Cohort members in Wales were offered the option of doing cognitive assessments in Welsh. This included carrying out Sally and Anne, Progress in Maths and Pattern Construction in Welsh and using the Our Adventures assessment instead of the Word Reading. Table 5.10 shows the number of assessments conducted in English and Welsh.
.
Other language options were not offered for any of the assessments.

Table 5.10 Number of cognitive assessments conducted in English and Welsh

	Sally and Anne	Word Reading/ Our Adventures	Progress in Maths	Pattern Construction
	N	N	N	N
English	1904	1772	1855	1890
Welsh	54	126	82	49

Cohort members in Wales were also offered the option of completing the Welsh language version of the child self-completion questionnaire. Out of the 1863 child self-completion questionnaires completed in Wales (see Table 6.16), 102 used the Welsh language questionnaire.

5.16 Thank-you card

All families that took part in the study were sent a thank-you card, unless they had requested they not be contacted again. The thank-you cards were designed by a professional graphic designer. A separate Welsh thank-you card was also produced. Copies of the thank-you cards can be found in the appendix. The information written on the back of the card was translated into the languages mentioned previously, and the language slips were used for those respondents for whom the interview had been translated.

Thank-you cards were not sent out until all of the contact information was cleaned and ready to be returned to CLS. The first cards were therefore sent out on 31 July 2008, almost six months after the first interviews took place, and thank-you cards were sent on a monthly basis after that, with the exception of December, which was postponed to avoid the Christmas mailing period. .

The following table shows the number of thank-you cards sent by month. A contact information file was provided to CLS at the same time as each thank-you card mailing.

Table 5.11 Thank-you mailings by month

Mail out date in each month	No of thank-you cards sent
31 July 2008	7673
28 August 2008	2367
25 September 2008	907
23 October 2008	1020
20 November 2008	884
22 January 2009	448
12 March 2009 (mop-up)	562
Total	13861

5.17 Fieldwork quality control

As mentioned previously, all interviewers were required to attend the briefing and conduct two practice sessions before starting work. During the briefing, interviewers conducted dummy interviews and were encouraged to practice further at home.

The vast majority of NatCen interviewers working on the study were experienced interviewers, and most had worked on previous cohort studies at NatCen. Indeed, about three-quarters had worked on the previous sweep of MCS. Any new interviewers were supervised during their first interview, and if necessary given further assistance with the study. In Northern Ireland all of the interviewers working on the study were experienced interviewers, with most having worked on the previous sweep of MCS.

Interviewers' work was checked when it was returned to the office to ensure that sufficient tracing was done where necessary, that outcome codes were assigned correctly, and that all necessary paperwork, such as consent forms and paper self-completion questionnaires, was returned. If it was felt that an interviewer had not tried hard enough to trace respondents that had moved, then the case was returned to the interviewer for further tracing. See section 5.11 for further details.

It is standard practice at NatCen for interviewers to be supervised in the field twice a year, and for their work to be reviewed on an on-going basis. In addition, standard NatCen checking procedures applied: 10% of cohort families interviewed were re-contacted by telephone or letter, and interviewers were supervised regularly. Interviewers whose performance was below expectation were contacted and offered further briefing and support. NISRA adheres to the same practice, with the exception that their interviewers are supervised in the field once a year.

The interviewer's route through the CAPI questionnaire was programmed so that all relevant questions came on route according to the cohort member's earlier answers. Several checks of values and measurements were also built into the CAPI. The 'hard' checks did not allow entries outside a given range, and the 'soft' checks asked the interviewer to confirm what he or she had entered. Soft checks were usually triggered where values were implausible but not impossible. These checks were reviewed when the data were edited.

5.18 Fieldwork complaints

NatCen has a standard procedure for dealing with complaints from respondents about interviewers, but this procedure was altered slightly for MCS because of the longitudinal nature of the study, and the fact that respondents could contact the sponsors and researchers directly.

If complaints were made directly to CLS, the complaint was acknowledged with a standard response explaining that the matter would be referred to NatCen for further investigation, and the details were then forwarded to the research team at NatCen, who then forwarded the complaint to Field Services at NatCen who deal with such matters.

If complaints were made directly to the NatCen research team, the complaint was acknowledged with a standard response, again explaining that the matter would be investigated fully, and then forwarded to Field Services.

Field services would contact the interviewer's Area Manager explaining that a complaint had been made, and requesting the interviewer's account of events in writing. At this stage, the nature of the complaint was not explained in detail to the interviewer as this could influence the interviewer's account.

Once the interviewer's version of events was received, Field services responded to the Area Manager with fuller details of the complaint, which the Area Manager relayed to the interviewer, asking if the interviewer wished to add anything to their original account.

If the complaint was justified, then action was taken against the interviewer. The action taken would depend on the type of incident, and the severity of the matter.

5.19 Safety, consent and confidentiality Issues

5.19.1 Safety issues

Interviewers were given guidance on how to work effectively with children. They were instructed to take care to avoid physical contact the children except where necessary for the purpose of taking the child physical measurements. Where contact was necessary, interviewers were instructed to explain beforehand what would be required, and to ensure that the parent was able to see what was happening throughout the process.

Interviewers were also advised to ensure that a parent was present when they were administering the assessments to the children. If the parent left the room momentarily, interviewers were advised to make sure that the door to the room remained open and that the parent remained within earshot, and if they felt uncomfortable being alone with the child to ask the child to go to its parent, or to make an excuse to leave the household e.g. saying they had to pop out to their car.

5.19.2 Consent issues

Any parent or parent-figure was able to give consent for the data collection elements, regardless of their relationship to the child. So for example a step-parent could give consent for the cohort child cognitive assessments and physical measurements, placement of the cohort child self-completion questionnaire, and physical activity monitoring (Consent 2). This is because these consents were an ethical rather than a legal requirement, so it was not necessary for the person signing the form to have legal parental responsibility for the child. However, in general, if natural parents were available, interviewers were advised to seek the consent of that parent.

For the information from other sources and health and education records there were legal restrictions about who could give permission for the release of this information. Interviewers were therefore required to ensure they correctly recorded the reference number on the form of the person who signed the form so that their relationship to the cohort child could be checked by CLS to establish whether or not they were legally able to give permission for the information to be released.

A person whose mother tongue was English but who could not read and understand the advance leaflets or consent forms for themselves because of literacy problems or poor vision would have the leaflets and consent forms read out to them. Large-type copies of the leaflets and consent forms were available on request.

Interviewers were reminded that consent from a parent or guardian did not imply consent from the child, who retained the right to decide whether or not to take part in the survey.

5.19.3 Confidentiality issues

In order to maintain confidentiality, interviewers were instructed to avoid mentioning the title of the study to anyone but the cohort member or their parents. As mentioned in the advance letter, the cohort member's answers were treated in strict confidence in accordance with the Data Protection Act. In addition, interviewers were not permitted to interview anyone known to them personally, such as a friend, a neighbour or a colleague. Such instances were re-assigned to other interviewers.

6 Survey response

6.1 Household response

The issued sample comprised a total of 17031 families. Of these, 120 were not eligible because the cohort child had died or emigrated, or because the child was now in a care home or institution. A further 755 were of uncertain eligibility: see section 6.3 for details.

A total of 13857 families were successfully interviewed, giving a response rate of 81.9% of the eligible sample, and a co-operation rate of 85.8%.

Overall, 8.6% of contacted cohort families refused to participate in the survey. Table 6.1 provides a detailed breakdown of the response to the survey.

Table 6.1 Summary of contact and response

	No.	Survey response rate	Co-operation rate
Total sample	**17031**		
Total ineligible	**120**		
Died	1		
Emigrated	104		
Child in care home/ institution	15		
Total eligible sample	**16911**	**100%**	
Uncertain eligibility	**755**	**4.5%**	
Untraced movers	648	3.8%	
Address not attempted/ ran out of time	107	0.6%	
Total sample traced and eligible	**16156**	**95.5%**	**100%**
Productive	**13857**	**81.9%**	**85.8%**
Fully productive	12159	71.9%	75.3%
Partially productive	1698	10.0%	10.5%
Refusals	**1811**	**10.7%**	**11.2%**
Office refusal	308	1.8%	1.9%
Refusal to interviewer	1503	8.9%	9.3%
Other unproductive	**488**	**2.9%**	**3.0%**
Non-contact	123	0.7%	0.8%
Ill during fieldwork period	44	*	*
Away during fieldwork period	63	*	*
Language difficulties	15	*	*
Data lost on laptop	5	*	*
Other reason	237	1.4	1.5%
Productive - but respondent asked for data deletion	1	*	*

6.1.1 Household response by response at prior sweeps

Table 6.2 shows how the contact and response rates varied by households' participation status in previous sweeps.

As expected, co-operation rates were highest among those families that had taken part in MCS3, at 91.3% for those families that had taken part in all three previous sweeps, 88.3% for those that had taken part in MCS2 and MCS3[10], and 77.3% for those that had taken part in MCS1 and MCS3. Co-operation was lowest among those who had taken part in MCS1 but had not taken part in MCS2 or MCS3, at 30.5%.

At MCS3, there were 195 households that had not been traced. Over half (53.3% of these families were traced during MCS4, and of those families contacted, almost two thirds (63.5%) took part in the survey.

[10] See section 2.1 for details

Table 6.2 Summary of response by response in previous sweeps

	Total	Productive at both MCS1, MCS2 & MCS3	Productive at MCS1 & MCS2, untraced at MCS3	Productive at MCS1 & MCS2, unproductive or ineligible at MCS3	Productive at MCS1, unproductive at MCS2, productive at MCS3	Productive at MCS1, unproductive at MCS2 & MCS3	New MCS2 families: productive at MCS2 & MCS3	New MCS2 families: productive at MCS2, unproductive at MCS3
	N	N	N	N	N	N	N	N
Total sample	17031	13143	195	857	1436	754	563	83
Total ineligible	120	60	13	15	11	10	6	5
Died	1	0	0	0	0	0.	1	0
Emigrated	104	53	11	12	9	10	5	4
Child in care home/ institution	15	7	2	3	2	0	0	1
Uncertain eligibility	755	241	78	93	94	194	27	28
Untraced moved	648	201	70	79	80	174	22	22
Outstanding movers/ ran out of time	107	40	8	14	14	20	5	6
Total sample traced and eligible	16156	12842	104	749	1331	550	530	50
Productive	13857	11721	66	379	1029	168	468	26
Unproductive	2299	1121	38	370	302	382	62	24
	%	%	%	%	%	%	%	%
Sample traced and eligible	94.9	97.7	53.3	87.4	92.7	72.9	94.1	60.2
Survey response rate	81.9	89.6	36.3	45.0	72.2	22.6	84.0	33.3
Co-operation rate	85.8	91.3	63.5	50.6	77.3	30.5	88.3	52.0

6.1.2 Household response by country of issue

There were very slight differences in response and co-operation rates by country. These are shown in Table 6.3.

Table 6.3 Summary of response by country of issue

	Total	England	Wales	Scotland	N Ireland
	N	N	N	N	N
Total sample	**17031**	**10922**	**2389**	**2033**	**1687**
Total ineligible	**120**	**86**	**6**	**20**	**8**
Died	1	1	0	0	0
Emigrated	104	74	5	17	8
Ineligible/ out of survey	15	11	1	3	0
Uncertain ineligibility	**755**	**521**	**76**	**104**	**54**
Untraced movers	648	447	66	86	49
Outstanding movers/ ran out of time	107	74	10	18	5
Total sample traced and eligible	**16156**	**10310**	**2308**	**1908**	**1630**
Productive	**13857**	**8882**	**1978**	**1620**	**1377**
Unproductive	**2299**	**1428**	**330**	**288**	**253**
	%	%	%	%	%
Sample traced and eligible	**94.9**	**94.4**	**96.6**	**93.9**	**96.6**
Survey response rate	**81.9**	**82.0**	**83.0**	**80.5**	**82.0**
Co-operation rate	**85.8**	**86.1**	**85.7**	**84.9**	**84.5**

6.2 Mode of contact

If a family had participated in MCS3 and a telephone number for that family was available, then interviewers were asked to attempt to make first contact with the family by telephone.

Overall, telephone contact was attempted at about two-thirds of addresses (65.7%). Attempted telephone contact was somewhat higher in Scotland (71.9%), and somewhat lower in Wales (57.2%). Appointments were subsequently made by telephone at just under half (47%) of UK addresses. This figure was highest in Scotland, and lowest in Wales, which reflected the proportions of addresses at which telephone contact was attempted.

Table 6.4 Summary of telephone contact by country of issue

	Total	England	Wales	Scotland	N Ireland
	N	N	N	N	N
Total sample	17031	10922	2389	2033	1687
Telephone contact attempted	11186	7279	1367	1462	1078
Telephone contact made	8815	5782	1075	1145	813
Appointments made by telephone	8011	5263	991	1006	751
	%	%	%	%	%
Telephone contact attempted	65.7	66.6	57.2	71.9	63.9
Telephone contact made	51.8	52.9	45.0	56.3	48.2
Appointment made by telephone	47.0	48.2	41.5	49.5	44.5

Table 6.5 shows the proportion of attempted telephone contacts which resulted in actual contact. At almost eight in 10 addresses where contact was attempted by telephone, the interviewers successfully contacted the respondent, that is the interviewer actually spoke to the respondent, and in the majority of cases (90.9%) an appointment for an interview was arranged over the telephone.

Table 6.5 Proportion of attempted telephone contacts where contact was made by telephone

	Total	England	Wales	Scotland	N Ireland
Base: number of addresses at which telephone contact attempted	11186	7279	1367	1462	1078
	%	**%**	**%**	**%**	**%**
Telephone contact made	78.8	79.4	78.6	78.3	75.4
Appointment made by telephone	71.6	72.3	72.5	68.8	69.7
Base: Telephone contact made	%	%	%	%	%
Appointment made by telephone	90.9	91.0	92.2	87.9	92.4

If interviewers were not able to make contact by telephone, or were unable to make an appointment over the telephone, they were required to make personal visits to the address, as described in section 5.8.3.

Overall interviewers averaged three visits per household, which includes any personal visits to make an appointment, and visits to conduct the interview.

6.3 Movers and tracing

Overall, 14.1% of cohort families were identified as movers, that is they no longer lived at the issued address. The highest proportion of families identified as movers was found in England (14.7%) and the lowest in Northern Ireland (10.9%). Details of the steps interviewers took to trace respondents can be found in section 5.9.

Table 6.6 Proportion of sample that no longer lived at issued address

	Total	England	Wales	Scotland	N Ireland
	N	N	N	N	N
Total sample	17031	10922	2389	2033	1687
Non-movers	14637	9316	2079	1739	1503
Movers	2394	1606	310	294	184
	%	%	%	%	%
Non movers	85.9	85.3	87.0	85.5	89.1
Movers	14.1	14.7	13.0	14.5	10.9

Over half (53.6%) of those identified as movers were traced by interviewers, and the overwhelming majority of these cases still lived within the same area. Only 92 families moved out of their original country of issue.

Table 6.7 Movers between countries

Original country of issue	Total who moved to different country	Country moved to			
		England	Wales	Scotland	Northern Ireland
	N	N	N	N	N
England	33	-	21	11	1
Wales	40	38	-	2	0
Scotland	13	12	1	-	0
Northern Ireland	6	3	1	2	-
TOTAL	92	53	23	15	1

When interviewers were not able to trace the respondents, the case was sent to CLS for tracing. CLS successfully traced just over 15% of movers.

In total, 748 families' eligibility was uncertain at the end of fieldwork:

- 652 of these had been identified as movers by interviewers during fieldwork, but neither the interviewers, nor the tracing team at CLS, were able to establish a new address for the families.

- 90 families were identified as movers by interviewers, but there was not enough time for CLS to complete the tracing procedures for these families.

- 6 families were identified as movers by interviewers, and returned to CLS for tracing. Updated details for these families were found, but the details came back to NatCen too late for the cases to be reissued to interviewers, so the eligibility of these cases remained uncertain at the end of fieldwork.

Table 6.8 shows a breakdown of movers, and the tracing outcomes, by country of issue.

Table 6.8 Tracing outcomes for movers

	Total	England	Wales	Scotland	N Ireland
	N	N	N	N	N
Total movers	**2394**	**1606**	**310**	**294**	**184**
Movers who were traced	**1646**	**1081**	**236**	**194**	**135**
Traced by interviewer	1283	803	206	148	126
Address within own area	*1153*	*717*	*193*	*127*	*116*
Address outside own area	*127*	*86*	*13*	*21*	*7*
Address overseas/ emigrated	*3*	*0*	*0*	*0*	*3*
Traced by CLS	363	278	30	46	9
New address / information	*223*	*172*	*23*	*25*	*3*
Emigrated	*101*	*74*	*5*	*17*	*5*
Refusal/ ineligible	*39*	*32*	*2*	*4*	*1*
Untraced movers	**652**	**456**	**65**	**87**	**44**
Outstanding movers	**96**	**69**	**9**	**13**	**5**
Movers identified by NatCen/ NISRA - no time to complete	90	65	9	11	5
Movers returned to NatCen/ NISRA by CLS - no time to complete	6	4	0	2	0
	%	%	%	%	%
Traced by interviewers	53.6	50.0	66.5	50.3	68.5
Traced by CLS	15.2	17.3	9.7	15.6	4.9
Untraced	27.2	28.4	21.0	29.6	23.9
Outstanding movers	4.0	4.3	2.9	4.4	2.7

6.4 Response to individual survey elements

This section is based on the 13857 households that took part in MCS4.

As described in section 3, the interview consisted of several elements. For a household to be classified as fully productive, all required elements of the study had to be either fully or partially complete. For a household to be classified as partially complete, some of the elements of the study were unproductive.

6.4.1 Main respondent interview

Main respondent interviews were completed with 13797 respondents, and the majority of interviews were fully productive.

Table 6.9 Response - main respondent interview

	Total	England	Wales	Scotland	N Ireland
	N	N	N	N	N
Base: total productive households	13857	8882	1978	1620	1377
Productive	13797	8853	1971	1609	1364
Fully productive	*13491*	*8596*	*1960*	*1591*	*1344*
Partially productive	*306*	*257*	*11*	*18*	*20*
Unproductive	60	29	7	11	13
	%	%	%	%	%
Productive	99.6	99.7	99.6	99.3	99.1
Fully productive	97.4	96.8	99.1	98.2	97.6
Partially productive	2.2	2.9	0.6	1.1	1.5
Unproductive	0.4	0.3	0.4	0.7	0.9

The mean and median times for the main respondent interview, including the completion of the household questionnaire were 72.0 and 67.4 minutes respectively.

Table 6.10 shows the individual module timings.

Table 6.10 Module timings - main respondent interview

Interview block	Mean time (decimal minutes)	Median time (decimal minutes)
HD - Household grid	5.5	4.2
Consents - some (after household grid)	6.5	5.4
FC - Parental Situation	1.4	0.7
ES - Early Education and Schooling	9.4	8.7
AB - Child and Family Activities	6.7	6.3
PA - Parenting Activities	1.5	1.4
CH - Child Health	6.5	5.9
PH - Parent's Health	2.3	2.1
EIa - Employment	3.7	3.6
EIb - Income	5.1	4.7
EIc - Education / Job History	1.5	1.1
HA - Housing and Local Area	2.2	2.0
OM - Other Matters	1.7	1.5
SC - Self Completion	13.8	12.4
Z - Check sample information (and remaining consents)	4.2	2.9
Main respondent total	72.0	67.4

6.4.2 Partner interview

Overall, just under eight in ten households (78.9%) contained an eligible partner respondent, and interviews were conducted with partners in 83.9% of these. A further 2.3% of eligible households completed the partner interview by proxy.

Details of response to the partner interview by country can be found in Table 6.11.

Table 6.11 Response - partner interview

	Total	England	Wales	Scotland	N Ireland
	N	N	N	N	N
Base: total productive households	13857	8882	1978	1620	1377
Ineligible - no partner in household	2917	1858	462	305	292
Eligible households	10940	7024	1516	1315	1085
Productive	9180	5933	1314	1091	842
Fully productive	*8817*	*5614*	*1300*	*1077*	*826*
Partially productive	*363*	*319*	*14*	*14*	*16*
Proxy interviews	249	175	27	27	20
Unproductive	1511	916	175	197	223
	%	%	%	%	%
Eligible households	78.9	79.1	76.6	81.2	78.8
Productive[11]	83.9	84.5	86.7	83.0	77.6
Fully productive	80.6	79.9	85.8	81.9	76.1
Partially productive	3.3	4.5	0.9	1.1	1.5
Proxy interviews	2.3	2.5	1.8	2.1	1.8
Unproductive	13.8	13.0	11.5	15.0	20.6

The mean and median times for the partner interview were 21.9 and 20.6 minutes respectively.

Table 6.12 shows the individual module timings. The mean and median times for the proxy partner interview were 4.1 and 3.7 minutes respectively.

[11] As a proportion of eligible households

Table 6.12 Module timings - partner interview

Interview block	Mean time (decimal minutes)	Median time (decimal minutes)
FC - Parental Situation	0.7	0.5
ES - Early Education and Schooling	1.2	1.0
PA - Parenting Activities	2.0	1.9
PH - Parent's Health	2.1	1.9
EIa - Employment	4.6	4.4
EIb - Income	1.5	1.3
EIc - Education / Job History	0.8	0.4
OM - Other Matters	0.6	0.5
SC - Self Completion	7.5	6.8
Z - Check sample information	0.9	0.5
Partner respondent total	21.9	20.6
Proxy partner interview	4.1	3.7

6.4.3 Child cognitive assessments and physical measurements

The 13857 productive households contained a total of 14043 cohort children, including several pairs of twins and triplets. The vast majority of cohort children took part in the cognitive assessments (98.5%) and physical measurements (98.8%). Table 6.13 shows the breakdown of response for the cognitive assessments, and Table 6.14 for the physical measurements.

Table 6.13 Response - child cognitive assessments

	Total	England	Wales	Scotland	N Ireland
	N	N	N	N	N
Base: total cohort children in productive households	14043	8998	1999	1646	1400
Productive	13835	8883	1960	1620	1372
Fully productive	*13554*	*8750*	*1880*	*1583*	*1341*
Partially productive	*281*	*133*	*80*	*37*	*31*
Unproductive	208	115	39	26	28
	%	%	%	%	%
Productive	98.5	98.7	98.0	98.4	98.0
Fully productive	*96.5*	*97.2*	*94.0*	*96.2*	*95.8*
Partially productive	*2.0*	*1.5*	*4.0*	*2.2*	*2.2*
Unproductive	1.5	1.3	2.0	1.6	2.0

Table 6.14 Response - child physical measurements

	Total	England	Wales	Scotland	N Ireland
	N	N	N	N	N
Base: total cohort children in productive households	14043	8998	1999	1646	1400
Productive	13873	8906	1973	1616	1378
Fully productive	*13689*	*8809*	*1954*	*1563*	*1363*
Partially productive	*184*	*97*	*19*	*53*	*15*
Unproductive	170	92	26	30	22
	%	%	%	%	%
Productive	98.8	99.0	98.7	98.2	98.4
Fully productive	*97.5*	*97.9*	*97.7*	*95.0*	*97.4*
Partially productive	*1.3*	*1.1*	*1.0*	*3.2*	*1.1*
Unproductive	1.2	1.0	1.3	1.8	1.6

The mean and median times for the cognitive assessments were 26.6 and 25.0 minutes respectively, and for the physical measurements 11.4 and 10.8 minutes.

6.4.4 Physical activity monitoring

Over nine in ten parents (91.5%) gave permission for their child to be included in the physical activity monitoring study.

Table 6.15 Consent rates for physical activity monitoring

	Total	England	Wales	Scotland	N Ireland
	N	N	N	N	N
Base: total cohort children in productive households	14043	8998	1999	1646	1400
Consent given	12854	8271	1847	1491	1245
	%	%	%	%	%
Consent given	91.5	91.9	92.4	90.6	88.9

6.4.5 Cohort child self-completion questionnaire

The majority of cohort children completed the cohort child self-completion questionnaire, which had a response rate of 94.3%.

Table 6.16 Consent rates for cohort child-self completion questionnaire

	Total	England	Wales	Scotland	N Ireland
	N	N	N	N	N
Base: total cohort children in productive households	14043	8998	1999	1646	1400
Productive	13244	8496	1863	1537	1348
Fully productive	*12691*	*8136*	*1783*	*1480*	*1292*
Partially productive	*553*	*360*	*80*	*57*	*56*
Unproductive	799	502	136	109	52
	%	%	%	%	%
Productive	94.3	94.4	93.2	93.4	96.3
Fully productive	*90.4*	*90.4*	*89.2*	*89.9*	*92.3*
Partially productive	*3.9*	*4.0*	*4.0*	*3.5*	*4.0*
Unproductive	5.7	5.6	6.8	6.6	3.7

6.4.6 Consent rates for data linkage

Overall, the majority of respondents gave permission for information from routine records to be accessed. The vast majority of parents gave consent for their child's health and education records to be accessed, with 92.9% giving permission to access the cohort children's health records and 93.8% the cohort children's education records. The proportion of parents giving consent for the cohort children's eligible siblings' routine records to be accessed was slightly lower, at 89.2% for both health and economic records.

Table 6.17 Consent rates for data linkage - cohort children

	Total	England	Wales	Scotland	N Ireland
	N	N	N	N	N
Base: total cohort children in productive households	14043	8998	1999	1646	1400
Health records	13047	8359	1885	1509	1294
Education records	13170	8445	1902	1534	1289
	%	%	%	%	%
Health records	92.9	92.9	94.3	91.7	92.4
Education records	93.8	93.9	95.1	93.2	92.1

Table 6.18 Consent rates for data linkage - eligible siblings

	Total	England	Wales	Scotland	N Ireland
	N	N	N	N	N
Base: total eligible siblings in productive households	17356	11372	2289	1785	1910
Health records	15487	10173	2056	1596	1662
Education records	15482	10160	2040	1610	1672
	%	%	%	%	%
Health records	89.2	89.5	89.8	89.4	87.0
Education records	89.2	89.3	89.1	90.2	87.5

Of the main respondents, 86.8% gave permission for their health records to be accessed, and 80.2% gave permission for their routine economic records to be accessed. Of those who gave permission to access their routine economic records, 71.8 also provided their National Insurance number. Slightly smaller proportions of partners gave consent for their routine records to be accessed: 83.9% gave permission to access their health records, and 77.3% their economic records, with 69.3% of these also providing their National Insurance number.

Table 6.19 Consent rates for data linkage - main respondents

	Total	England	Wales	Scotland	N Ireland
	N	N	N	N	N
Base: total main respondent interviews	13797	8853	1971	1609	1364
Health records	11977	7653	1720	1426	1178
Economic records	11063	7115	1581	1326	1041
NI number given	9906	6426	1457	1256	767
	%	%	%	%	%
Health records	86.8	86.4	87.3	88.6	86.4
Economic records	80.2	80.4	80.2	82.4	76.3
NI number given	71.8	72.6	73.9	78.1	56.2
Base: consent given to access economic records	%	%	%	%	%
NI number given	89.5	90.3	92.2	94.7	73.7

Table 6.20 Consent rates for data linkage - partners

	Total	England	Wales	Scotland	N Ireland
	N	N	N	N	N
Base: total partner interviews (inc proxies)	9429	6108	1341	1118	862
Health records	7908	5091	1106	962	749
Economic records	7290	4718	1016	900	656
NI number given	6538	4306	924	851	457
	%	%	%	%	%
Health records	83.9	83.3	82.5	86.0	86.9
Economic records	77.3	77.2	75.8	80.5	76.1
NI number given	69.3	70.5	68.9	76.1	53.0
Base: consent given to access economic records	%	%	%	%	%
NI number given	89.7	91.3	90.9	94.6	69.7

7 Coding, editing and data preparation

7.1 Editing CAPI data

In the Millennium Cohort Study, as in most CAPI surveys, most of the editing of data was carried out by interviewers in the field. The Blaise program ensured that the correct routing was followed through the interview questionnaire and applied range and consistency error checks. This enabled interviewers to clarify and query data discrepancies directly with the respondent during the interview.

Consistency errors comprise 'soft' and 'hard' checks. Hard checks must be resolved by the interviewer at the time of the interview, but soft checks can be suppressed by the interviewer and investigated at the coding and edit stage.

However, some data checking is too complex to be carried out in the field. In addition it is not always possible to include all possible consistency checks in the program. As a result, a separate in-house editing process was required.

For each case a paper fact sheet was generated for the editor to use. The factsheets included the cohort member's details, and the details of other people in the household, and the relationships between other members of the household and the cohort child. In addition, all responses that had triggered a soft check were listed, along with any notes made by interviewers, and all verbatim responses to open-ended and semi-closed questions for coding (see section 7.3 for details of these).

As part of the CAPI edit program, suspected errors in the data were triggered for the editor to action as they moved through the questionnaire, and there were some additional checks which related to inconsistencies in the data.

Editors only made changes to the data according to the rules written in the codebook provided. If a situation was not covered by the code-book, then editors consulted with their supervisors, who in turn consulted NatCen researchers.

All actions taken by editors, and any outstanding queries, were recorded onto the factsheets.

7.2 Quality control

Initially, all factsheets were reviewed by NatCen researchers, to ensure that the editing and coding rules were being applied consistently. If any inconsistencies were found, feedback, and additional guidance, was given to the editors, and, where required, the codebook was updated with additional information that helped to ensure consistency and accuracy. Once researchers were satisfied that the coding and editing was being done consistently, spot checks only were performed on a sample of the factsheets.

7.3 Coding open-ended and 'other-specify' questions

In the Millennium Cohort study, as in most CAPI surveys, the majority of answers given by respondents were coded during the interview by the interviewer into pre-specified code frames. Many questions had fully closed code frames, that is the interviewer had to code the respondent's answer to one of the existing categories. However, there were a number

of questions where an option was included in the code frame to allow the interviewer to enter an answer that they were not confident of coding into the pre-specified options or to record an answer which was truly an 'other' answer. In these cases the interviewer simply transcribed the answer given by the respondent. Questions of this type are called 'other-specify' questions. In addition, there were some questions where a code frame was deliberately not included in the CAPI program and interviewers were asked to transcribe all the answers to these questions. This type of question is called an 'open' question.

7.3.1 Other-specify questions

Most of the questions that required coding were 'other-specify' questions. In many cases it was possible for editors to code 'other-specify' answers back into the existing code frame (back coding). However, in some cases back coding is not always possible as new, distinct groups of responses emerge.

Therefore, before the data was passed to the Operations Department at NatCen for editing, the researchers at NatCen reviewed the early data to try to identify where additional codes were needed, and what they should be. All new codes that were identified via this process were incorporated into the code frames.

However, in some cases it was still not possible for responses to be allocated an existing code or any of the additional codes. In these instances, coders assigned a new 'other' code as appropriate. These codes were:

- code 85 - other specific answer
- code 86 - vague/ irrelevant answer
- code 87 - editor cannot deal with this

'Code 85 - other specific answer' was used for most of the responses that could not be coded using the existing/additional codes in the code frames.

'Code 86 - irrelevant response' was only used for responses that did not answer the question.

NatCen researchers reviewed all responses given one of these codes by editors.

7.3.2 Open questions

Open questions require the interviewer to record the respondent's responses verbatim, i.e. it was intentional that a code frame was not provided in the CAPI.

For these questions the researchers reviewed the answers given, and developed entirely new code frames from the responses.

As with the other-specify questions, if interviewers were not able to allocate the responses to a code in the code frame, then a new other code was allocated, as above.

7.3.3 SOC coding, drugs coding, and ICD-10

Some of the questions made use of pre-existing classification schemes: Standard Occupational Classification (SOC2000), drugs codes (taken from the British National Formulary No 48, September 2005) and the International Classification of Diseases, 10th revision (ICD-10).

The drugs coding, in particular, proved to be problematic for coders. In the code frame used, all drugs are coded to six digits. Several drugs have multiple uses, and the assigned code differs according to the use, for example aspirin and betnesol. In addition, some drugs were hard to find, and many answers given by respondents were too vague to be allocated a code using this code frame.

In these circumstances, the editors were allowed to use the following codes:

- code 850000 - other specific answer
- code 860000 - vague/ irrelevant answer
- code 870000 - editor cannot deal with this

7.4 Editing paper questionnaire data

Keying of the cohort child self-completion questionnaires was undertaken by an external agency, and then the data was edited in a similar way to the CAPI data.

Editors needed to resolve contradictions in the data, for example where respondents had not followed the correct routing instructions, or where they had ticked more than one answer where only one response was allowed.

7.5 CAPI problems with the data

The CAPI questionnaire was issued to interviewers once before the start of fieldwork and it was not found necessary to issue any revisions during fieldwork.

Interviewer queries during fieldwork mainly related to protocols over families with unusual circumstances, and there was the occasional problem with incorrect feed-forward data.

During the edit no systematic errors were encountered in the data.

7.6 Survey outputs

Table 7.1 Survey outputs

Output	Date delivered	Notes
CAPI Data		
Final data	7 May 2009	
CAPI Questionnaire Documentation		
Interim	10 July 2009	
Final	2 November 2009	
Cognitive assessments/ physical measurements	2 October 2009	Final - no interim
Contact Information		
Contact Information File - Final	22 May 2009	Includes both productives and unproductives. Note that contact files were delivered approximately each month during fieldwork for thank-you letter mailings, and this file was the accumulation of all those, and superseded them.
Final Response and Survey Process Data		
Final household outcome	21 July 2009	File contains NatCen and CLS serial numbers and household outcome code for full sample of productives and unproductives.
Final household outcome codes	21 July 2009	A description of each household outcome code
Final outcomes for each survey element	21 July 2009	For productive households only.
Interviewer remarks	29 May 2009	
XML & HTML files	28 May 2009	
Survey process data	23 December 2009	
Teacher Survey		
Data (Final delivery)	4 August 2009	
Personal identifiers	4 August 2009	Teacher names and school names

Cohort child paper self-completion & Our Adventures		
Cohort child self-completion - final data file	12 May 2009	
Our Adventures - final data file	12 May 2009	
Consent Form Data		
GB only	9 September 2009	
GB & NI	1 October 2009	
Sibling consents - extra data	1 March 2010	Name and DOB, as keyed for checking purposes