Institute of Education

Millennium Cohort Study: Age 17 Sweep (MCS7)

User guide

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UCL Institute of Education

University College London

20 Bedford Way

London WC1H 0AL

www.cls.ucl.ac.uk

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This document is available in alternative formats. Please contact the Centre for Longitudinal Studies:

tel: +44 (0)20 7612 6875

email: clsfeedback@uck.ac.uk

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About the Millennium Cohort Study

The Millennium Cohort Study (MCS) is a longitudinal birth cohort study, following a nationally representative sample of approximately 19,000 people born in the UK at the turn of the century.

Through the study, we have captured rich information about the different aspects of cohort members' lives, from birth to childhood and adolescence, and we are continuing to keep up with them now they are adults.

As a multidisciplinary study, MCS is used by researchers working in a wide range of fields. Findings from MCS have influenced policy at the highest level, and today the study remains a vital source of evidence on the major issues affecting young people's lives.

Related documents

"Millennium Cohort Study Seventh Sweep (MCS7) Technical Report. Prepared for the Centre for Longitudinal Studies, UCL Institute for Education" - Ipsos Mori

MCS7 Questionnaires

MCS Longitudinal Data Dictionary (spreadsheet)

"MCS7 Derived Variables User Guide" - Sunil Veeravalli

"MCS Data Handling Guide" - Vilma Agalioti-Sgompou & Jon Johnson

Important note about figures in this document

Figures that are presented in this document vary compared to the totals of the datasets. This happens due to various reasons: resolution of duplicate cases or whether the data are available under End User Licence (for example, the cases that include triplets are available under Secure Access). The DATA_AVAILABILITY variable of the mcs_longitudinal_family_file marks which cases have available data under End User Licence and helps users to estimate the final sample size that can be used for research purposes under End User Licence.

The data under Secure Access Licence can be requested by applying for Data Access : https://cls.ucl.ac.uk/data-access-training/data-enhancements/ or by contacting clsfeedback@ucl.ac.uk . The mcs_longitudinal_family_file is available here: https://beta.ukdataservice.ac.uk/datacatalogue/studies/study?id=8172 .

1. Background

1.1 The Millennium Cohort Study

The Millennium Cohort Study (MCS) is a multi-disciplinary research project following the lives of an original 18,818 children born in the UK in 2000-02. The sample was augmented in early childhood with a further 701 children born in the same period who had been missed previously, taking the total sample to 19,519 (note, there is no sample refreshment by immigrants). At the time of writing, it is the most recent of Britain's world-renowned national longitudinal birth cohort studies. The study has been tracking the Millennium children through their childhood years and plans to follow them through adulthood. It collects information directly from the cohort members, their resident parents and, in two of its sweeps, older siblings. The MCS covers such diverse topics as parenting; childcare; schooling and education; daily activities and behaviour; cognitive development; child and parent mental and physical health; employment and education; income and poverty; housing, neighbourhood and residential mobility; and social capital, ethnicity and identity.

The seven surveys of MCS cohort members carried out so far have built up a uniquely detailed portrait of the children of the new century. The seventh, Age 17, survey, which is the subject of this User Guide, marked an important transitional time in the cohort members' lives, where educational and occupational paths can diverge significantly. It is also an important age in data collection terms since it may be the last sweep at which parents are interviewed and it is an age when direct engagement with the cohort members themselves rather than their families is crucial to the long term viability of the study. To reflect this, we conducted face to face interviews with the cohort members for the first time. Cohort members were also asked to do a range of other activities including filling in a self-completion questionnaire on the interviewer's tablet, completing a cognitive assessment (number activity) and having their height weight and body fat measurements taken. In addition, they were asked to complete a short online questionnaire after the visit. Parental involvement at MCS7 was as follows; resident parents were asked to complete a household interview and a short online questionnaire, and one parent was asked to complete a Strengths and Difficulties Questionnaire (SDQ) about the

cohort member. Cohort members who were either unable or unwilling to complete the main survey were asked to complete a short follow up questionnaire online after the fieldwork finished. This contained some key questions and was designed to boost response and maintain engagement.

To date there have been seven MCS surveys:

Sweep	Fieldwork / data collection starting year	Cohort Members' average age
MCS 1	between June 2001 and January 2003	9 months old
MCS 2	between September 2003 and April 2005	3 years old
MCS 3	between February 2006 and January 2007	5 years old
MCS 4	between late January 2008 and February 2009	7 years old
MCS 5	between January 2012 and February 2013	11 years old
MCS 6	between January 2015 and April 2016	14 years old
MCS 7	between January 2018 and May 2019	17 years old

Funding of MCS7

The seventh sweep of the Millennium Cohort Study was core-funded by the Economic and Social Research Council (ESRC), and co-funded by the following consortium of government departments: Department for Education, Department for the Economy NI (previously known as the Department for Employment & Learning NI), Department for Transport, Department of Education NI , Department of Health and Social Care, Department of Work & Pensions, Department for Business, Energy and Industrial Strategy, Home Office, Ministry of Justice, and the Welsh Government.

1.2 Overview of MCS7

The seventh sweep of the Millennium Cohort Study was carried out when the cohort members were 17 years old. As 17 is a key transitional age, the sweep purposefully focussed on engaging with the cohort members themselves (rather than their parents) It included:

- A household interview (conducted with a resident parent if they were willing and able to do so, or with the cohort member themselves if no such parent was available)
- interview CAPI (computer-assisted personal interview) with the cohort member, including a section asking for permission to carry out various administrative data linkages
- a self-completion (CASI) interview with the cohort members conducted in the household
- cognitive assessment (number activity) for cohort member
- completion of a paper Strengths and Difficulties questionnaire (SDQ) by one parent
- Completion of the SDQ by the cohort member for the first time (done in CASI)
- physical measurements of the cohort member
- an online questionnaire for each of the parents
- an online questionnaire for the young person (completed after the main interview).

2. The sample

The original MCS sample covered children from all four countries of the UK who were eligible for child benefit[1] and were 9 months old at the time of the first sweep. It used a stratified, clustered random sample design and oversampled from areas that were disadvantaged or had high ethnic minority populations. This was to facilitate robust study of the effects of disadvantage on children, as well as analysis of different ethnic groups.

2.1 Birth dates

Cohort members were sampled from a population born across a 16-month period. This not only allowed for season of birth to be taken into account in analysis, but also had the practical advantage of allowing for a longer, less intense and more manageable fieldwork period.

- In **England and Wales** – the sample was drawn from the population of children born between **1 September 2000 and 31 August 2001.**
- In **Scotland and Northern Ireland** – the sample was drawn from the population of children born between **24 November 2000 and 11 January 2002.**

2.2 Stratification

In England and Wales, the population was divided into three strata:

- **The ethnic minority stratum** was comprised of children living in wards where the proportion of ethnic minorities in that ward in the 1991 Census was at least 30 per cent.
- **The disadvantaged stratum** was comprised of children living in wards, other than those falling into the ethnic minority stratum, which fell into the poorest

[1] Child Benefit claims covered virtually all of the child population except those ineligible due to recent or temporary immigration status.

25 per cent of wards according to the Child Poverty Index for England and Wales.

- **The advantaged stratum c**omprised children living in wards other than the two described above.

In Wales, Scotland and Northern Ireland there were only two strata (because of the low percentages of ethnic minority groups, at around 1 per cent of the population):

- **The disadvantaged stratum** was composed of children living in wards (known as 'Electoral Divisions' in Wales) that fell into the poorest 25 per cent of wards according to the Child Poverty Index.
- **The advantaged stratum** was made up of children living in other wards in these countries.

It is important to bear in mind that both the ethnic minority indicator and the Child Poverty Index are area-level measures. That means the design will be useful for identifying those who are disadvantaged or from an ethnic minority background – for those who live in areas with others from a similar background – but will be less well placed to identify those who are likely to be part of these groups but do not live in areas with similar people. Indeed, focusing on families in poverty, Plewis (2007) found that in England in 1998, about 37 per cent of disadvantaged families with children under 16 were living in advantaged wards; 54 per cent were in disadvantaged wards; and 10 per cent were in ethnic minority wards.[2]

2.3 Clustering

The sample was clustered by characteristics of electoral wards. Clustering is efficient, and it is more cost-effective to draw a cluster sample of specific areas than to sample the whole UK. It also helps in keeping fieldwork costs down as it enables interviewer workloads to be concentrated, thereby reducing travel costs. Moreover, from an analysis perspective, clustering brings the neighbourhood context into the picture, as having multiple respondents in the same areas allows researchers to better understand area effects. Another advantage of the cluster design is that data from the census and other sources can be matched at the electoral ward level.

[2] Percentages do not add to 100% due to rounding.

However, a drawback of cluster sampling is that estimates are less precise than those obtained from a simple random sample.

2.4 Drawing the sample

The sample was randomly selected within each of three strata in each country, producing a disproportionately stratified cluster sample. This means that the sample is not self-weighting, and so weighted estimates of means, variance etc. are required (Plewis 2007).

Once the sample wards were selected, a list of all children turning 9 months old during the 16-month survey window and living in those wards was generated from the Child Benefit (CB) register provided by the then Department for Social Security (DSS), now the Department for Work and Pensions (DWP). At that time, CB was a universal provision, payable (usually to the mother) from birth. The DWP wrote to all eligible families asking the CB recipient to opt out if they did not want to be included in the survey. An opt-out procedure tends to be more inclusive of marginal and low literacy respondents than an opt-in procedure, and also results in higher response rates. The DWP withdrew sensitive cases from the issued sample. These included families where children had died or had been taken into local authority care by that point, or where there was an investigation into benefit fraud within the family. In addition, if families had already taken part in the DWP's Families and Children Survey (FACS), they were excluded from the sample.[3]

Because the CB records did not include all families who had moved into the sample wards as the child approached 9 months, an additional sample was drawn using health visitors to find eligible families who had moved into the selected areas and who had eligible children. Fifty-six families were found in this way.

2.5 The original sample size

The MCS1 survey reached 18,552 families which, after allowing for 256 sets of twins and 10 sets of triplets, amounted to 18,818 cohort children. Six families have two singletons in the sample. The table below shows how these respondents are

[3] This affected only 40 cases.

distributed across the four countries of the UK. Further details by stratum appear in the Technical Report on Sampling (4th edition) (Plewis 2007).

	Number of sample 'wards'*	Target sample as boosted	Achieved responses**	
			Children	Families
England	200	13,146	11,695	11,533
Wales	73	3,000	2,798	2,760
Scotland	62	2,500	2,370	2,336
N. Ireland	63	2,000	1,955	1,923
Total UK	398	20,646	18,818	18,552

*Counting amalgamations in 'superwards' as a single unit

**All productive contacts

Please see the **"User Guide (Surveys1-5)" 9th Edition August 2020** for more information.

2.6 MCS sample Sweeps 2 to 6

Note: Exact numbers may vary between the datasets and the description of this section due to resolution of a few cases. Please use the mcs_longidutinal_family_file for the exact productive number of families per sweep. The mcs_longidutinal_family_file is available here http://doi.org/10.5255/UKDA-SN-8172-2

- **MCS2** – The sample issued for MCS2 consisted of productive families at MCS1 and new families that, although eligible, had not participated in MCS1. The total issued sample was 19,870; 18,481 were productive families at MCS1 and 1,389 were new families.

- **MCS3** – The sample issued for MCS3 comprised all those who had responded to the survey at least once, i.e., to MCS1 (18,522) or to MCS2 (including 692 additional cases who had responded to MCS2 as new families). There were 19,244 families potentially eligible for inclusion in the issued sample; however, 718 families were not issued to the field due to ineligibility (death or emigration), permanent refusal or sensitive family situations.
- **MCS4** – The sample for MCS4 was the same as for MCS3 (i.e., those who had responded at least once to MCS1 and MCS2). There were 19,244 families potentially eligible for the survey. However 2,213 cases were not issued to the field due to ineligibility from death or emigration, permanent refusal or sensitive family situations.
- **MCS5** – The sample for MCS5 was the same as for MCS3 and MCS4 (i.e., those who had responded at least once to MCS1 and MCS2). There were 19,244 families potentially eligible for the survey. However, 2,581 were not issued to the field due to ineligibility from death or emigration, permanent refusal or sensitive family situations.
- **MCS6** – The sample for MCS6 was the same as for MCS3, MCS4 and MCS5 (ie those who had responded at least once to MCS1 and MCS2). There were 19, 243 families potentially eligible (one less than the previous waves as one family was identified as having had duplicate records in previous waves). However, 3,828 families were not issued into the field due to ineligibility from death or emigration, permanent refusal or sensitive family situations.

Full details on the samples and responses for each of these sweeps can be found in their respective user guides.

2.7 The MCS 7 sample and response

Potentially eligible families – There were 19,243 families potentially eligible for MCS7.

Not issued families – 4,747 families were not issued into the field (due to death or emigration; permanent refusal; untraceability; sensitive situations).

Issued cases – 14,496 cases were issued into the field.

2.8 MCS7 response

MCS7 overall response is shown in the table below:

Outcome code	Number of families	Percent
Productive	10,625	73.6%
Refusal	2935	20.3%
Other unproductive	341	2.4%
Ineligible	27	0.2%
Untraced	375	2.6%
No contact	140	1.0%
Total issued cases	14443	100%

The numbers on this table may vary to the technical report. This is due to data cleaning and validating that affects slightly total numbers. The definitive number of productive cases is provided through the mcs_longitudinal_family_file http://doi.org/10.5255/UKDA-SN-8172-2

More information on number of cohort members or parents that have participated in sweep 7 is available in the mcs7_hhgrid.

3. Survey development and contents

3.1 Development and piloting of MCS7

- Development work on MCS7 was particularly important as considerably more questionnaire data was being collected from cohort members than at other sweeps and there were new challenges in terms of engaging them. The development work covered the elaboration of survey content, instruments and materials as well as study engagement and branding. Usability testing was also conducted for the young person online questionnaire. The development phase work preceded the pilot and dress rehearsal which tested all aspects of the survey. Details of all the development phases are provided below, further information about this can be found in the MCS7 technical report and related published material.
- **Qualitative pre-testing workshops:** a qualitative workshop was carried out with non-cohort 16-17 year olds in February 2017 in Watford. The purpose was to inform the final survey processes and procedures, communications strategies, interviewer training and developing a strategy for reluctant respondents. Five work stations were set up covering: contact and reminder procedures, data collection modes, cognitive assessments, data linkage and questionnaire design. The participants spent 20 minutes at each table with a moderator and note taker. A table with low cost gifts was also provided and young people were asked to vote for their favourite.
- **Cognitive testing:** selected sections of the young person questionnaires (CASI and CAWI) were cognitively tested in face to face interviews with young people who were not cohort members in February to March 2017 in three locations in England and one in Scotland. Specific objectives were to test question wording to ensure comprehension by 17-year olds, particularly where questions had previously been asked of parents. The focus of the cognitive testing was to understand how young people comprehended the questions, recalled the information being sought, decided how to answer the questions, and to explore how they formatted and (possibly) edited their response, in relation to the answer categories provided. The concept of data

linkage and an introduction to the Age 17 Survey were also explored during this round of the testing.

- **Usability testing of young person online questionnaire:** During April to May 2017, usability testing was conducted to check the functionality of the young person online questionnaire, with a focus on understanding how easy the questionnaire was to complete by 17-year olds. Eleven face to face interviews were complete using 'Mr Tappy' a purpose-built HD camera for a filming participant's interactions with a mobile, laptop or tablet device, allowing observation of access and navigation through the survey. Interviewers could see if there were any difficulties with access, navigation or completion of the survey.
- **Brand testing:** a brand 'refresh' was carried out in spring 2017 following focus group testing, to ensure that the survey materials were relevant, appropriate and appealing to 17-year olds.

Pilot 1: The first pilot survey took place between 13 April and 5 May 2017 in five locations across England, Scotland and Wales using a quota sample to ensure that a representative cross-section of young people and families was included. Two external agencies recruited families with a 16/17 year old. Fifty two families were interviewed. The overall objective of the first pilot was to test all data collection elements in the field, along with fieldwork materials, consent procedures and interviewer training.

Dress rehearsal pilot: The second, dress rehearsal, pilot took place between 4 August and 3 September 2017 in 13 locations across England, Scotland, Wales and Northern Ireland. The Dress Rehearsal contained a mix of longitudinal sample (cases who had participated in the Dress Rehearsal at previous sweeps of the study) and a 'fresh' top up sample, which was included to test survey procedures and protocols with as wide a range of households and interview scenarios as possible. The 'top up' sample was selected to mirror the characteristics of the MCS7 cohort. As with the first pilot, the dress rehearsal aimed to test how the data collection elements performed in the field. In addition to evaluating the materials, consent procedures and training, the dress rehearsal also tested the content and quality of

the sample and feed forward information and sample management procedures and systems.

Further details of the first and dress rehearsal pilots can be found in the technical report.

3.2 Content

The Age 17 Survey contained the following key elements:

- Household interview (which established who the household members were): 5 minutes

Cohort member:

- Interviewer administered questionnaire (CAPI): 20 minutes
- Self-completion questionnaire (CASI): 15 minutes
- Online questionnaire (CAWI): 15 minutes
- Physical measurements (height, weight and body fat): 10 minutes
- Cognitive assessment (one number activity): 10 minutes
- Consent to data linkage: 10 minutes

Parents:

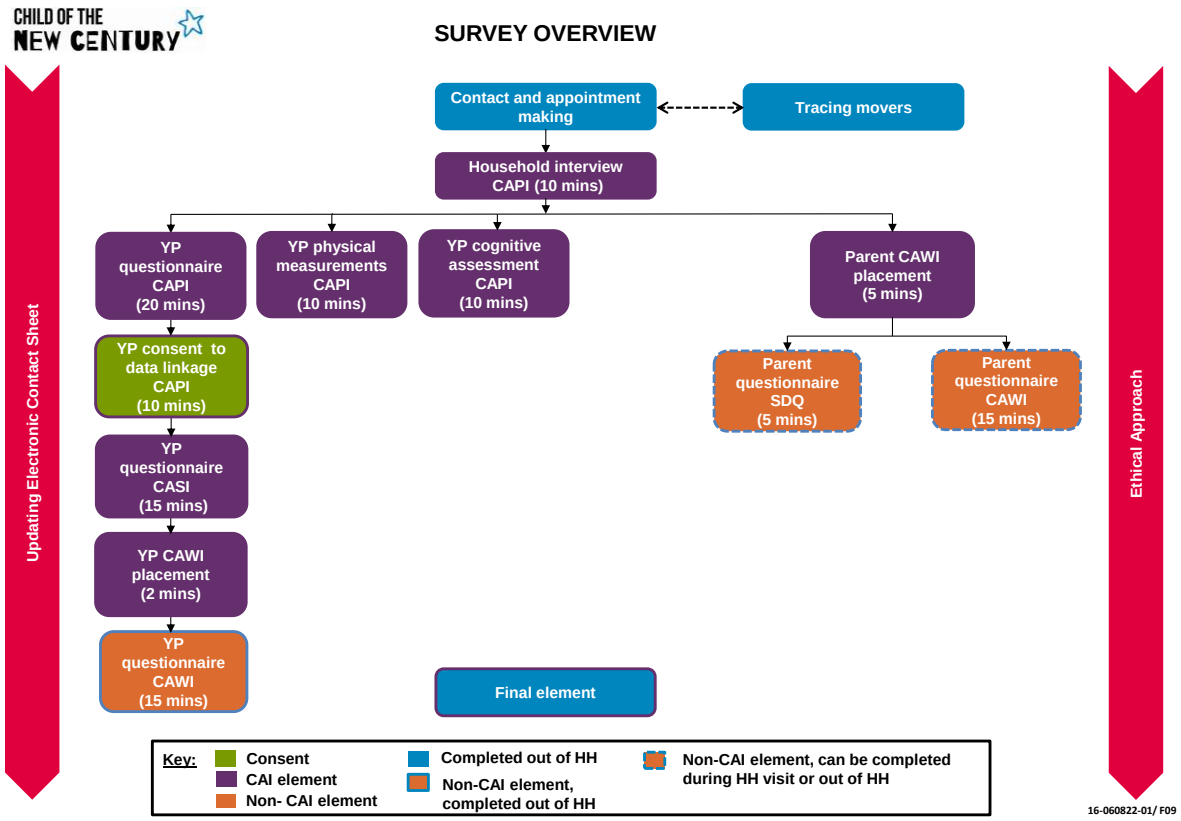
- Parent 1 and parent 2 online questionnaire (CAWI): 15 minutes
- ONE PARENT: Strengths and Difficulties questionnaire (SDQ) on paper: 5 minutes[4].
- Both parents received the same questionnaire, so there is no distinction between Main and Partner respondent unlike in sweeps 1-6. Information on data handling is in Chapter 5.

The diagram below provides an overview of the survey elements. It also indicates average timings for each element, mode of administration, which consents were required (and when), and whether the element was completed during or outside of

[4] Note that the cohort member also completed the SDQ in CASI.

the household visit. This chart was used in the interviewer briefings to help interviewers to understand how each of the different household elements fitted together and to ensure that the visit was conducted as efficiently as possible.

Further details of each of the elements can be found in the respective sections of the User Guide, and also in the Technical Report.



4. Fieldwork

Following a competitive tender process, Ipsos MORI (IM) was appointed to carry out the fieldwork for MCS7. Some interviewing work was subcontracted by IM to NatCen in order to increase the field force available to work on MCS7. The first wave of the mainstage fieldwork began in England and Wales in January 2018. Fieldwork in Scotland and Northern Ireland started in February 2018.

4.1 Briefings

All interviewers attended a two-day briefing before working on the survey. The briefings were run by researchers from Ipsos MORI and CLS, members of the Ipsos MORI internal field team and region managers or region co-ordinators from Ipsos MORI's field force. In total, 311 interviewers (237 from Ipsos MORI and 74 from NatCen) completed both days of the briefing. The size of the briefings varied between regions and attendance ranged between 7 and 21 interviewers per briefing.

4.2 Fieldwork timetable

Fieldwork was conducted between 8 January 2018 and 8 April 2019. The fieldwork timetable for MCS7 was driven by the requirement to interview the family during Year 12 in England/Wales (Year S6 in Scotland and Year 13 in Northern Ireland). As at previous sweeps, the fieldwork was compressed into school years. In England and Wales, the cohort birth dates span a single school year. However, in Scotland and Northern Ireland the birthdates are spread over more than one school year. In England, Wales and Northern Ireland, school year is normally determined by date of birth. In Scotland, school year is determined by parental choice in addition to date of birth. It is worth noting that because of fieldwork overrunning for this sweep of MCS, 1178 families (11 per cent of those interviewed) were interviewed when the cohort members were in a different school year.

In order to manage the fieldwork effectively, it was divided into two phases. Phase 1 (January 2018 – July 2018) included all cohort members who were due to start Year 12 (England and Wales)/S6 (Scotland)/Sixth Form (Northern Ireland) in Autumn 2017, and phase 2 (August 2018- April 2019) included those who would start in

Autumn 2018. A number of interviews did not take place within their allotted phase (e.g. because cohort members were uncontactable at the time or were unwilling to participate at that time). Details of this are contained within the technical report.

4.3 Languages

Families in Wales were provided with all main communication materials in both English and Welsh, and were also able to choose which language they participated in: at the appointment-making stage, families living in Wales were asked if they would like any of the parent or young person elements to be administered in Welsh. If the family requested the interview to be conducted in Welsh, the address was reallocated to a Welsh-speaking interviewer. The cohort member interview (CAPI) could be verbally translated into Welsh (by a Welsh speaking interviewer). If requested, a paper self-completion questionnaire in Welsh was available (instead of the CASI). None of the cohort members who completed the interview in Wales requested the Welsh language format. Cognitive assessment and physical measurement instruction sheets, as well as the SDQ and online (CAWI) questionnaire placements were also available in Welsh. Provision was made for the online questionnaire scripts to be translated by a Welsh-speaking interviewer over the telephone but no parents or cohort members requested this.

To support participation of parents with limited English, other language materials were available upon request (they were not provided or required for cohort members, all of whom were born and grew up in the UK and therefore have good spoken English). Parents' materials were available in the four languages most commonly required at previous sweeps of the study: Bengali (2 requested), Gujarati (none requested), Punjabi (Urdu script) (1 requested) and Urdu (7 requested). Occasionally the main and partner respondents were unable to speak English or were uncomfortable with completing the interview in that language. In such cases, interviewers were instructed to find a 'household interpreter' or other informal interpreter to translate the paper SDQ. Interpreters had to be 16 or over, and not a child of the parent (due to the sensitive nature of the questions). Interviewers indicated that 140 parent SDQs were translated in this way. Similarly, parents who consented to fill in the online questionnaire but whose first language was not English

could ask for a friend or family member to translate the questionnaire for them. 185 parents indicated that they had done this.

5. Dataset Information and Handling

5.1 Data structure and key identifiers

The data of MCS7 is in a long format, namely, there is one row per respondent. The key identifiers are:

- MCSID is a family / household identifier
- GPNUM00 is a person identifier for Parents / Carers or other individuals in the household excluding the Cohort Member
- GCNUM00 is a Cohort Member number that provides the number of the Cohort Member within an MCS family.

The datasets of MCS vary in levels. For example:

- The _family_ level dataset has one row per family,
- The _cm_ level dataset has one row per Cohort Member per family and has two identifiers (MCSID and *CNUM*),
- The _parent_ level dataset has one row per Parent / Carer that responded to the Parent Questionnaire (MCSID and *PNUM*),
- The _parent_cm_ level dataset has one row per Parent per Cohort Member (MCSID, *CNUM* and *PNUM*). This dataset contains information of questions the parents answer about each of the Cohort Members.

Dataset structures

Variables are allocated to datasets according to the type of information they hold. The questionnaire specification (to whom the question is asked and whether it loops over each CM) determines the type of information held. For example, if a question is answered by the Main or Partner respondent about themselves (Parent level dataset) or answered by the Main/Partner about each of the Cohort Members (Parent - CM level dataset). The same frame applies to derived variable datasets.

family level dataset

MCSID	VAR
Family identifier	
Family 1	A
Family 2	B
Family 3	C

_cm_ level dataset

MCSID	Cohort Member	VAR
Family identifier	Index of the Cohort Member (CNUM)	
Family 1	1	A
Family 2	1	B
Family 2	2	C
Family 3	1	D

parent level dataset

MCSID	Main/Partner	VAR
Family identifier	Variables on Main/Partner respondent (ELIG, RESP, PNUM)	
Family 1	Main Interview	A
Family 1	Partner Interview	B
Family 2	Main Interview	C
Family 2	Partner Interview	D
Family 3	Main Interview	E

_parent_cm_ level dataset

MCSID	Main/Partner	Cohort Member	VAR
Family identifier	Variables on Main/Partner respondent (ELIG, RESP, PNUM)	Index of the Cohort Member (CNUM)	
Family 1	Main Interview	1	A
Family 1	Partner Interview	1	B
Family 2	Main Interview	1	C
Family 2	Partner Interview	1	D
Family 2	Main Interview	2	E
Family 2	Partner Interview	2	F
Family 3	Main Interview	1	G

The data can be merged with previous sweeps using MCSID and either GCNUM00 or GPNUM00 or both depending on the dataset. The **MCS Data Handling Guide** provides examples of data handling for the various long level datasets of MCS.

5.2 Dataset conventions

5.2.1 Variable names

Each question name in the instrumentation is made up of four letters. Each variable name in the data is eight characters long – made up of the four-letter question name (e.g., ETHE), two single-letter prefixes and two single-character suffixes, as follows:

[prefix1] [prefix2] [question name / CAPI code] [suffix1] [suffix2]

where:

- **Prefix1**: indicates the sweep; A = MCS1; B = MCS2; C = MCS3; D = MCS4; E = MCS5; F = MCS6; G = MCS7

- **Prefix2**: Identifies the instrument/respondent main and partner respondents with the prefixes m and p respectively and proxy partner interviews with x. The full list of potential variants for prefix 2 is:

Prefix2	Instrument/respondent
P	Parental respondent
H	Household module completed by main or partner respondent
D	Derived
C	Cohort member level data

- **Question name**: the four-letter question name in the questionnaire
- **Suffix1**: identifies the iteration, i.e., where the same question is repeated for different events/individuals:

Suffix1	Iteration
0	no iteration
1	1st iteration
2	2nd iteration
3	3rd iteration
…..	and so on

- **Suffix 2**: identifies a multi-coded variable, ie, where a single question produces more than one answer:

Suffix2	Iteration
0	no multi-code answer
A	1st iteration
B	2nd iteration
C	3rd iteration
…..	and so on

Additional suffixes that may appear in the variable names are:

- The suffix _T stands for total score.
- The suffix _R* stands for recoded variables, described below.

5.2.1.1 Recoded variables

Some of the variables were modified due to having values with low counts, and therefore being potentially disclosive. The values were recoded to reduce this risk, either by capping the outliers or banding into larger groups of values.

All recoded variables in the data (_R*) are available under End User Licence (EUL). The original variables containing the detailed value labels are available under Secure Access. For more information, please refer to section 5.3.9.

The list of variables contained in each MCS dataset and what licence has been used to make them available can be found in the **MCS Longitudinal Data Dictionary**. The original variable containing the complete information, e.g, 'VARNAM', is shared with researchers under Secure Access. The recoded variable name with the suffix, for example, 'VARNAM_R30' is available under EUL.

5.2.2 Variable labels

Variables are labelled in a consistent manner to aid navigation within the datasets. Labels have abbreviated descriptions to indicate sweep, instrument and position in loops, as follows:

Abbreviation	**Description**
S7	Sweep 7 (NB similar abbreviations are used for Sweeps 1-6)
DV	derived variable
COG	cognitive assessment
PHYS	physical measurements, e.g., height and weight
MC	These appear at the end of labels and indicate a multi-coded question
R	These appear at the end of labels and indicate an event loop

Abbreviation	Description
IWR	These indicate the capture of an interviewer response
IWInf	These indicate the capture of interviewer information

5.3 Notes on specific datasets

5.3.1 Household grid and outcome variables

5.3.1.1 Overview of the Household grid

The household grid (mcs7_hhgrid) contains the data of the first part of the interview of Sweep 7 (Household Questionnaire) and it contains variables important in determining data available for Cohort Members (GCNUM00), for the Parents (GPNUM00) and for the Families they belong to (MCSID).

The main sets of variables of the mcs7_hhgrid are:

- Information about the Persons (GPNUM00) or Cohort Members (GCNUM00) of the household, such as age, whether full-time resident in the household, whether in employment, whether present/resident in the household at the time of the interview, etc
- The relationships grid which provides information about the relationship of each of the members of the family to the other members of the family including to the Cohort Member. These are the variables GHCREL00 and GHPREL0*
- The outcomes of the different elements of the interview, such as HHQ, Young Person CAPI, Parental CAWI, etc. (see section on Outcomes of the household grid in the chapter)

5.3.1.2 Household grid keys and rows

The household grid contains the following keys:

- MCSID which is the family / household anonymised identifier
- GPNUM00 which is the Person Number for people who appeared at some point at the household apart from Cohort Members

- GCNUM00 which is the Cohort Member Number within an MCS family.

The mcs7_hhgrid dataset contains family information (relationships grid) for the families that were productive at the face-to-face interview (Core sample). It also includes the feed forward data of 4 families that had their household questionnaire data lost in tablet. The data for these 4 families are filled with the _hhgrid information of the last productive sweep.

Cohort Members that were productive in the online follow-up questionnaire only (Boost sample) did not have a household interview. For this reason, we have added only one row for these cases: one for each of the productive Cohort Members in the Boost.

5.3.1.3 The respondent of the household grid

Sweep 7 was the first sweep where the Cohort Members were allowed to answer the household interview themselves. The person who started the household grid may be different to the person who completed the household grid interview. For this reason, two additional variables are provided: GHHSTR00 and GHPGRD00 that show who started and who completed the household grid.

As in previous sweeps Feed Forward information was used from previous sweeps for dependent interviewing. For example, the parent who was answering the questionnaire was asked to confirm if , for example, Person 3 is still their natural child. The same technique was followed for Sweep 7 when the parent was the respondent.

However, in cases where the Cohort Member was answering the household relationships grid the Feed Forward information was not used and the household grid was answered by the Cohort Member. This means that there may be data variation when the Cohort Member was the respondent between the data of Sweep 7 and previous sweeps.

5.3.1.4 Sample: Core and/or Boost

Sweep 7 contained two samples (for more information please see the MCS7 Technical Report):

- The face-to-face interview (household level) which was the Core sample
- An online follow-up interview for specific Cohort Members (CM level) which was the Boost sample

The two samples are not mutually exclusive. Namely, a few Cohort Members belonged to families that were partially productive in the face-to-face interview (Core sample) and were issued for the online follow-up interview (Boost sample) making them productive in both: Core and Boost sample.

The variable G_OUT_SAMPLE shows the sample in which the Cohort Member belonged to. It focuses on the Cohort Member rather than the household interview and it shows 'sample group' and not necessarily productive outcome. The variables G_OUT_CMBOOST and G_OUT_CORE_FINOUT provide outcomes:

- G_OUT_CMBOOST shows whether the Cohort Member (only, not family) was productive in the online follow-up interview (Boost sample)
- G_OUT_CORE_FINOUT shows whether the Family (entire family) was productive in the face-to-face interview's elements (Core sample)

The important distinction is that the G_OUT_CMBOOST is on the Cohort Member level but the G_OUT_CORE_FINOUT is on the Family / Household level. However, due to variability of response to different elements on the Core sample, the Cohort Member of a productive family of G_OUT_CORE_FINOUT might have not been productive in other Young Person specific interview elements (e.g. CAPI, CASI, CAWI, Cognitive Assessment, Physical Measurements).

To help users identify response for specific interview elements of sweep 7 the household grid includes outcomes for these different interview elements.

5.3.1.5 Outcome variables (G_*)

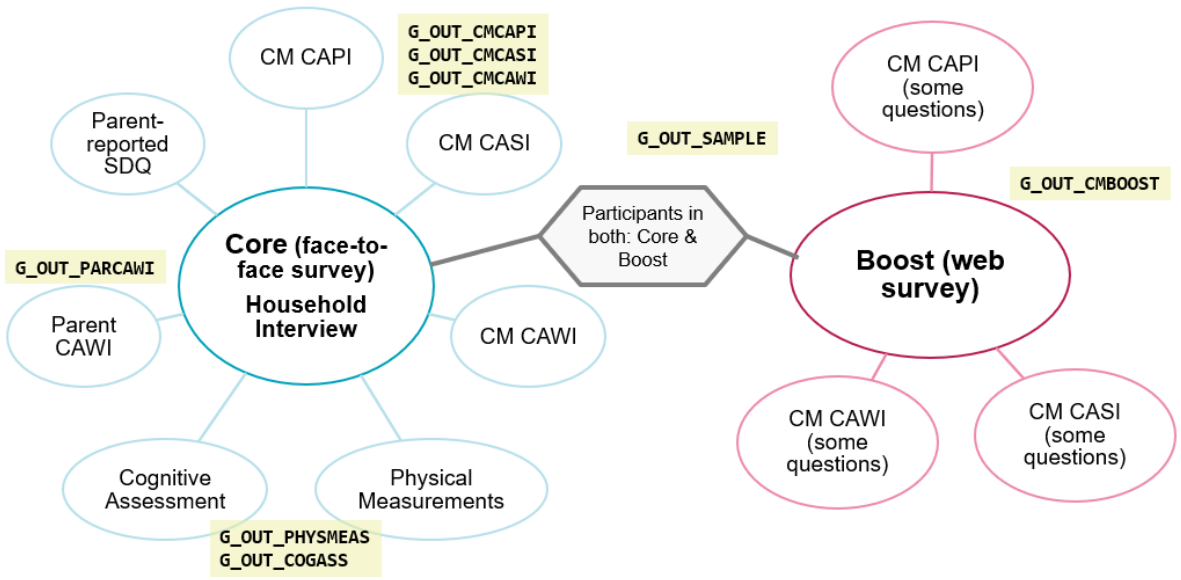
A family is considered productive if the minimum (Household Questionnaire) was completed. However, individual response would vary in each family. For example, the parent might have refused the parent questionnaire while the Cohort Member consented to the Young Person Interview. Another frequent scenario is for the Cohort Members to consent only to some of the interview elements. This means that for productive families and the availability of survey data for those rows varies. For

this reason, we provide users with the outcomes for different interview elements (e.g. CAPI, CASI, CAWI, Cognitive Assessment, etc).

The outcome variables are useful to determine the total sample for a specific research project.

Variable name	**Description**	**Sample**
G_OUT_CMCAPI	Face-to-face interview with the Young Person	Core
G_OUT_CMCASI	Self-completion questionnaire during the interviewer visit using interviewers' electronic device	Core
G_OUT_CMCAWI	Self-completion online questionnaire during or after the interviewer visit	Core
G_OUT_COGASS	Cognitive Assessment for the Cohort Member	Core
G_OUT_PHYSMEAS	Physical Measurements for the Cohort Member	Core
G_OUT_CMBOOST	Online follow-up interview with the Cohort Member	Boost
G_OUT_PARCAWI	Self-completion online questionnaire during or after the interviewer visit	Core

Households / Families that were productive in the face-to-face survey (Core: G_OUT_CORE_FINOUT) have data in all of the datasets depending on the outcome of each element. For example, the Parent / Carer CAWI questionnaire produced the mcs7_parent_interview and the mcs7_parent_cm_interview datasets. If the parent is not productive in the Parent questionnaire, namely G_OUT_PARCAWI is unproductive, then there will not be data in those datasets.



5.3.2 Sample information in the datasets

The variable G_OUT_SAMPLE available in the household grid dataset (mcs7_hhgrid) shows whether the Cohort Member participated in the online follow-up survey (Boost). Cohort Members that belonged to the Boost sample (and were productive in that: G_OUT_CMBOOST) will have a row in the cohort member interview dataset (mcs7_cm_interview). However, there will not appear in any other MCS7 datasets.

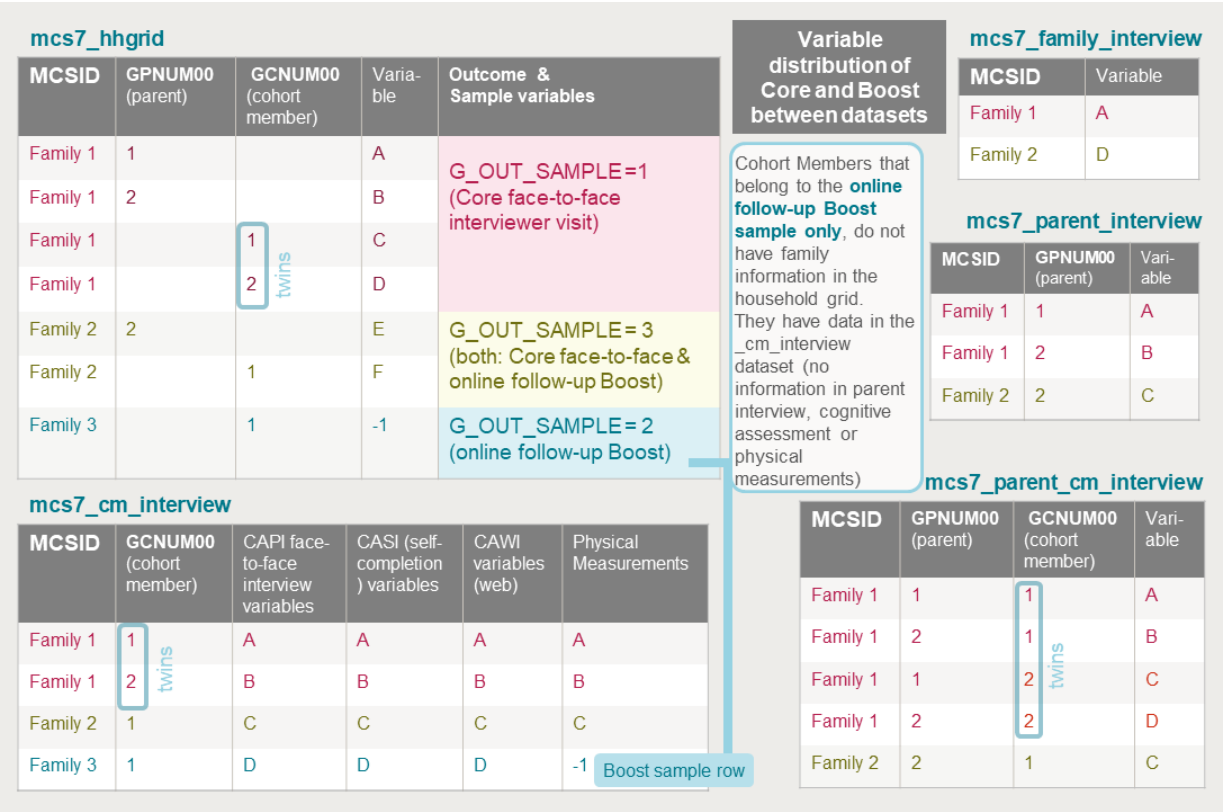
The graph below visualises the three possible categories of G_OUT_SAMPLE:

1) Value = 1: face-to-face Core sample,

2) Value = 2: online follow-up Boost sample and

3) Value = 3: respondents were productive in both the Core and Boost.

The Core sample (1) and the sample that was productive in both the Core and Boost (3) may contain rows in all MCS7 datasets,depending on the response outcome in G_OUT_* of each questionnaire section.



5.3.3 CM interview dataset

The information of the different interview elements with the Cohort Members are provided in the mcs7_cm_interview file. The file is in a long format (one row per Cohort Member) and it contains MCSID and GCNUM00 as row identifiers.

The file combines the different interview elements (CAPI, CASI, CAWI) for both of the samples (Core and Boost sample).

The table below shows how the questionnaire sections are arranged in the dataset. The CAPI, CASI and CAWI data of the Core sample were merged in one file while the information coming from the Boost sample was appended to the file. For Cohort Members that belong to both samples (Core and Boost) the data were combined into one row keeping the information of the variable where it was available. The variable G_OUT_SAMPLE is in the mcs7_hhgrid and in the mcs7_cm_interview to help users identify which rows are expected to have data from the Boost interview and which are not.

SAMPLE	Questionnaire section as it appears in the dataset		
Face-to-face sample (Core sample)	CAPI questionnaire (face-to-face)	CASI questionnaire (self-completion during the interview)	CAWI questionnaire (web-survey *usually* after the face-to-face interview)
Online follow up sample (Boost sample)	Online follow-up interview (web)		

The **MCS_Longitudinal_Data_Dictionary** provides information on which questions were only asked in the face-to-face interview elements (Core sample) or only in the online follow-up interview (Boost sample) or in both.

A few variables have been anonymised before sharing under EUL. For example, school's URN and interviewer's ID in the mcs7_cm_interview. The values provided are 4-character randomised IDs. In the schools' URN the value BAPT corresponds to missing or not provided school, whereas in the interviewer's ID the value HLYN corresponds to missing.

5.3.4 Parent interview dataset

The parent interview is divided in the questions that are about:

- the parents themselves (mcs7_parent_interview : one row per parent)
- the parents providing information about the Cohort Member (mcs7_parent_cm_interview: 1 row per parent per Cohort Member)

Information on how to handle files with _parent_ and _parent_cm_ structure is provided at the **MCS Data Handling Guide**.

A new development of Sweep 7 compared to previous sweeps is the lack of distinction of the parents / carers of the Cohort Members between Main and Partner

respondent. Both of the parents received the same questionnaire and answered the same questions. In previous sweeps the Main respondent would answer most of the questions about the household and the Cohort Member. However, both parents / carers (in 2-parent households) received the same CAWI (PARCAWI) questionnaire with the exception of the paper parent-reported SDQ that was answered only by one parent.

The parent datasets contain the MCSID and GPNUM00 which is the person number from the household grid. The mcs7_hhgrid dataset contains GELIG00 which shows the parent's eligibility for Main or Partner interview.

mcs7_hhgrid

MCSID	GPNUM00 (Parent)	GCNUM00 Cohort Member)	ELIG	G_OUT_PAR CAWI
Family 1	1		Partner	Productive
Family 1	2		Main	Unproductive
Family 1		1		
Family 2	2		Main	Productive
Family 2		1		
Family 3		1		
Family 4	1		Main	Unproductive
Family 4	2		Partner	Productive

mcs7_parent_interview

MCSID	GPNUM00 (parent)	Vari-able
Family 1	1	A
Family 2	2	C
Family 4	2	D

The picture demonstrates that ELIG is not related to productive parent interview in this sweep. For example, two Main parent/carer respondents have the status of 'Main' in the ELIG variable. These cases are marked as 'Unproductive' in G_OUT_PARCAWI and they do not have a row in the mcs7_parent_interview dataset. In these cases information about the parent(s) and the family can be drawn from the Partner respondent/carer. If ELIG has been used for merging with other sweeps, one can use an AGGREGATE/COUNT function to calculate information from one or both parent(s)/care(s) to the family level (see **MCS Data Handling Guide**).

The variable G_OUT_PARQUEST in the mcs7_parent_cm_interview flags what data is available for that parent respondent. For example, a parent may have answered to the PARCAWI or filled in the paper version of the Parent-SDQ or both.

The mcs7_parent_cm_interview contains GPNUM00 and GCNUM00. The _parent_cm_ structure dataset contains one row per parent per child. It contains the information from the parent interview; each of the parent(s)/carer(s) provide information about the Cohort Member. The GPNUM00 is helpful if merged with the

household grid to identify the relationship of the parent(s)/carer(s) to the Cohort Member (CREL).

The mcs7_parent_cm_interview dataset contains also the parent-reported paper version of the SDQ (Strengths and Difficulties Questionnaire). The SDQ questionnaire was left with a parent/carer or with the Cohort Member for a parent/carer to fill the questionnaire and send to the agency. The importance of this is that the GPNUM00 does not show with certainty the parent/carer respondent of the SDQ but the individual it was left with to fill the questionnaire (see sections 4.1 and 4.9.2 of the MCS7 Technical report for details on the administration).

5.3.5 Cognitive assessment dataset

The mcs7_cm_cognitive_assessment dataset is provided on the CM level, namely, one row per Cohort Member per family. The row identifiers for this dataset are the MCSID and the GCNUM00. The correct answer is provided in the variable label.

5.3.6 Self-reported qualifications dataset

The mcs7_cm_qualifications dataset is provided on the CM level. It contains the information on Cohort Member's academic and vocational qualifications (for example, GCSEs). The dataset contains the past/acquired and the present qualifications.

The qualifications dataset is long / stacked and dataset and it contains three key variables to identify a specific row:

- MCSID (family ID)
- GCNUM00 (Cohort Member number within an MCS family)
- GC_ROWID (row number or mention number, for example, 1st subject mentioned, 2nd subject mentioned etc. Up to 20 subjects were collected per interview, for this reason, each Cohort Member has 20 rows where GC_ROWID is an index with values 1-20)

There are two types of variables in the dataset:

- LOOPED – these questions were asked in a loop, for example, subjects, grades, levels

- SINGLE – these questions were asked once for each participant. These are questions that work as entry points, for example, whether the Cohort Member holds a Baccalaureate.

The type of variable is marked in the variable name and in the variable labels:

Variable type	Variable name	Variable label
Question asked multiple times ➔ GC_ROWID shows the order in which a subject, e.g. 'Maths', was mentioned during the interview	_L_	(LOOPED)
Question asked once, for example, Baccalaureate or vocational qualifications ➔ GC_ROWID is significant to select one row per CM per family. For example, if the research project requires the single information variables then we need to select / keep where the GC_ROWID is 1.	_S_	(SINGLE)

The visualisation below shows how the mcs7_cm_qualifications dataset is structured. The GC_S_* variables contain information only when the GC_ROWID is 1 whereas the GC_L_* variables contain information in rows 1-20 for each Cohort Member. Furthermore, the order in which the subjects appear is the same order the Cohort Member recalled the subjects they took. The grades or level of each subject is on the same row as the respective subject (for example, the row that contains Mathematics, also contains the grade and the level of the subject Mathematics studied).

Row order is the order in which the subjects were mentioned at the interview.

GC_S_* (Single) versus GC_L_* (Looped) variables. The GC_S_* variables have data only for GC_ROWID == 1.

Grade or level of the subject for GC_ROWID == 1 (in this example for Mathematics)

MCSID (family id)	GCNUM00 (cohort member)	GC_ROWID (row number)	GC_S_BACC (Baccalaureate)	GC_L_GCSB_NAME (GCSE subject Past Quals)	GC_L_* grade / level etc	GC_S_ACQA_ALNW (Whether studying for A-levels)
Family 1	1	1	2	Mathematics	...	1
Family 1	1	2	-1	Chemistry		-1
Family 1	1	3	-1	English		-1
Family 1	1	4	-1	-1		-1
Family 1	1	5	-1	-1		-1
Family 1	1	6	-1	-1		-1
Family 1	1	7	-1	-1		-1
Family 1	1	8	-1	-1		-1
...	...	...	-1	-1		-1
Family 1	1	20	-1	-1		-1
Family 2	1	1	2	Physics	...	2
Family 2	1	2	-1	English		-1
Family 2	1	3		Dance		
Family 2	1	4		Spanish		
...	...	...		-1		
Family 2	1	20	-1	-1		-1

Up to 20 subjects were collected for each type of qualifications. This applies for the GC_L_* variables

The subjects appear in the dataset in the order in which they were mentioned at the interview. Each Cohort Member listed the subjects in a different order.

Handling the GC_L_* long formatted variables can take different paths depending on the aims of the specific research project. For example, if the aim is to count how many STEM or English/Language subjects each Cohort Member has taken, one can use aggregate by" (R/SPSS) or "count, by" (STATA) by MCSID and GCNUM00 (see the **MCS Data Handling guide**, example code F). The 'by' grouping factor would be MCSID and GCNUM00 to control the aggregation within the options of one Cohort Child. Another example would be to identify the average grade for English/Language subjects. This would require a first step to create a flag that marks as 1 the Language subjects, a second step to select only the rows when the flag equals 1 in the dataset and a third step to "aggregate by" the grades by applying a function that calculates the average.

5.3.7 Paradata

Further information is collected that relates to process of data collection such as call level information, issue level information, interviewer-participant interaction, interview section timings (timestamps), device information (for web completed interviews), etc. This information may become available on request (subject to DAC decision). More information is available here https://cls.ucl.ac.uk/data-access-training/access-cls-dac/ . Please email clsfeedback@ucl.ac.uk with a query on paradata collected.

5.3.8 Derived variables

CLS has derived variables per cohort member, per parent and per family and these are available through separate datasets. More information is in the MCS7 Derived Variables User Guide.

5.3.9 Distribution of variables to End User Licence and Secure Access

CLS have carried out a thorough disclosure assessment of the MCS datasets in order to protect research participant's rights and avoid data disclosure and re-identification of individuals. Following the evaluation of the potential risk of data disclosivity, a number of data measures were put in place to de-identify the data as much as possible in order to make the data publicly available under End User Licence.

Generally, variables with values with low counts can be potentially disclosive. For example, certain full employment SOC codes can appear in less than 5 individuals. For this reason, the variables that are considered potentially disclosive and their values these values need to be modified to reduce this risk, either by recoding (e.g. recapping the outliers, banding into larger groups of values) or truncating.

The majority of the variables affected that are provided under End User Licence are either:

- Recoded, because of low counts, (for example, ethnicity or religion), or,
- Truncated, because of low counts (for example, SOC codes)

All recoded and truncated variables have been made available under End User Licence (EUL).

The original version of the variables containing the detailed values is available under Secure Access. There are some rare exceptions where the variable contains only low count information and these are available only under Secure Access.

The list of variables contained in each MCS dataset and what licence has been used to make them available can be found in the **MCS Longitudinal Data Dictionary**.

Through this data dictionary it is possible to find what variables exists under EUL and in what variables under Secure Access. The naming conventions of section 5.2.1 apply in both licences. For instance, the original variable containing the complete information, e.g, ‘VARNAM’, is shared with researchers under Secure Access. The recoded variable name with the suffix, for example, ‘VARNAM_R30’ is available under EUL.

6. The household grid and the household questionnaire

6.1 Background and introduction

6.1.1 What is the household grid?

The household grid is part of an initial household module which is administered before any other module in the interview. It contains information about every person in the household and includes two types of information: individual identifiers and identifying characteristics (number, sex and date of birth), and cross-sectional variables (e.g., relationships between household members).

The household grid contains one record for each person who has ever appeared in the household, for each family who participated in that sweep. Each household has a unique number (MSCID).

There is a variable which indicates for each person whether or not they were present at any particular sweep: AHCPRS00, BHCPRS00, CHCPRS00, DHCPRS00, EHCPRS00, FHCPRS00, GHCPRS00 for cohort members in MCS1, MCS2, MCS3, MCS4, MCS5, MCS6 and MCS7 respectively, and AHPRES00, BHPRES00, CHPRES00, DHPRES00, EHPRES00, FHPRES00 and GHPRES00 respectively for other people in the household. These can be used to identify people moving into, out of or back into the household by merging the household grid files from each sweep. Details about the household grid for previous sweeps can also be found in the respective user guides.

6.1.2 How is the household grid information collected?

At MCS7 the household grid was collected as part of the household module. It could be completed by anyone aged 16 or over in the household, but ideally by a parent. If a parent was resident in the household and willing and able to do the household interview, interviewers were asked to conduct the interview with them. If no such parent was resident or if they were unwilling or unable to complete the household interview, the interviewers could conduct the interview with the cohort member themselves or any other resident adult. It was collected at the start of the household visit, as its contents determined who was eligible for the parent online questionnaires

and the parent-report Strength and Difficulties questionnaire (SDQ). The household grid used data fed forward from previous sweeps. In this way, it was possible to check whether each person identified as being present at Sweep 7 had been present at any of the previous sweeps: the person completing the grid was asked to list all of the people currently present in the household and, for each person, was asked if that person was someone whom we had listed as living in the household previously so that they could be assigned the same person number. If they had never been listed as living in the household before, they were assigned a new person number.

6.2 Contents of the household grid and household questionnaire

6.2.1 What information is collected in the household grid?

The household grid collected (or confirmed) the following information for each person in the household:

- who is living in the household currently, preserving the person number of those who have listed previously
- what happened to people who were household members at the last sweep interviewed but who are not currently present in the house (e.g. left household, long term absence or deceased)
- name, sex and date of birth of new people in the household (and confirmation of these details for previously listed people)
- whether each household member is a full-time or a part-time member of the household
- the working status of adults (aged 16 and over)
- relationship of each household member to the cohort member and to each other – NB there was a slight difference in the methodology for collecting this information at MCS7. At earlier sweeps, relationships between pre-existing members of the household were simply confirmed (e.g. “Is Jenny Tom’s adoptive mother?”). However, in order to maintain confidentiality (particularly regarding potentially sensitive relationships), this information was asked afresh if the cohort member, rather than their parents, was answering the section.

This data is stored in the file mcs7_hhgrid.

6.2.2 What other information was collected in the household questionnaire and where is it stored?

The household questionnaire covers a number of other topics. As this information covers the household, it appears in the parent interview file:

- Type of residence (institution or private residence);
- Country in which the interview is taking place;
- Change of address since last interview;
- Details about accommodation;
- Household composition;
- Relationships between each of the household members;
- Employment status of all adults aged 16 or over (including the cohort member);
- Selection of individuals eligible to complete the parent questionnaires;
- Relationship history of parents;
- Collection of household contact information.

The household questionnaire is in the file mcs7_family_interview.

7. Overview of cohort member questionnaires

7.1 Background and introduction

Age 17 marked a key point in cohort members' developmental and educational lives, a time when their educational and occupational paths start to diverge in more salient ways through their different aspirations and choices. In terms of data collection, it is an age when direct engagement with the cohort members themselves was particularly important to their engagement and the long-term viability of the study. To reflect this, the relative balance between parental and cohort member involvement in the survey shifted considerably, with cohort members providing more information than they had done at any of the previous sweeps, and considerably more than parents at this sweep. A 20 minute face-to-face interview was conducted with the cohort member for the first time (including collecting contact information and data linkage consents), they were also asked to fill in a self-completion questionnaire (30 minutes) on the interviewer's tablet in the home, and to complete an online questionnaire after the visit (15 minutes).

7.2 Baseline numbers

The total number is 11,872 of Cohort Members. Information on sample available for analysis under End User Licence is provided in the mcs_longitudinal_family_file and the variable DATA_AVAILABILITY.

7.3 The cohort member interview (CAPI)

7.3.1 Content of the Young Person Interview

The 20 minute interview covered a range of topics to understand the lives of cohort members – their circumstances, behaviours, views and development. Before starting the face to face interview, interviewers asked the cohort members to provide their verbal consent to complete it and recorded their response in the CAI programme.

Topics covered included:

Section	Topic
Family and home life	If not living with parents: - tenure - date stopped living with parents (month & year) - reason not living with parents Experience of homelessness Experience of care
Income and employment	Whether currently attends school or college & whether FT or PT Whether doing an apprenticeship Whether doing any training Whether doing any paid job If no activity: whether looking for paid work Whether looking after home or family full time Reasons left full time education if not full time) If NEET: Reasons difficult to work If apprentice or training: reasons applied for apprenticeship or training If main activity job, apprenticeship or training: title of job/training, hours, employee of self-employed, type of organisation, managerial or supervisor duties, size of organisation If any job: whether does shift work, whether zero hours contract, If main activity job: whether no fixed contract If apprentice or training: whether gets regular payment, allowance or other payment: pay and period If has a job: pay and period covered Other income from paid work Other regular income
Education and Schooling	***Academic qualifications:*** type (incl: baccalaureates, Highers, National Fours and Fives; GCSE's; iGCSEs; BTECs; AS levels; A2 levels; A levels; Cambridge PreU); level; subject; grade; date taken ***Vocational & other qualifications:*** type; level; grade; date taken ***Current education:*** where studying; school or college year; school moves; name & address of school or college; whether fees are paid ***Current academic qualifications studying for:*** type; number; subjects ***Current vocational qualifications studying for:*** type; number; subjects Extent to which what studying or training for informed by job wishes to do From whom obtained post-16 educational advice Wales only: How important medium of Welsh was in post-16 option choice
Health and physical activity	General health Long standing limiting illness

Section	Topic
	Accidents Hospital admissions other than accidents Physical activity
Identity (Wales only)	Frequency speaks Welsh with friends Language used on social media
Contact information	Telephone, email, intention to move and new address if known. Details used to keep in contact with the young people about the study and for reminders to be sent for the online (CAWI) questionnaire
Consent to data linkage	Cohort members were asked to give their written consent to linking their administrative records to survey data: education, health, economic and crime.

Interviewers were briefed, where possible, to conduct the interview with just the cohort member in the room. Where this was not possible, interviewers were required to record, at the end, whether anyone else was present while the cohort member answered the questions. Information on identifying who was the respondent of the household questionnaire is available at the mcs7_hhgrid dataset and at section 5.3.1.

It was possible for someone else to answer the interview on behalf of the young person if (s)he was unable to understand or answer the questions by him/herself. On the rare occasions this happened, the reason why and who helped were recorded.

The interview could also be translated into Welsh by a Welsh-speaking interviewer if requested.

7.3.1.1 Income

Cohort members were asked about their current economic activities in some detail. They were all asked about whether they were currently attending school or college (even if on holiday) as well as about any training or apprenticeships they were doing, any other paid work. Sometimes, cohort members were engaged in more than one activity and, if this was the case, they were asked which was their main activity, as well as some questions about activity/educational motivations.

If a cohort member considered their main activity was working, training or an apprenticeship, they were asked a series of detailed employment questions covering employment conditions and pay. All cohort members were also asked about income

that was not from their main activity – including jobs, benefits and parental contributions.

7.3.1.2 Education qualifications grid

Cohort members were asked about any academic or vocational qualifications they had gained. There is a wide range of qualifications available across the UK and the data collection was designed to capture these in a way which reflected the different nature of the courses and grading structures. This included collecting:

- the type, subjects covered (with levels) and overall and individual subject grades for baccalaureates (e.g. International Baccalaureate, Scottish Baccalaureate)
- the subjects and grades for school/sixth form type exams (e.g. GCSE, A level, BTEC, Scottish Higher Grade exams, Extended Project Qualification and Cambridge Pre U). For each of these qualifications, details were collected about the subjects covered, the final grade and, where appropriate, the level.
- whether they had obtained any of a range of vocational qualifications (e.g. Essential Skills, City and Guilds and SQA certificate). Where appropriate, they were also asked about the grade and/or level.

Cohort members who were still in school or college were then asked details about where they were studying and the qualifications they were studying for.

7.4 The cohort member questionnaire (CASI)

7.4.1 Content of the Young Person self-completion questionnaire

Cohort members have been completing their own questionnaire since the age of 7 (self-completion at ages 7, 11, 14). At age 17, the self-completion questionnaire was done by the cohort member on the interview's tablet after completing the face to face interview. If the cohort member refused the face to face interview, they were still eligible to do the CASI questionnaire.

The CASI questionnaire mainly contained topics of a more personal and sensitive nature, and as a result it was not possible for the interviewer or anyone else to conduct the questionnaire on the cohort member's behalf if the cohort member was

unable to complete it themselves. The CASI took approximately 15 minutes to complete.

Before the cohort member started the self-completion questionnaire, the interviewer asked for their verbal consent to complete it and recorded the cohort member's response in the CAI programme. Interviewers then read out an introduction to reassure the cohort member that it was not a test, that there were no right or wrong answers, that none of their answers would be seen by anyone in their family or by the interviewer themselves, and that they could skip any question they did not wish to answer. Text was included in the questionnaire to highlight the sensitive nature of some of the questions and to encourage honesty. The interviewer detached the keyboard and handed their tablet screen over to the cohort member. The cohort member was encouraged to complete the questionnaire in private due to the sensitive nature of many of the topics.

The CASI questionnaire was available as a paper Welsh version if the cohort member requested it.

Topics covered included:

Section	**Topic**
Relationships with family	***If CM not living with either/both natural parents:*** Contact with non-resident parent (incl. seeing & phone, text, email, social media) ***If CM co-resident with either/both parents:*** Closeness to parent; frequency talks to parent about important things
Strengths and Difficulties Questionnaire	25 items on psychological attributes (see further details below in relevant section)

Section	Topic
Personality	**Big Five personality traits**, also known as the **five-factor mode.** Fifteen questions on common language descriptors of personality. Also known as OCEAN or CANOE (see further details below in relevant section)
Physical and Mental Health and Wellbeing	Whether a female CM had started periods and age (if not reported at previous sweep) ***Kessler 6 scale:*** a quantifier of non-specific psychological distress formed of 6 questions. (see further details below in relevant section) ***Short WEMWBS:*** a mental wellbeing 7-item scale. (see further details below in relevant section) ***Shortened Rosenberg Self-esteem Scale (5 items):*** five items were used from the Rosenberg Self-esteem scale. (see further details below in relevant section) Experience and treatment for depression ***Self-harm:*** 6 questions from the Edinburgh Study of Youth and Transitions and one on attempted suicide
Relationships, sex and pregnancy	Whether has boyfriend or girlfriend Whether has had sex & age of first experience Use of contraception & types Contraception free sex STIs

Section	Topic
	Pregnancy grid: whether has ever become or made someone pregnant; outcome; date of end of pregnancy or birth
Risky Behaviours	Smoking and e-cigarettes Alcohol consumption & binge drinking Drug use Experience as a victim Risky & anti-social behaviour Acts against other people
Identity	Sexual & gender identity Sexual attraction

7.4.2 Young person self-completion questionnaire scales

7.4.2.1 Young Person Strengths and Difficulties Questionnaire (SDQ)

Goodman (1997): https://www.sdqinfo.com/a0.html

Age 17 was the first time the cohort members were asked to complete their own version. The parent version has been used since age 3 at sweeps 2, 3 4, 5 and 6. For further details see Johnson *et al.* (2015). The SDQ is a behavioural screening questionnaire for 4 to 17-year-olds. It measures 25 items on psychological attributes.

At MCS7, the one-sided self-rated SDQ for 11 to 17-year olds without impact statement version was completed by the cohort members as part of the in-home self-completion questionnaire (CASI). A paper parent version was also completed by one resident parent which is part of the parent response.

The cohort member was asked the following statements about their behaviour over the past 6 months with response options: Not true, Somewhat true or Certainly true.

Question name	Question	Variables	Equivalent on SDQ
SDQA	I try to be nice to other people. I care about their feelings		SDQ item 1
SDQB	I am restless, I cannot stay still for long		SDQ item 2
SDQC	I get a lot of headaches, stomach-aches or sickness		SDQ item 3
SDQD	I usually share with others (food, games, pens etc.)		SDQ item 4
SDQE	I get very angry and often lose my temper		SDQ item 5
SDQF	I am usually on my own. I generally play alone or keep to myself		SDQ item 6
SDQG	I usually do as I am told		SDQ item 7
SDQH	I worry a lot		SDQ item 8
SDQI	I am helpful if someone is hurt, upset or feeling ill		SDQ item 9
SDQJ	I am constantly fidgeting or squirming		SDQ item 10
SDQK	I have one good friend or more		SDQ item 11
SDQL	I fight a lot. I can make other people do what I want		SDQ item 12
SDQM	I am often unhappy, down-hearted or tearful		SDQ item 13
SDQN	Other people my age generally like me		SDQ item 14
SDQO	I am easily distracted, I find it difficult to concentrate		SDQ item 15

Question name	Question	Variables	Equivalent on SDQ
SDQP	I am nervous in new situations. I easily lose confidence		SDQ item 16
SDQQ	I am kind to younger children		SDQ item 17
SDQR	I am often accused of lying or cheating		SDQ item 18
SDQS	Other children or young people pick on me or bully me		SDQ item 19
SDQT	I often volunteer to help others (parents, teachers, children)		SDQ item 20
SDQU	I think before I do things		SDQ item 21
SDQV	I take things that are not mine from home, school or elsewhere		SDQ item 22
SDQW	I get on better with adults than with people my own age		SDQ item 23
SDQX	I have many fears, I am easily scared		SDQ item 24
SDQY	I finish the work I'm doing. My attention is good		SDQ item 25

The above 25 items are divided between 5 scales:

1. Emotional symptoms
    a. Complains of headaches/stomach aches/sickness
    b. Often seems worried
    c. Often unhappy
    d. Nervous or clingy in new situations
    e. Many fears, easily scared.
2. Conduct problems
    a. Often has temper tantrums
    b. Generally obedient*
    c. Fights with or bullies other children
    d. Steals from home, school or elsewhere (In MCS2: Can be spiteful to others)
    e. Often lies or cheats (in MCS2: Often argumentative with adults).
3. Hyperactivity/inattention

    a. Restless, overactive, cannot stay still for long
    b. Constantly fidgeting
    c. Easily distracted
    d. Can stop and think before acting*
    e. Sees tasks through to the end*.
4. Peer relationship problems
    a. I am usually on my own. I generally play alone or keep to myself
    b. I have one good friend or more *
    c. Other people my age generally like me *
    d. Other children or young people pick on me or bully me
    e. I get on better with adults than with people my own age.
5. Prosocial behaviour
    a. I try to be nice to other people. I care about their feelings
    b. Shares readily with others
    c. Helpful if someone is hurt, upset or ill
    d. Kind to younger children
    e. Often volunteers to help others.

*Denotes items that are reversed when generating sub-scales on behaviour.

Each of the five scales can be used alone or together to create:

- 1-4 when taken together generate a total difficulties score
- 1 and 4 create an internalising problems score
- 2 and 3 create an externalising conduct score
- 5 alone measures prosocial behaviour

See: https://sdqinfo.org/py/sdqinfo/b3.py?language=Englishqz(UK

7.4.2.2 Young Person Big Five personality traits

NEO PI/FFI manual supplement for use with the NEO Personality Inventory and the NEO Five-Factor Inventory Paul T. Costa, Jr. & Robert R. McCrea. Published 1989 by Psychological Assessment Resources in Odessa, Fla. (P.O. Box 998, Odessa 33556) (available online from http://www.openlibrary.org) .

Age 17 was the first time that cohort members were asked the Big Five. The OCEAN was also asked of the main and partner parent respondents at Age 14 (MCS6).

The **Big Five personality traits**, also known as the **five-factor model** (**FFM**), is a model based on common language descriptors of personality. The five factors have been defined as openness to experience, conscientiousness, extraversion, agreeableness and neuroticism, often listed under the acronyms OCEAN or CANOE.

At MCS7, the cohort member was asked to rate how much each of the following 15 statements applied to them using a scale of 1 to 7, where 1 is ‘does not apply to me at all’ and 7 is ‘applies to me perfectly’.

Question name	**Question**
BIGA	I see myself as someone who is sometimes rude to others
BIGB	I see myself as someone who does a thorough job
BIGC	I see myself as someone who is talkative
BIGD	I see myself as someone who worries a lot
BIGE	I see myself as someone who is original, coming up with new ideas
BIGF	I see myself as someone who has a forgiving nature
BIGG	I see myself as someone who tends to be lazy
BIGH	I see myself as someone who is outgoing, sociable
BIGI	I see myself as someone who gets nervous easily
BIGJ	I see myself as someone who values artistic, aesthetic experiences
BIGK	I see myself as someone who is considerate and kind to almost everyone
BIGL	I see myself as someone who does things efficiently
BIGM	I see myself as someone who is reserved

Question name	Question
BIGN	I see myself as someone who is relaxed, handles stress well
BIGO	I see myself as someone who has a big imagination

7.4.2.3 Young Person Kessler 6 scale

Kessler, R.C., Barker, P.R., Colpe, L.J., Epstein, J.F., Gfroerer, J.C., Hiripi, E., Howes, M.J, Normand, S-L.T., Manderscheid, R.W., Walters, E.E., Zaslavsky, A.M. (2003). Screening for serious mental illness in the general population. Archives of General Psychiatry. 60(2), 184-189. Information on scoring and interpretation of this scale can be found at http://www.hcp.med.harvard.edu/ncs/k6_scales.php.

Age 17 was the first time the Kessler 6 was asked of the cohort members. The Kessler 6 has been asked of main and partner respondents at each sweep since MCS2 (age 3) and was repeated at age 17 in the parent online questionnaire (SEE).

The Kessler 6 (K6) scale is a quantifier of non-specific psychological distress. It consists of six questions about depressive and anxiety symptoms that a person has experienced in the last 30 days.

At age 17, cohort members were asked six questions on how they had felt over the last 30 days with a self-report scale of five possible answers plus don't know/don't wish to answer (which was not shown on screen unless an item was left blank):

1. All of the time
2. Most of the time
3. Some of the time
4. A little of the time
5. None of the time

The questions are introduced by the statement: 'The next few questions are about how you have felt over the last 30 days'. The six questions are:

Question name	Question
PHDE	During the last 30 days, about how often did you feel so depressed that nothing could cheer you up?
PHHO	During the last 30 days, about how often did you feel hopeless?
PHRF	During the last 30 days, about how often did you feel restless or fidgety?
PHEE	During the last 30 days, about how often did you feel that everything was an effort?
PHWO	During the last 30 days, about how often did you feel worthless?
PHNE	During the last 30 days, about how often did you feel nervous?

7.4.2.4 Young Person Warwick-Edinburgh Mental Wellbeing Scale (Short WEMWBS)

Copyright: Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS) © NHS Health Scotland, The University of Warwick and University of Edinburgh, 2006, all right reserved.

The WEMWBS was asked for the first time at age 17.

The short WEMWBS is a mental wellbeing scale. It provides a single sumsmary score indicating overall wellbeing. At age 17 the short 7-item scale was used. Permission was granted to use the scale.

The cohort member was asked to select the answer that best described their experience over the past two weeks: None of the time; Rarely; Some of the time; Often; All of the time for the following statements:

Question name	Question
WWOP	I’ve been feeling optimistic about the future
WWUS	I’ve been feeling useful
WWRE	I’ve been feeling relaxed
WWDE	I’ve been dealing with problems well
WWTH	I’ve been thinking clearly
WWCL	I’ve been feeling close to other people
WWMN	I’ve been able to make up my own mind about things

Scoring:

https://warwick.ac.uk/fac/sci/med/research/platform/wemwbs/using/howto/

7.4.2.5 Young Person Shortened Rosenberg Self-esteem Scale (5 items)

Rosenberg, M. (1965). Society and the adolescent self-image. Princeton, NJ: Princeton University Press.

The shortened Rosenberg self-esteem scale was also asked of cohort members at MCS5 (age 11) and MCS6 (age 14).

At age 17 five items were used from the Rosenberg Self-esteem scale. The original measure is a ten item Likert-type questionnaire. The scale is thought to have good reliability and validity as a tool to measure self-esteem in psychology and the social sciences. It was developed using a sample of over 5000 children drawn from schools in the state of New York and has since been widely applied since.

Cohort members were asked how much they agreed or disagreed with the following statements about them:

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree

Question name	Question
SATI	On the whole, I am satisfied with myself
GDQL	I feel I have a number of good qualities
DOWL	I am able to do things as well as most other people
VALU	I am a person of value
GDSF	I feel good about myself

7.5 The cohort member online questionnaire (CAWI)

7.5.1 Content of the Young Person online questionnaire

At Age 17, cohort members were asked for the first time to complete an online questionnaire. This was placed by the interviewer during the household visit, and cohort members were asked to complete it after the interviewer had left. All cohort members were eligible for the online questionnaire, regardless of whether or not they had completed the interview and self-completion questionnaire in the household visit. The online questionnaire contained a variety of topics, some of which were of a personal and sensitive nature. As a result, it was not possible for the cohort member to receive help completing questionnaire from a household member if they were unwilling or unable to complete it themselves. The online questionnaire took approximately 15 minutes.

At the beginning of the online questionnaire, there were a number of introduction screens, explaining the purpose of the questionnaire and how long it would take to complete. Cohort members were reassured that there were no right or wrong answers and that they could skip any question they did not wish to answer. There

was also text to highlight the sensitive nature of some of the questions and to encourage honesty. They were encouraged to complete the questionnaire in private due to the sensitive nature of some of the topics.

The online questionnaire was available for completion over the telephone in Welsh if the young person requested it.

Topics covered included:

Section	Topic
Personality and attitudes	**Brief self-control scale** (see further details below) Seven items on wide-ranging attitudes: • Politics • Employment • Couples with children • Abortion • Race • Religion • The environment
Activities	13 items on activities they participate in Hours spent: • Watching TV or films • Playing games • Social networking Attitudes towards social media and online presence
Risky behaviours	Gambling Carrying a knife and gang membership Contact with the police
Diet and body image	Perception of weight Exercise

Section	Topic
	Eating behaviour and food choices **Eating Choices Index (ECI)**: a four-item index on food choices (see further details below)
Risk and time preferences	Two grids of questions, one assessing risk-taking behaviour, and one assessing time preferences
Identity	Religious identity Languages spoken with friends and at home
Learning and the future	Likelihood of attending university, and reasons why or why not Understanding of cost of university Understanding of student loans Effect of university attendance on getting a job and earnings Job at age 30 Life achievements at age 30
Life and wellbeing	Sleep quality **Social provisions scale**: a three-item index on social support (see further details below) Parental involvement in their life Caring responsibilities Methods and length of daily travel

7.5.2 Young person online questionnaire scales

7.5.2.1 Young Person Brief Self-Control Scale (4-items)

Tangney, J. P., Baumeister, R. F., & Boone, A. L. "High self-control predicts good adjustment, less pathology, better grades, and interpersonal success," *Journal of Personality*, *72* (2), 2004, pp. 271–324.

Age 17 was the first time the Brief Self-control Scale was asked.

At age 17, a reduced 4 restraint item version of the Brief Self-Control Scale was included The Brief Self-Control Scale (BSCS) is a measure of individual differences in self-control. The 4 item restraint facet measures tendency to be deliberative or disciplined and engage in effortful control.

The cohort member was asked to indicate the extent to which each statement best represented them with the following responses: Not at all like me; A little bit like me; Somewhat like me; Mostly like me; Very much like me

Question name	**Question**
BSCA	I am good at resisting temptation
BSCB	I find it hard to break bad habits
BSCC	I wish I had more self-control
BSCD	People would say that I have strong self-control

7.5.2.2 Young Person Eating Choices Index (ECI)

(Pot GK; Richards, M Prynne CJ, Stephens AM; 2014).
https://www.ncbi.nlm.nih.gov/pubmed/24477178

The ECI was also used with cohort members at age 14 (MCS6).

The Eating Choices Index (ECI) score includes four components: (i) consumption of breakfast, (ii) consumption of two portions of fruit per day, (iii) type of milk consumed and (iv) type of bread consumed, each providing a score from 1 to 5. The index discriminates healthy and unhealthy eating choices for use in large surveys as a short questionnaire and as a measure in existing studies with adequate dietary data

At age 17 a question on consumption of vegetables (VEGI) was added, which is not part of the ECI.

For breakfast (BRKN) respondents were asked how often they ate over a week and fruit consumption (FRUT), respondents were asked to say how often they eat at least 2 portions of fruit a day, with the following response categories:

1. Never
2. Some days, but not all days
3. Every day

For bread type consumed (BRED), respondents were asked to select one of the following response categories:

1. I only eat white bread
2. I sometimes eat white bread, sometimes I eat brown or granary or wholemeal bread (including 50:50 bread)
3. I only eat brown/granary bread (including 50:50 bread)
4. I sometimes eat brown/granary bread (including 50:50 bread), sometimes I eat wholemeal bread
5. I only eat wholemeal bread
6. I never eat bread

For milk consumption (MILK), respondents were asked to select one of the following response categories:

1. I only have whole milk
2. I sometimes have whole milk, sometimes I have semi-skimmed or skimmed milk
3. I only have semi-skimmed milk
4. I sometimes have semi-skimmed, sometimes I have skimmed milk
5. I only have skimmed milk
6. I only have 1% fat milk
7. I have soya milk or other non-cow milk
8. I never have milk

Question name	Question
BRKN	How often do you eat breakfast over a week?
FRUT	How often do you eat at least 2 portions of fruit per day?
BRED	Which type of bread do you normally eat?
MILK	Which type of milk do you usually have?

7.5.2.3 Young Person Social Provisions Scale (3-items)

Cutrona CE, Russell DW. The provisions of social support and adaptation to stress. Advance in Personal Relationships. 1987;1:37–67.

The Social Provisions Scale was also included at age 14 (MCS6).

At age 17, three items were included from the 10-item Social Provisions Scale (Cutrona 1987). The Social Provisions Scale measures the availability of social support.

The cohort member was asked to think about their current relationships with friends, family members, community members and so on. They were asked to indicate the extent to which each statement described their current relationship with other people from the following responses: Very true; Partly true or Not true at all

Question name	Question
SAFF	I have family and friends who help me feel safe, secure and happy
TRSS	There is someone I trust whom I would turn to for advice if I were having problems

Question name	Question
NCLS	There is no one I feel close to

7.6 Overview of the online follow-up with cohort members (Boost sample) (CAWI Boost)

7.6.1 Background and introduction

All cohort members in unproductive households at the main stage of the Age 17 Survey (excluding ineligible cases and permanent withdrawals) were invited to take part in a short online questionnaire (lasting up to 20 minutes) on a device of their choice, after main stage fieldwork was completed. The purpose of this online follow up was two-fold: first, to boost the overall Age 17 Survey response, and second, to collect data from unproductive cohort members for a number of key survey questions. This data collection was designed to be a follow-up, rather than a separate survey. Only cohort members were invited to take part in the follow-up, not parents.

Information on how to identify these boost cases in the sample is provided in section 5.3.1.

7.6.2 Baseline numbers

A total of 2,506 cohort members were eligible to take part in the online follow-up. 253 cohort members completed the online questionnaire and belong to the 'boost' sample.

7.6.3 Contents of the online follow-up questionnaire

The questionnaire covered a variety of topics relevant to the lives of young people. An overview is provided below:

- Current activity (education/work)
- Attitudes

- Mental health and wellbeing
- Personality
- Relationships, sex and pregnancy
- Risky behaviours
    - Smoking
    - Drinking
    - Drug use
    - Anti-social behaviour
- Victimisation
- Identity
- Social media use
- Contact information (used to keep in contact with the young people about the study)

The online questionnaire was provided in English, but could be translated into Welsh by a Welsh-speaking interviewer over the telephone.

7.6.4 Scales

A number of scales were included in the online follow-up, which were also included in the mainstage survey instruments. They include: Kessler 6, Short WEMWBS, Rosenberg, Big 5/OCEAN, Brief Self-Control scale. Detail on these scales has been covered in previous sections.

8. Young Person Cognitive Assessment

8.1 Background and introduction

Cohort members were asked to complete a cognitive assessment: the Number Analogies activity (GL Assessments). The activity assesses young people's basic arithmetic knowledge and reasoning with numbers. Ten items were used from the Cognitive Abilities Test 3, Level H, Number Analogies test (David F Lohman, Robert L Thorndike, Elizabeth P Hagen, Adapted by Pauline Smith, Cres Fernandes and Steve Strand) which assessed the young person's arithmetic knowledge and reasoning with numbers. The assessment was used and reduced from the original 20 items with permission of the owners GL Assessment. © David F Lohman, Robert L Thorndike, Elizabeth P Hagen, 2001. Reproduced by permission of GL Assessment. The assessment was timed, and cohort members had 6 minutes to work through the 10 questions in the question booklet. They were provided with pencil and paper if needed to work out answers.

Interviewers were told not to administer the assessment if the cohort member had a learning disability or serious behavioural problem (e.g. severe ADHD, autism), or was unable to respond in the required manner for the assessment (e.g. reading). Before beginning the assessment, interviewers were asked to confirm in CAI whether they received verbal consent from the cohort member to carry out the cognitive assessment.

The cognitive assessment could be completed in Welsh if requested.

8.2 Baseline numbers

9558 Cohort Members answered the cognitive assessment.

9. Physical measurements

9.1 Background to physical measurements on MCS

At age 17 height, weight and body fat measurements were taken in the home by the interviewer for each consenting, eligible cohort member. Physical measurements have been collected from cohort members since the age of 3. Height and weight measurements have been taken at each survey (ages 3, 5, 7, 11 and 14). In addition, waist measurements were taken at ages 5 and 7, and body fat measurements were taken at ages 7, 11 and 14.

As at previous sweeps, cohort members who could not stand unaided were not able to have their height or weight and body fat measurements taken. In addition, any cohort members who were fitted with an internal electrical device such as pacemaker or cochlea implant were not able to have their body fat measurement taken as the electrical signal could cause such devices to malfunction. Pregnant women should not have their body fat measurement taken as the measurement might be inaccurate, although there is no risk to the unborn child. At age 17, female cohort members were given a showcard at the start of the module which asked them if they had an electrical implant, were pregnant or neither applied. They were simply asked to indicate which number on the card applied to preserve confidentiality.

Interviewers were accredited to take the physical measurements at age 17 as part of the interviewer briefing in order to ensure accurate and consistent measurements. Reasons for not being able to take any measurement and circumstances that applied to measurements were recorded by the interviewer in CAI.

The data collection instrument set checks for height to between 120cm and 205cm, and weight to between 20kg and 125kg (even where interviewers confirmed the value outside the range was correct and re-entered it).

9.2 Height

The height measurement was taken by the interviewer using a Leicester height measure. The interviewer used a Frankfurt Plane card to check that the cohort

member's head was positioned correctly. The measurement was taken in metres and centimetres and rounded down to the nearest completed millimetre. As indicated above cohort members had to be able to stand unaided in order for the height measurement to be taken. At age 17 it was possible that the cohort member would be significantly taller than the interviewer. In these cases the interviewer was trained to take the measurement at the bottom of a staircase if possible and use the steps to place the head plate into position. If this was not possible they could ask another adult in the house to help take the measurement.

9.3 Weight and body fat

Weight and body fat measurements were taken together using Tanita™ scales. Weight measurements were recorded in kilograms and body fat was recorded as a percent, both to one decimal place. The body fat measurement was taken by sending a weak electronic current around the body from one foot to the other. The scales measure the amount of resistance encountered by the current as it travels round the body. As muscle and fat have different levels of resistance, the scales use this to calculate body fat percentage. The scales required the cohort member's height and age to be entered before the measurements could be taken, so height had to be measured first.

9.4 Weight only

If the cohort member did not want their body fat measurement to be taken or if the body fat measurement could not be taken (e.g. no height measurement was possible, body fat ineligible or refused), the Tanita™ scales could be operated to take weight only. This was measured in kilograms to one decimal place.

9.5 Consent

Before taking any of the physical measurements, interviewers asked cohort members to give verbal consent for each measurement and confirmed their answers in CAI (recorded at **CHAC**). After the measurements were taken the interviewer asked the young person if they would like a record of any of their measurements. If

so, these were recorded from CAI onto a measurement card and given to the young person.

9.6 Cohort Members aged 18

As fieldwork was extended, it was possible for a small number of cohort members to be aged 18 at the time of the household visit. In these cases the Tanita™ scales asked for body type to be entered into the console (‘standard’ or ‘athlete’) in addition to gender, age and height. Interviewers were instructed to select ‘standard’ body type all these cases. In addition, the scales would also provide an extra measurement – total body water percentage. This was not recorded in the CAI programme or fed back to cohort members.

9.7 Baseline numbers

Measurement	**Male**	**Female**
Height	4407	4437
Weight	4336	4200
Body fat	4277	4121
No Measurement	370	483
Total	4990	5154

9.8 Data format

Data from the physical measurements module is available in the CM measurement file, and the derived variables are held in the CM derived file. Both of these contain one row per cohort member.

9.9 Derived variables

There are two measures of obesity available, based on the two most widely used reference panels – the International Obesity Task Force (IOTF) (Cole *et al*., 2000) and the UK90 (Cole *et al*., 1990). Cut-offs are based on the age of the cohort member at the time of interview and are provided with the relevant derived variables.

9.10 Reference cut-offs

The cut-offs that were used for the construction of the IOTF and UK90 derived variables are provided at the value labels of the relevant derived variables. For the UK90 derivation cut-off points were generated using the LMSGrowth Microsoft Excel add-in software.

10. Overview of the parent questionnaires

10.1 Background and introduction

10.1.1 What are the parent questionnaires

At MCS7, parents were asked to complete an online questionnaire for the first time, in place of a face-to-face interview. Up to two resident parents were eligible to complete the online questionnaire, which had the same content for both parents. Questions were included about the cohort member(s) as well as about the parent/carer themselves and the household circumstances. The questionnaire took around 15 minutes to complete, and could be filled in using a computer, tablet or smartphone. The questionnaires could not be completed by proxy.

One parent was also asked to complete the parent facing Strengths and Difficulties Questionnaire (SDQ) on paper.

10.1.2 How were parents identified at MCS7?

The parent respondents were established during the household questionnaire using an algorithm within the CAPI questionnaire. The algorithm was based exclusively on relationships between household members, firstly on the relationship between parental figures and the cohort member, and then based on the parent figures' relationship with each other. Natural parents took precedence, followed by adoptive, step, foster, and grand-parents. Once parents were selected, neither took precedence over the other.

10.1.3 Are the parent respondents the same people in all sweeps?

The response of parents varies between sweeps. This is because their inclusion to the household grid (*PNUM*) is different to their eligibility for the interview (*ELIG*, *RESP*). To help on this the datasets with _parent_ or _parent_cm_ structure provide all the parent key identifiers: MCSID, PNUM, ELIG and RESP. The **MCS Data Handling Guide** provides guidance on dealing with PNUM and ELIG variables.

In Sweep 7 the parents were provided with the same questionnaire. Due to this the parent key identifier is their person number: GPNUM00. In sweep 7 it is not needed

to distinguish between Main Respondent and Partner Respondent that used to be the information for ELIG and RESP in previous sweeps. More information on the parent identifiers of MCS7 see section 5.3.4

10.2 Baseline numbers

MCS7 Proportion of households with productive and eligible parent online questionnaires

	Frequency	Percent
1 parent productive interview (PARCAWI) in family	3641	23.14
2 parents productive interview (PARCAWI) in family	4525	42.59
No parent interview (no PARCAWI data)	2459	23.14
All productive households (in Core sample)	**10625**	**100**
2 Parents eligible	7900	74.35
1 Parent eligible	2653	24.97
0 Parent eligible	72	0.68
All productive households (in Core sample)	**10625**	**100**

Note: Percentages may not sum to 100 due to rounding.

10.3 Contents of the parent questionnaires

The online questionnaires covered a variety of topics about the cohort member(s) as well as about the parent/carer him or herself and the household circumstances. A breakdown is provided below.

- Ethnicity (if not recorded at a previous sweep)

- Family situation
    - Marital status
    - Questions about a non-resident natural parent of the cohort member
        - Whether they are still alive
        - Whether they financially contribute
        - The relationship of the responding parent with the non-resident natural parent
    - Questions about their own parents
- Cohort member's likelihood of going to university and reasons
- Relationship with cohort member
- Health
- Employment and income
    - Details of current job
    - Employment history since last interview
    - Hours worked
    - Paid and unpaid overtime
    - Activity if unemployed
    - Reasons for absence from employment
    - Current pay
    - Other income (household level)
    - Financial wellbeing
- Housing tenure
- Mental health
- Contact information
- Parent-facing SDQ (one parent only)

10.3.1 Income

Income has been collected at each sweep of MCS, previously through two banded questions administered to two-parent and single-parent families respectively. This section describes the collection of income measures in the survey at MCS7, and the derivation of the income-derived variables and poverty indicator.

10.3.2 Total income data

Respondents were asked to provide a total amount of income from all sources and earnings after tax and other deductions. If respondents did not provide an exact figure, unfolding brackets were used to try to get an approximate amount. If the respondent was unwilling or unable to answer a question on income, s/he was asked whether his/her income was above or below a rounded income amount (for example £20,000). S/he could then be asked a series of similarly structured questions in order

to narrow down the amount range. Both parent respondents (if applicable) were asked the same question.

10.3.3 Missing income data (item non-response)

Some families did not report income: the table below shows that some MCS families in sweep 7 did not provide income data, and shows why.

Missing data on the banded income questions

	NTLP (1-parent family income)	NTCO (2-parent family income)
Missing income data (refusal)	211	1539
Missing income data (don't know)	109	1004
Other missing (not applicable / not routed)	10924	1966
Number of respondents who provided income data	1447	8182

10.4 Scales

10.4.1 Kessler 6 Scale

Kessler, R.C., Barker, P.R., Colpe, L.J., Epstein, J.F., Gfroerer, J.C., Hiripi, E., Howes, M.J, Normand, S-L.T., Manderscheid, R.W., Walters, E.E., Zaslavsky, A.M. (2003). Screening for serious mental illness in the general population. Archives of General Psychiatry. 60(2), 184-189. Information on scoring and interpretation of this scale can be found at http://www.hcp.med.harvard.edu/ncs/k6_scales.php.

At MCS7 the Kessler 6 was asked as part of the parent online CAWI questionnaire . The K6 has also been asked of both parent respondents from MCS2 (age 3) through to MCS6 (age 14). As noted earlier, the K6 was additionally asked of the cohort members themselves for the first time at age 17.

The Kessler 6 (K6) scale is a quantifier of non-specific psychological distress. It consists of six questions about depressive and anxiety symptoms that a person has experienced in the last 30 days.

For each question, respondents were offered a self-report scale of five possible answers plus don't know/don't wish to answer:

6. All of the time
7. Most of the time
8. Some of the time
9. A little of the time
10. None of the time
11. Don't know/Don't wish to answer

The questions are preambled by the statement: 'The next few questions are about how you have felt over the last 30 days'. The six questions are:

Question name	Question
PHDE	During the last 30 days, about how often did you feel so depressed that nothing could cheer you up?
PHHO	During the last 30 days, about how often did you feel hopeless?
PHRF	During the last 30 days, about how often did you feel restless or fidgety?
PHEE	During the last 30 days, about how often did you feel that everything was an effort?
PHWO	During the last 30 days, about how often did you feel worthless?
PHNE	During the last 30 days, about how often did you feel nervous?

10.4.2 Strengths and Difficulties Questionnaire (SDQ)

Goodman (1997): https://www.sdqinfo.com/a0.html

The parent SDQ was also administered in Sweeps 2, 3 4, 5 and 6. For further details see Johnson *et al.* (2015).

The SDQ is a behavioural screening questionnaire about 4 to 17-year-olds. It measures 25 items on psychological attributes

At MCS7, the **P4-17** - SDQ without impact supplement for the parents of 4-17-year-olds version was used.

The respondent is asked to comment on the following statements about the cohort member over the past 6 months with response options: Not true, Somewhat true or Certainly true. The above 25 items are divided between 5 scales:

Emotional symptoms

f. Complains of headaches/stomach aches/sickness
g. Often seems worried
h. Often unhappy
i. Nervous or clingy in new situations
j. Many fears, easily scared.

Conduct problems

k. Often has temper tantrums
l. Generally obedient*
m. Fights with or bullies other children
n. Steals from home, school or elsewhere (In MCS2: Can be spiteful to others)
o. Often lies or cheats (in MCS2: Often argumentative with adults).

Hyperactivity/inattention

p. Restless, overactive, cannot stay still for long
q. Constantly fidgeting
r. Easily distracted
s. Can stop and think before acting*
t. Sees tasks through to the end*.

Peer relationship problems

u. Tends to play alone
v. Has at least one good friend*
w. Generally liked by other children*
x. Picked on or bullied by other children
y. Gets on better with adults.

Prosocial behaviour

z. Considerate of others' feelings
aa. Shares readily with others

bb. Helpful if someone is hurt, upset or ill
cc. Kind to younger children
dd. Often volunteers to help others.

*Denotes items that are reversed when generating sub-scales on behaviour.

Each of the five scales can be used alone or together to create:

- 1-4 when taken together generate a **total difficulties score**
- 1 and 4 create an internalising problems score
- 2 and 3 create an externalising conduct score
- 5 alone measures prosocial behaviour

See: https://sdqinfo.org/py/sdqinfo/b3.py?language=Englishqz(UK

10.5 Feed forward data

A limited amount of information was fed forward from earlier sweeps, mainly around the respondent's working status and/or job role at the previous sweep. Parents were identified by a person number which was recorded on the Computer-Assisted Interview (CAI). If the person number for a parent was associated with someone who had been the main or partner at a previous sweep, personal information about her or him was fed forward from the last sweep they had participated in.

11. Data linkage

11.1 Asking for administrative data linkage consent

As part of the CAPI interview, cohort members were asked for consent to link their survey answers with nine different administrative data sources, held by a number of different government departments and non-governmental bodies:

- Health records, held by the NHS, including Primary Care data - covering visits to family doctor and other health professionals, and Hospital Episode Statistics (HES) - covering admissions and attendance at hospital;
- Records about school participation and attainment, and pupil characteristics, kept by the Department for Education;
- Records about participation in further education and attainment, kept by the Department for Business Innovation and Skills;
- Records covering university participation and attainment, held by the Higher Education Statistics Agency (HESA);
- Records covering higher education applications and offers, held by the Universities and Colleges Admissions Service (UCAS);
- Records covering payments of student support, held by Student Loans Company (SLC);
- Information on benefit and employment programs, kept by Department for Work and
- Pensions (DWP);
- Information on employment, earnings, tax credits, occupational pensions and National Insurance Contributions, kept by Her Majesty's Revenue and Customs (HMRC);
- Respondents who consented to either DWP or HMRC linkage were also asked for their National Insurance number (NINO).
- Police National Computer (PNC) records covering arrests, cautions and sentences, held by the Ministry of Justice.

All participant materials and operational procedures involved in collecting data linkage consent were tested in exploratory qualitative work and the study pilot

stages, and approved by data holders and ethical committees prior the main stage data collection.

11.2 Consent process

Data linkage was an important part of the study and considerable effort was expended in developing an approach that would maximise consent (see 4.8 Data linkage in Millennium Cohort Study Seventh Sweep (MCS7) Technical Report).

In order to obtain consent, a data linkage booklet was sent to the cohort member in advance of their interview once an appointment had been secured. It gave information on the purpose, types, value and process of data linkage, and encouraged cohort members to contact the study team with any questions they might have. During the interview, interviewers first showed the cohort member a video on their tablet explaining data linkage. After confirming that cohort members had read the information booklet (and in the event they had not, read some key information out to them), consent to data linkage was collected on paper. Cohort members were left with a carbon copy of the consents they had given.

11.3 Achieved consent rates

The table below outlines the rate of consent for each administrative source that consent was sought for.

Table X: Rates of consent to data linkage at time of interview

Linkage	**n**	**%**
Eligible cohort members	*10,757*	*100*
Consented to at least one type of data linkage	*9,862*	*91.7*
Consented to all linkages	*6,392*	*59.4*

Linkage	**n**	**%**
Consented to no linkages	*895*	*8.3*
NHS	9,214	85.7
Education	9,407	87.5
UCAS	9,293	86.4
Student Loans Company	9,009	83.8
DWP	8,958	83.3
HMRC	8,938	83.1
Ministry of Justice	8,890	82.6
NINO	7,132	66.3

11.4 Linked data deposit and documentation

Separate documentation will support the deposit of any subsequently deposited linked data (more information at cls.ucl.ac.uk). Further documentation (in the form of working papers) will be produced to provide more detail on data linkage.

12. Non-Response and Weights

Non-response is common in longitudinal surveys. Missing values mean less efficient estimates because of the reduced size of the analysis sample, but also introduce the potential for bias since respondents are often systematically different from non-respondents. To support researchers in producing robust analysis, we have developed comprehensive advice on how to deal with missing data (Silverwood et al., 2020a). The approaches we recommend to researchers capitalise on the rich data cohort members and their families provided over the years before their non-response. These include well-known methods such as multiple imputation, inverse probability weighting, and full information maximum likelihood. To correct for non-response in MCS7, non-response weights are provided, so that inverse probability weighted analysis can be undertaken, either in isolation or in combination with multiple imputation.

This report examines non-response in MCS7 and presents the procedures used in the construction of MCS7 unit non-response weights. For a full description of attrition in previous sweeps, refer to the MCS Technical Report on Response (3rd edition, 2010), Technical Report on Response in sweep 5 (2014) and MCS6 User Guide. For a description of how to use the weights in Stata and SPSS, refer to the respective guides (Stata, SPSS). For a description of the MCS sample refer to the Technical Report on Sampling (4th edition, 2007).

12.1 Response in MCS

In Table 1, the proportions of productive and unproductive cases are presented by category. The table shows that the proportion of productive cases has decreased over time from 96.4% in MCS1 (age 9 months) to 55.2% in MCS7 (age 17). The two categories of non-response which have seen a marked increase over time are ‘Refusal’ and ‘Not issued’. In early sweeps ‘Refusals’ consist of respondents who refused to take part in a particular sweep of data collection, and ‘Not issued’ are respondents who have not participated in the survey on two consecutive occasions,

and therefore were no longer issued for fieldwork (i.e. the survey agency no longer tries to contact them).

Non-contact has, in general, declined over time because respondents in this category have either been located and contacted again, or have moved to the not issued category. All other types of non-response are relatively stable over time. Note that 'Ineligible' includes child deaths, sensitive cases and temporary and permanent emigrants. The category 'Untraced movers' refers to respondents who have changed address and were not located, including possible emigrants. Respondents who were not issued in MCS1 but at MCS2 instead are labelled as 'New Families'. These were eligible families who were not contacted in MCS1 because their addresses were not know in time for them to be included in the first sweep of data collection.

Table 1: Productive and unproductive cases in all MCS sweeps.

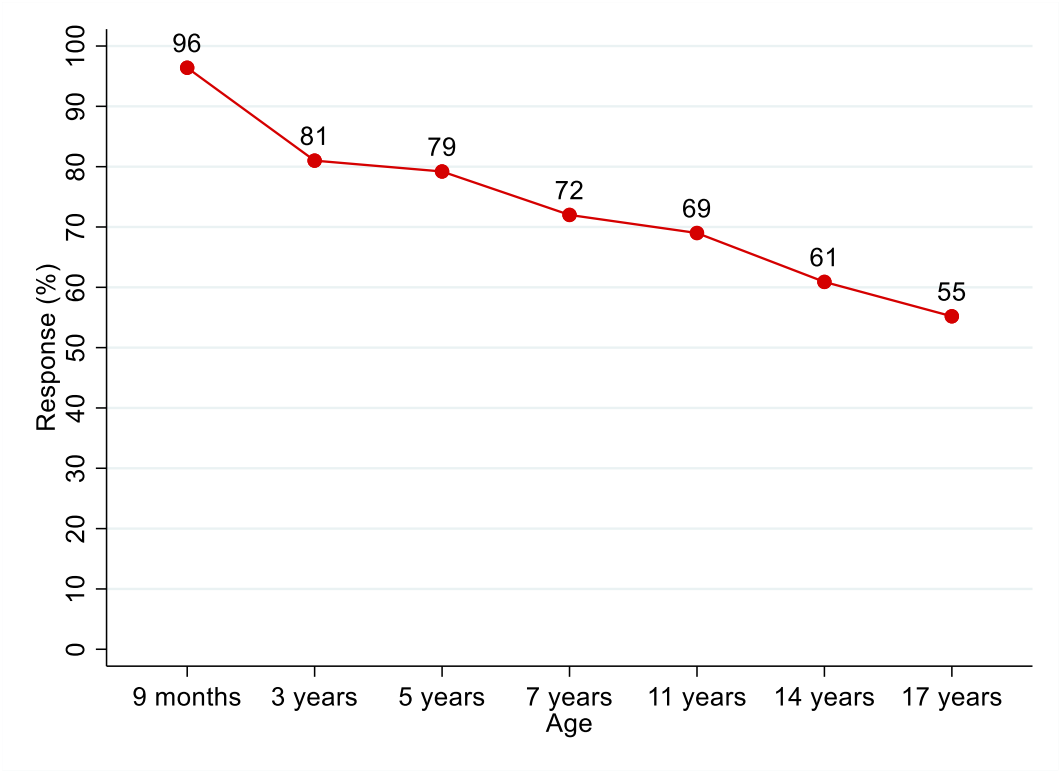
	MCS1 Age 9 months		MCS2 Age 3 years		MCS3 Age 5 years		MCS4 Age 7 years	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Productive	18,551	96.4	15,590	81.0	15,246	79.2	13,857	72.0
Refusal			1,739	9.0	2,315	12.0	1,811	9.4
Ineligible			167	0.9	300	1.6	126	0.7
Untraced movers			686	3.6	546	2.8	706	3.7
Non-contact			930	4.8	546	2.8	123	0.6
Not issued	692	3.6					2,212	11.5
Other unproductive			131	0.7	290	1.5	408	2.1

Total	19,243	100	19,243	100	19,243	100	19,243	100

	MCS5 Age 11 years		MCS6 Age 14 years		MCS7 Age 17 years	
	Freq.	%	Freq.	%	Freq.	%
Productive	13,287	69.0	11,726	60.9	10,625	55.2
Refusal	2,195	11.4	3,029	15.7	2,935	15.3
Ineligible	78	0.4	45	0.2	27	0.1
Untraced movers	388	2.0	428	2.2	375	1.9
Non-contact	438	2.3	75	0.4	140	0.7
Not issued	2,851	14.8	3,828	19.9	4,800	24.9
Other unproductive	6	0.0	112	0.6	341	1.8
Total	19,243	100	19,243	100	19,243	100

Figure 1 presents the proportion of productive cases in MCS in all sweeps. The figure shows that the sample decreased by 45% by the time of the age 17 survey.

Figure 1: Proportion of cases productive in all MCS sweeps.



Note: The total number of MCS respondents ever interviewed is 19,243.

We now show how the proportion of productive cases at MCS7 vary along key dimensions. First, Table 2 shows how the MCS7 proportion of productive cases vary by country of sampling. The proportion productive is higher than the UK average in England while it is lower than the average in Wales, Scotland and Northern Ireland.

Table 2: Productive and unproductive cases by country of sampling in MCS7.

	England		Wales		Scotland		Northern Ireland	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Productive	7,068	57.8	1,467	53.2	1,112	47.6	978	50.9
Refusal	1,757	14.4	439	15.9	406	17.4	333	17.3
Ineligible	22	0.2	0	0.0	2	0.1	3	0.2

Untraced movers	181	1.5	87	3.2	76	3.3	31	1.6
Non-contact	87	0.7	25	0.9	14	0.6	14	0.7
Not issued	2,895	23.7	662	24.0	695	29.8	548	28.5
Other unproductive	214	1.8	80	2.9	31	1.3	16	0.8
Total	12,224	100	2,760	100	2,336	100	1,923	100

Sample size=19,243.

Table 3 shows that the proportion of productive cases varies across sampling strata in each country. Respondents sampled from the socially advantaged stratum are more likely to be productive in all four countries, compared to those sampled from the disadvantaged stratum. Respondents sampled from the ethnic minority stratum are less likely to be productive than those in the advantaged stratum in England.

Table 3: Proportion of productive cases by stratum in MCS7.

	England			Wales		Scotland		Northern Ireland	
	Adv	Dis	Ethn	Adv	Dis	Adv	Dis	Adv	Dis
Productive	61.5	54.0	58.0	58.2	51.0	52.4	43.0	55.9	47.8
Unproductive	38.5	46.0	42.0	41.8	49.0	47.6	57.0	44.1	52.2

Adv stands for advantaged stratum; Dis stands for disadvantaged stratum; Ethn stands for ethnic minority stratum. Sample size=19,243.

In Table 4 we look at different response patterns. Table 4 shows that 40.7% of all respondents participated in all seven sweeps of MCS. In contrast, 25.1% have

interrupted response patterns (i.e. non-monotone response). In other words, they participated in a number of sweeps, and then dropped out before participating again in subsequent sweeps. 34.2% of all respondents have monotone response patterns. That is, they participated in a number of sweeps before dropping out for all subsequent sweeps.

Table 4: Monotone vs. non-monotone response in MCS.

Pattern	Freq.	%
Monotone response	6,579	34.2
Non-monotone response	4,822	25.1
Response at all sweeps	7,842	40.7
Total	19,243	100

Table 5 shows the percentages of respondents participating in n sweeps (n = 1, …, 7). We see that 56.9% of respondents participated in at least six out of seven sweeps of MCS, indicating that more than half of the sample have complete or almost complete records.

Table 5: Number of times productive up to MCS7.

Times productive	Freq.	%
One	1,921	10.0
Two	1,320	6.9
Three	1,382	7.2
Four	1,700	8.8

Five	1,987	10.3
Six	3,091	16.1
Seven	7,842	40.8
Total	19,243	100

12.2 Predicting response at MCS7

12.2.1 Method

The procedure used for deriving non-response weights at sweep 7 was based on that used at sweep 6 (Mostafa and Ploubidis, 2017).

In order to retain comparability with previous MCS sweeps, non-response weights have been derived in relation to the MCS7 “core” sample (face-to-face interviews) only, with any additional responses as part of the online follow-up “boost” sample disregarded (see 5.3.1.4 for explanation of core and boost samples). Please see the note at the end of this section regarding non-response weights for combined core and boost responses.

In the derivation of the MCS7 non-response weights we considered a number of predictors of non-response:

- Cohort member’s gender.
- Mother’s age at first live birth.
- Cohort member’s ethnic group.
- Housing tenure in MCS5.
- Accommodation type in MCS5.
- Main respondent’s highest educational qualification between sweep 1 and 5.
- Whether or not the cohort member was breastfed.
- Number of parents living in the household in MCS5.

- Main respondent's highest social and economic status between sweep 1 and 5.
- Ratio of number of times not answering the income question divided by the number of sweeps productive.
- Ratio of number of times reporting having a job divided by the number of times productive.
- Whether the household is a 'new' family. (701 children joined the survey in sweep 2 because their addresses were not known in sweep 1 and therefore did not take part in the first sweep. These children and their families were labelled as 'new families'.)
- Number of previous productive sweeps.
- Cohort member's cognitive ability at age 5.
- Mother's mental health when cohort member was age 9 months.
- Cohort member's own mental health at age 11.

The first 12 variables were included as predictors of response at sweep 6 (Mostafa and Ploubidis, 2017). The final four variables have been added on the basis of recent work on non-response in other Centre for Longitudinal Studies cohorts (Mostafa et al., 2020, Silverwood et al., 2020b).

Some of the predictor variables (the cohort member's gender, whether the household is a 'new' family, ratio of number of times not answering the income question divided by the number of sweeps productive, ratio of number of times reporting having a job divided by the number of times productive, number of previous productive sweeps) were fully observed.

Ethnicity can be considered as an essentially fixed attribute over time, so was constructed by starting with the most recent response and sequentially filling in any missing values by going backwards through the MCS sweeps, though a small number of missing values (0.1%) remained.

The remaining variables has levels of missing data between 0.2% (main respondent's highest educational qualification between sweep 1 and 5) and 31.0% (number of parents living in the household in MCS5).

All remaining missing values were handling using multiple imputation. The imputation model included all the above predictor variables, MCS7 response (a binary variable for response vs. otherwise, defined for all 19,243 cohort members) and the MCS sampling weight (weight2). Fifty imputed datasets were created using chained equations.

We note that multiple imputation returns valid estimates assuming the data are missing at random (MAR) (Enders, 2010, Seaman et al., 2013, Sterne et al., 2009). This implies that any differences between the missing values and the observed values can be explained by the variables that were included in the imputation models. Put differently, conditional on the variables in the imputation model, missingness in not due to unobserved or observed variables not included in the model.

Logistic regression models for MCS7 response conditional on all the above predictor variables were fitted in each imputed dataset and combined using standard rules. From these models, the probability of MCS7 response was predicted for each respondent, with the non-response weight calculated as the inverse of the response probability (Wooldridge, 2007).

Test analyses were conducted at different levels of weight truncation which suggested that truncation to 50 could provide some improvement in precision without undue introduction of bias. MCS7 non-response weights were therefore truncated to 50.

The MCS7 non-response weights were then calibrated so that they sum to the number of MCS7 productive sample size by multiplying them by the ratio of the number of productive respondents to the total of the uncalibrated non-response weights.

Finally, two overall weights were constructed by multiplying the MCS7 non-response weights by the sampling weights in sweep 1:

GOVWT1: Sweep 7 overall weight for single country analysis (for Core sample)

GOVWT2: Sweep 7 overall weight for whole of UK analysis (for Core sample)

All analyses were conducted using Stata version 15.

Note: As mentioned at the start of this section, we derived non-response weights in relation to the MCS7 “Core” sample (face-to-face interviews) only and disregarded any additional responses as part of the online CAWI (web interview), or the “Boost” samples. If users wish to analyse these responses alongside Core sample responses then they may consider deriving their own non-response weights following the approach outlined above but using instead a binary variable which captures response as part of either the core or CAWI/Boost sample in the response model. Alternatively, users may choose to utilise a multiple imputation approach rather than derive additional weights.

12.2.2 Results

Table 6 shows the estimated response model using the 50 imputed datasets.

Table 6: Estimated response model.

	OR	95% CI
New family		
Not a new family	1.00	(ref)
New family	2.71	2.13, 3.46
Cohort member’s sex		
Female	1.00	(ref)
Male	0.96	0.89, 1.04

Cohort member's ethnic group		
White	1.00	(ref)
Mixed	1.56	1.22, 1.98
Indian	1.94	1.47, 2.56
Pakistani/Bangladeshi	2.55	2.11, 3.07
Black Caribbean/Black African	2.01	1.59, 2.54
Other ethnic group	2.19	1.58, 3.03
Whether cohort member was breastfed		
No	1.00	(ref)
Yes	1.12	1.02, 1.23
Accommodation type		
Other	1.00	(ref)
House or bungalow	0.82	0.71, 0.95
Highest educational qualification		
NVQ level 1	1.00	(ref)
NVQ level 2	1.13	0.96, 1.33
NVQ level 3	1.27	1.06, 1.52
NVQ level 4	1.43	1.20, 1.71
NVQ level 5	1.80	1.44, 2.25
Overseas qualifications only	1.24	0.94, 1.62
None of these	1.18	0.98, 1.42
Number of parents in household		
One parent/carer	1.00	(ref)
Two parents/carers	1.27	1.14, 1.41
Main respondent's highest socioeconomic status		
Managerial and professional	1.00	(ref)

Intermediate	0.93	0.83, 1.05
Small employers and self employed	0.89	0.74, 1.08
Lower supervisory and technical	1.00	0.82, 1.21
Semi-routine and routine	0.89	0.78, 1.02
Housing tenure		
Own outright	1.00	(ref)
Own - mortgage/loan	0.96	0.81, 1.15
Rent from local authority	0.85	0.68, 1.05
Rent from housing association	0.86	0.68, 1.08
Rent privately	0.89	0.72, 1.10
Other	0.80	0.57, 1.14
Mother's age at first birth	1.01	1.00, 1.01
Maternal mental health (age 9 months)	0.99	0.97, 1.02
Cohort member cognitive ability (age 5)	1.10	1.03, 1.17
Cohort member mental health (age 11)	0.99	0.98, 1.00
Ratio times having a job	0.55	0.48, 0.64
Ratio of income item non-response	0.59	0.46, 0.76
Number of previous responses (sweeps 1-6)	3.54	3.41, 3.68

Sample size=19,243.

In Tables 7 and 8, the means, minima and maxima of the two overall weights are presented by stratum.

Table 7: GOVWT1, sweep 7 overall weight for single country analysis.

Sampling stratum	N	Mean	SD	Min	Max

England - Advantaged	2,971	1.13	1.46	0.77	37.24
England - Disadvantaged	2,594	0.79	1.41	0.42	20.03
England - Ethnic	1,503	0.26	0.51	0.14	6.77
Wales - Advantaged	484	1.64	2.62	1.05	38.18
Wales - Disadvantaged	983	0.73	1.40	0.39	18.34
Scotland - Advantaged	600	1.00	1.00	0.73	16.91
Scotland - Disadvantaged	512	0.81	1.41	0.44	21.16
Northern Ireland - Advantaged	404	1.21	1.57	0.86	24.95
Northern Ireland - Disadvantaged	574	0.84	1.65	0.47	21.44
All strata	10,625	0.87	1.45	0.14	38.18

Table 8: GOVWT2, sweep 7 overall weight for whole of the UK analysis.

Sampling stratum	N	Mean	SD	Min	Max
England - Advantaged	2,971	1.71	2.22	1.17	56.42
England - Disadvantaged	2,594	1.21	2.16	0.64	30.75
England - Ethnic	1,503	0.40	0.78	0.22	10.44
Wales - Advantaged	484	0.57	0.92	0.37	13.37
Wales - Disadvantaged	983	0.26	0.50	0.14	6.49
Scotland - Advantaged	600	0.75	0.75	0.55	12.78
Scotland - Disadvantaged	512	0.61	1.07	0.33	16.08
Northern Ireland - Advantaged	404	0.40	0.52	0.29	8.32

Northern Ireland - Disadvantaged	574	0.28	0.54	0.15	7.05
All strata	10,625	0.98	1.76	0.14	56.42

For a description of how to use the weights in Stata and SPSS refer to the respective guide (see section 12.3).

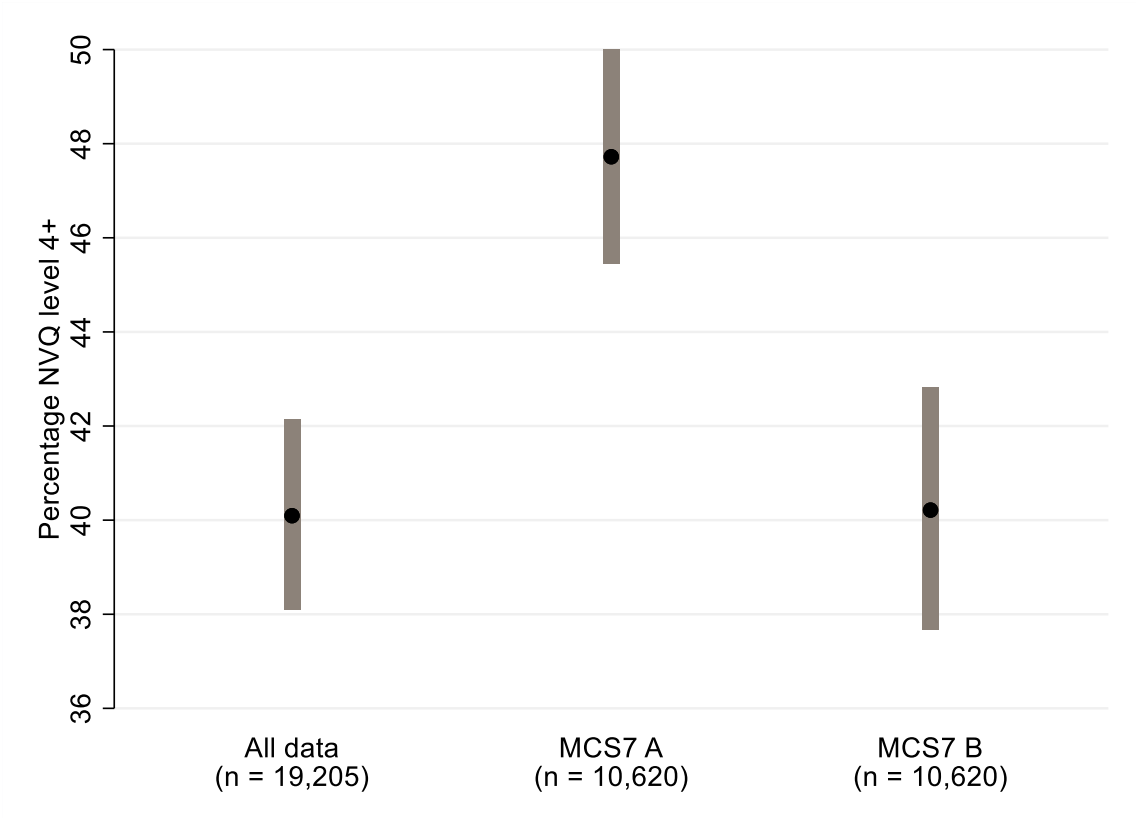
We note that the effectiveness of the response weights to correct for bias depends on the inclusion of all important predictors of unit non-response in the response model (Seaman and White, 2013).

12.2.3 Effectiveness of the weights

To examine the effectiveness of the derived non-response weights in restoring sample representativeness we conducted several analyses, two of which are presented here. We considered the distributions of variables which are observed in all or virtually all cohort members. We compared the following distributions of each variable: i) across all cohort members with observed data, ii) in MCS7 respondents only (to assess the extent of bias caused by non-response), and iii) in MCS7 respondents after the application of the non-response weights (to assess to what extent the bias due to non-response could be overcome). In all analyses the MCS initial sampling weights, primary sampling unit, strata and finite population correction were appropriately accounted for.

Results for parental NVQ level are presented in Figure 2. The percentage with parents with an NVQ level 4+ was considerably higher among MCS7 respondents than in the whole MCS sample (48% vs. 40%), indicating substantial bias. However, the application of the non-response weights essentially eliminated this bias.

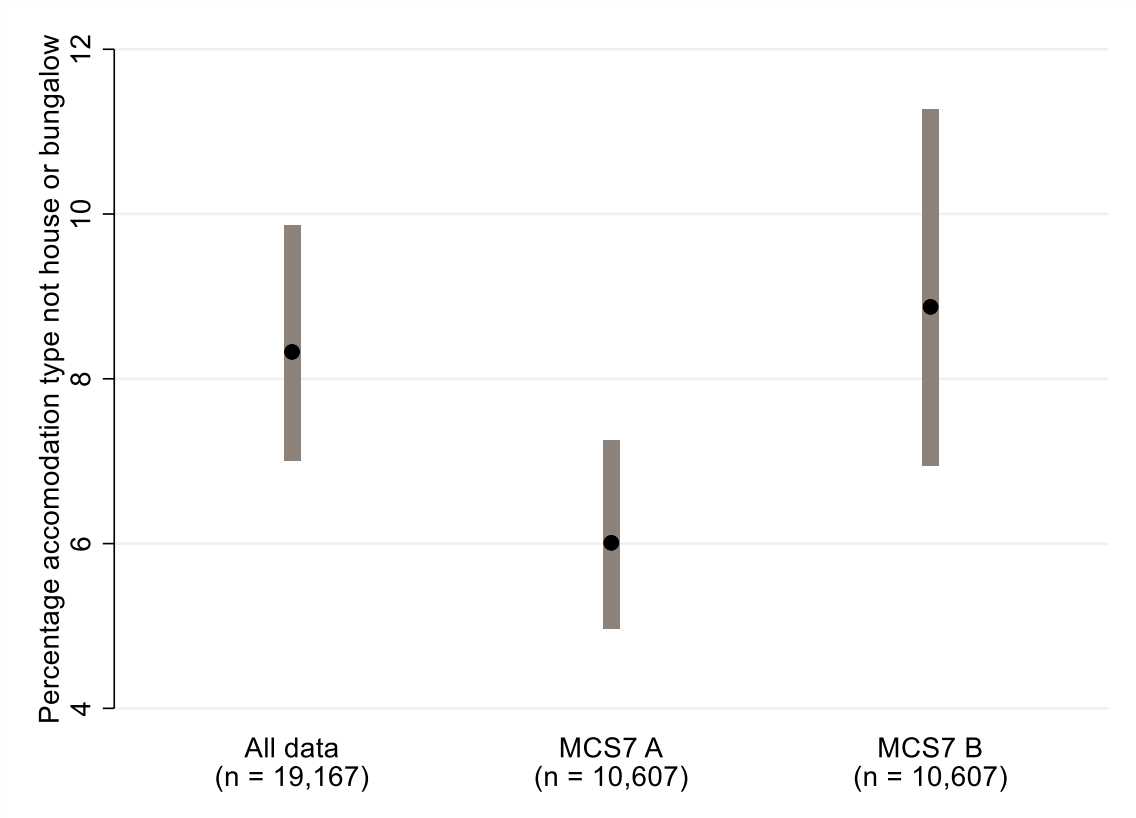
Figure 2: Percentage with parental NVQ level 4+ under different analysis approaches.



Note: MCS7 A = percentage in MCS7 respondents only; MCS7 B = percentage in MCS7 respondents after the application of the non-response weights.

Results for accommodation type are presented in Figure 3. There is again some evidence of bias due to non-response which is largely (though not perfectly) resolved through the application of the non-response weights.

Figure 2: Percentage of accommodation type not house or bungalow under different analysis approaches.



Note: MCS7 A = percentage in MCS7 respondents only; MCS7 B = percentage in MCS7 respondents after the application of the non-response weights.

Although these analyses illustrate the performance of the non-response weights with respect to these particular variables, they do not form a "test" of the performance of the non-response weights in general. In analyses of other variables we found the non-response weights to perform well, but this may not be the case for all variables of interest.

12.3 Supporting documents

MCS Technical Report on Sampling (4th edition, 2007) https://cls.ucl.ac.uk/wp-content/uploads/2017/07/Technical-Report-on-Sampling-4th-Edition-August-2007.pdf

MCS Technical Report on Response (3rd edition, 2010) https://cls.ucl.ac.uk/wp-content/uploads/2017/07/mcs_technical_report_on_response_thrid_edition.pdf

Technical Report on Response in sweep 5 (2014). https://cls.ucl.ac.uk/wp-content/uploads/2017/07/Technical-Report-on-Response-in-Sweep5-for-web-TM.pdf

12.4 References

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