

Going online with the National Child Development Study: Design decisions during the development of the Age 55 web survey

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Matt Brown

Abstract

The National Child Development Study (NCDS) Age 55 Survey adopted a sequential mixed-mode design whereby study members were first invited to participate online, with non-respondents being followed up by telephone. This represented one of the first uses of the web as a primary data collection tool in a large-scale longitudinal study in the UK or internationally. This paper provides a summary of the design decisions taken to maximise the quality of the data collected via the web, and is intended to aid those considering administering a similar survey. The paper describes the design of the web survey (in the mixed mode context) and the contact strategy employed to encourage participation via the web.

1. Introduction

Although web survey technology is well-established, to date the use of web surveys as a primary data collection mode has been relatively limited among large-scale probability surveys. However, the use of the web in mixed mode surveys is more widespread and is increasing (de Leeuw, 2005). A sequential mixed-mode approach, with web as the first mode followed by telephone was used for the Age 55 Survey of the National Child Development Study (NCDS), a longitudinal birth cohort study which began in 1958 (Power & Elliott, 2006). NCDS is one of the first large-scale longitudinal studies in the UK and internationally to use the web as a primary data collection mode in a mixed-mode context.

Since 1958 there have been ten attempts to re-contact and gather information from the cohort (at ages 7, 11, 16, 23, 33, 42, 44, 46, 50 and 55). Up until the Age 55 survey the primary mode of data collection had been face-to-face interviews, with the exception of the Age 46 survey which was conducted via telephone.

As is typically the case amongst those considering moving to a mixed mode data collection strategy, the key motivation was to reduce costs as a result of funding constraints. Web and telephone were to be offered sequentially, with the intention being that a significant number of participants would then complete via web (the cheaper mode) which would reduce the number of interviews to be completed via telephone (the more expensive mode) (Dillman et al., 2009). In addition, it was also felt that use of the web would bring other benefits including providing study members with greater flexibility over when they complete the survey, a shorter fieldwork period and the potential to enhance the survey with visual information (Callegaro et al., 2015).

The move to using the web did however raise many challenges and uncertainties. It is known from prior waves that the NCDS cohort are, in the main, regular users of computers and the internet. At age 50, 91 per cent had a computer at home and 65 per cent used a home computer at least several times a week, but it was unknown whether a significant proportion of participants could be persuaded to take part online. Evidence from other surveys gave some grounds for optimism. The Longitudinal Study of Young People in England used a sequential mixed mode approach with web as the first mode in waves 5 to 7 and a relatively high proportion, 37% to 46%, of interviews were conducted online (Department for Education, 2011), but participants were clearly much younger than NCDS participants. However, the U.S. Health and Retirement Study which follows a sample of adults aged 50 and over has conducted a number of 'between wave' online surveys (Sonnegá & Weir, 2014) which have obtained response rates of 70 to 75% and an experiment with online data collection conducted on the British Crime Survey (Fong and Williams, 2011) found that that online response actually increased with age.

The second concern was the overall response rate and whether the mixed mode approach involving web and telephone would yield the high response rate that has been achieved in all prior waves. Evidence from other studies was scarce as no other major population based longitudinal study had adopted this approach at this time (Dex & Gummy, 2011; Couper, 2012). Much consideration was given therefore to ensuring that the contact strategy employed would maximise both the web take-up rate and the overall response rate.

A third concern was whether 'mode effects' would lead to differences in measurement between those completing the web survey and those interviewed via telephone, particularly as previous evidence suggests that mode effects on measurement are most likely between interviewer administered and self-completion methods, such as the web (Dillman et al., 2009). It was therefore vital that the web and telephone data collection instruments were designed in such a way as to minimise the potential for measurement differences across the two modes.

Finally the questionnaires employed by the study are complex in nature; in particular the age 55 survey was to include three 'event history' sections covering cohabiting relationships, housing and economic activity in which respondents are asked to report details of all changes since they were last interviewed. In prior surveys an interviewer has been on hand to guide respondents through these particularly complex sections of the questionnaire but for web responders the help of an interviewer would clearly be unavailable. It was therefore crucial to ensure that the survey was designed in a way that ensured respondents could navigate their way through the questionnaire with ease.

The contact strategy and the data collection instruments were rigorously tested and gradually improved over a long development period which involved two rounds of 'user-testing' with specially recruited members of the public, a pilot study with a longitudinal pilot sample (and some new recruits) and a dress rehearsal with a sub-sample of cohort members. A detailed description of the development work is provided in the NCDS Age 55 Survey Technical Report (www.cls.ioe.ac.uk/ncds9techreport). In addition, in order to rigorously assess the effect of the mixed mode approach on response and measurement the Age 55 survey included an experiment whereby a random sub-sample of c.1500 study members were allocated to a telephone-only approach and were not invited to participate online.

Amongst those allocated to the mixed mode approach, 62% completed the web survey with a further 21% being followed up by telephone, giving an overall response rate of 83%.

Further details about response are provided in the Technical Report and results of the mixed mode experiment will be published shortly.

This paper describes the design of the web survey (in the mixed mode context) and the contact strategy employed to encourage participation via the web.

2. Web Survey Design

The design of the web survey was of vital importance to the overall success of the NCDS Age 55 Survey. As mentioned above, there is much evidence that mode of data collection can have an impact on the way in which respondents answer survey questions. For example, it has been found that sensitive questions are more prone to social desirability bias in interviewer administered modes (e.g. Tourangeau & Yan, 2007; Kreuter, Presser and Tourangeau, 2008), respondents give less detail when responding to open questions in self-completion modes (Dillman, 2000; de Leeuw, 1992) and that telephone respondents often give more positive responses when responding to scalar questions (Dillman et al, 2009).

When designing the survey every effort was made to ensure equivalence between the web and CATI instruments, drawing extensively on the Unimode design principles set out by Dillman and colleagues (2009). In addition, the great majority of the content of the survey was factual in nature, and such questions are generally acknowledged as being less prone to mode effects (e.g. Lozar et al., 2002; Schonlau et al., 2003).

NCDS study members have been involved in the study for many years and the ongoing success of the study relies on their continued participation. It was therefore crucial that the experience of completing the web survey was a positive one. A

poorly designed web survey which was difficult to navigate would potentially result not just in lower levels of participation at age 55 but increased attrition in future waves.

A summary of the key design decisions is provided below. Many of our decisions drew upon the guidelines set out by Couper (2008).

2.1) Web Survey Design

As shown in Box 1 the NCDS Age 55 web survey used a 'simple' design with a white background. The question and response options occupy the centre of the visual field and additional elements are placed in such a way to make them visible but not distracting. The top banner includes the NCDS logos and the colour scheme and fonts replicate those used in the letterhead printed on mailings to study members. The fieldwork agency logo (TNS BMRB) is placed in the lower banner. In the top right corner are two clickable links - the first of which provides general advice for completing the survey, the second gives information about privacy and data security. These links are present on each page. During the development phase participants were asked for their views on the 'look and feel' of the web survey and feedback was generally very positive.

2.2) Text

All question text and response options were in black. The font used was Verdana in size 12. All question text was left-justified with ragged right margins. The line length was not fixed and so was dependent on the browser and screen size used by the respondent. A maximum of around 12 words was displayed per line to enhance readability. All question text and response options were written in sentence case with occasional use of bold text for emphasis. Use of upper case text was avoided.

Box 1: General layout

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Before we start we need to check a few details.
Firstly please enter your sex below.

Male
 Female

Next
BACK

TNS

2.3) Question layout

Following convention, response options were generally laid out vertically. Response options were left justified with buttons to the left. Some advocate the use of horizontal response options for scales on the basis that vertical layout suggests distinct entities whereas horizontal layout implies continuation (Jenkins and Dillman, 1997), but Couper (2008) suggests there is little evidence to support this and recommends vertical layout for all questions. We opted to use vertical layout for scale questions unless they were presented as part of a grid (see Section 2.5)

2.4) Action buttons

HTML 'Next' and 'BACK' buttons were provided on all screens. It was felt important that respondents should be able to go back to amend a response to a prior question, however we did not wish to draw unnecessary attention to the 'BACK' button so it was made considerably smaller than the 'Next' button.

2.5) Grid questions

When administering a multi-code question via the telephone interviewers will typically read each response option and allow respondents to answer 'Yes' or 'No', whereas on the web respondents may simply be presented with the list of options and invited to select those that apply. However, evidence from the literature suggests that this approach will typically lead to a greater number of endorsements being given in the telephone mode (Smyth et al., 2008). In order to maximise

comparability between the two modes the vast majority of multi-code questions were therefore presented as Yes/No grids with both web and telephone respondents being required to provide a response to each option (see Box 2)¹. Grid formats were also used on a number of occasions where a series of questions made use of the same response options. Some advocate avoiding the use of grids (Dillman et al., 2009) but they are widely used and evidence suggests that if well designed then a high level of data quality can be maintained while increasing efficiency (Couper, 2008).

When using the grid format the items were displayed vertically with response options displayed horizontally. Response options were right aligned and it was always ensured that no horizontal scrolling would be required. Items were separated from each other via the use of shading.

An additional instruction informing respondents of the need to respond to each item was placed above the grid on each occasion.

Box 2: Yes/No grid format

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Do you currently receive a regular payment from any of the following sources?
 Please select yes or no for each source of income.

	Yes	No
Benefits or tax credits (including child benefit)	<input type="radio"/>	<input type="radio"/>
Income from investments, including interest on savings	<input type="radio"/>	<input type="radio"/>
Rent from boarders, lodgers or sub-tenants/rent from other property	<input type="radio"/>	<input type="radio"/>
Pension	<input type="radio"/>	<input type="radio"/>
Any other source of regular income	<input type="radio"/>	<input type="radio"/>

[Next](#)
[BACK](#)

TNS

2.6) Numeric questions / Open questions

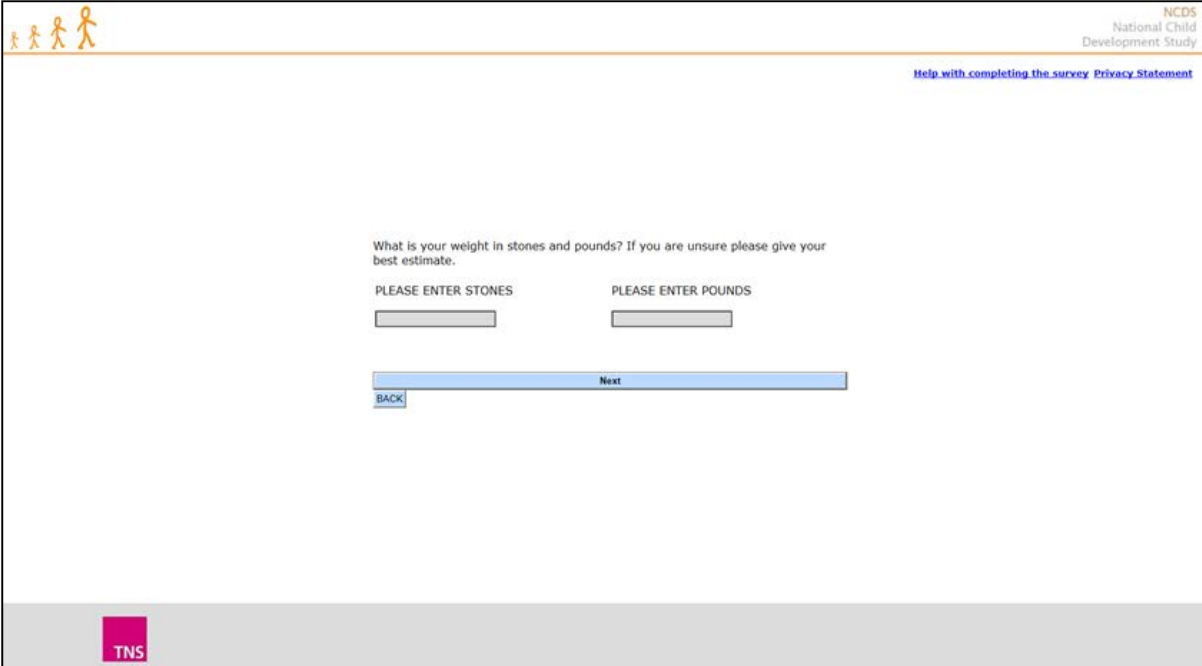
Numeric questions and open questions used a similar format whereby a grey text box was provided underneath the question text in which respondents could enter

¹ For a small number of questions in which multiple responses were permitted it was considered unnecessary or inappropriate to use the grid format. For example, respondents that reported that they had cancer were asked a follow-up question that asked which type of cancer. Thirteen types of cancer were listed and it was not felt desirable to force respondents to report whether they suffered from each.

their answer. The size of the text box was altered depending on the volume of text expected for a particular question.

A number of questions required respondents to enter their answer in to multiple fields on the screen. For example, if reporting an imperial weight then 'stones' had to be entered in one box, and 'pounds' in another. The layout of such questions was considered carefully and decisions taken based on a question by question basis. For example, when reporting weight two boxes in which 'stones' and 'pounds' were to be entered were laid out horizontally (see Box 3).

Box 3: Multiple responses per screen



The screenshot shows a survey question: "What is your weight in stones and pounds? If you are unsure please give your best estimate." Below the question are two input fields: "PLEASE ENTER STONES" and "PLEASE ENTER POUNDS". At the bottom of the question area are "Next" and "BACK" buttons. The top right corner of the screen displays "NCDS National Child Development Study" and a link for "Help with completing the survey Privacy Statement". The TNS logo is visible in the bottom left corner.

2.7) Additional clarification

As far as possible all clarification and instructions were incorporated into the question text. When instructions followed on from the question text the instructions were formatted in the same way as the question text. During the development phase instructions were presented in a lighter font but it became clear that they were often missed. When clarifications would not be relevant for all they were provided via help screens which were accessed via clicking a hyperlink placed between the question text and the response options (see Box 4). The additional information would then appear 'on top of' the main screen and could then be closed by clicking a 'Close' button in the top right corner.

Box 4: Help screens

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Is there anyone else, who lives with you?
[What counts as someone living with me? / What if someone lives here some of the time but not all of the time?](#)

Yes
 No

[Next](#)

[BACK](#)

TNS

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What counts as living with me? Close

All those who **normally** live with you AND who share a living room with you AND/OR share a meal a day with you.

Include:

- All those who are away from home temporarily (for less than 6 months continuously) - e.g. on holiday, in hospital, for work, in prison
- Children where custody is shared between you and an ex-partner
- Children under 16 attending boarding school but returning home during school holidays;
- Boarders - people who pay rent for a room and for whom meals are provided

Exclude:

- All those who are away from home for 6 months or more continuously.
- Children in care of local authority, in residential home or with foster parents;
- Children in long-stay institutions for the handicapped or disabled;
- Children aged 16 or more attending boarding school
- Students living away from home during term-time
- Lodgers - people who rent a room but whose meals are not provided

TNS

2.8) Missing data

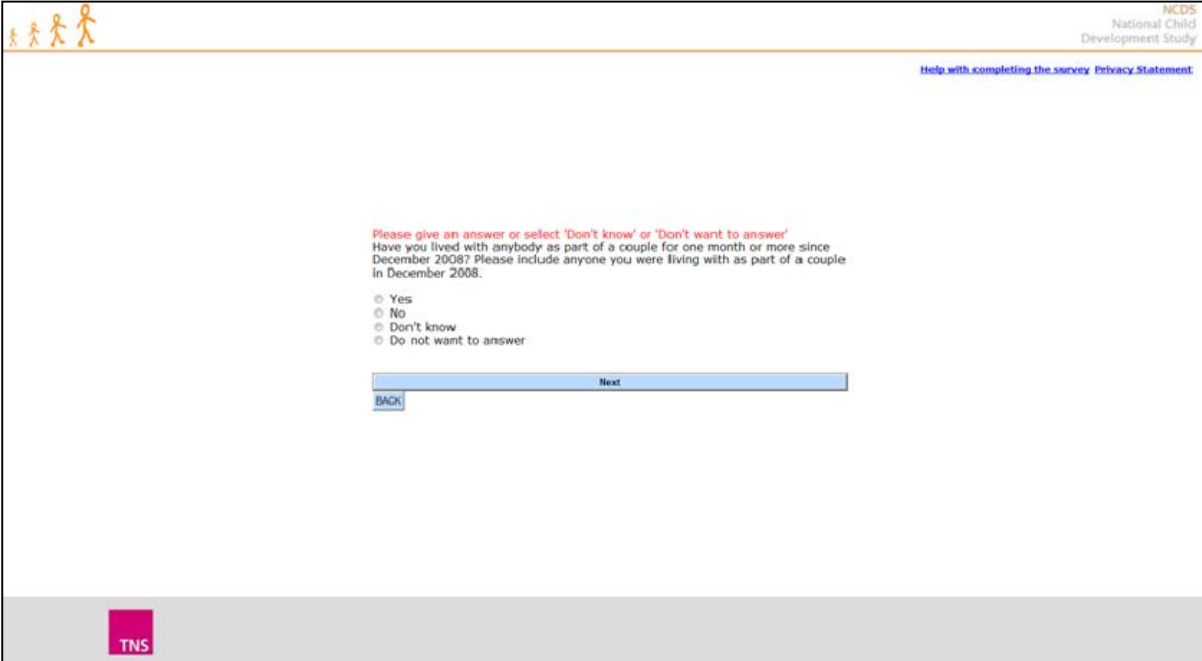
Study members have always been assured that they may choose not to answer any question that they do not wish to. However, there was concern that visible 'Don't Know' and 'Refusal' buttons on the web survey would lead to an increase in their usage which would both result in an increase in overall missing data and also lead to a lack of comparability with the telephone survey where these options would obviously not be visible. The approach taken therefore was to hide the 'Don't Know' and 'Refusal' options when questions were first presented, but to activate them when

respondents clicked 'Next' without providing an answer. In addition, an error message in red text appeared above the question text which said 'Please give an answer or select 'Don't Know' or 'Don't want to answer' (see Box 5).

For questions in a grid format the 'Don't know' and 'Don't want to answer' options appeared as additional columns to the right of the grid.

Instructions about how to skip questions were provided at the beginning of the survey. Certain types of question typically result in higher levels of non-response than others, most notably those that are may considered sensitive and those that are difficult to answer (Tourangeau and Yan, 2007). For example income questions are often skipped, both because such questions may be considered intrusive and also because participants may genuinely not know the answer. We were concerned that respondents that glossed over the instructions at the beginning would not know how to skip such questions when they arose which could cause frustration. On questions where there was likely to be a greater desire to skip it was therefore considered prudent to provide a reminder about how to do this. The reminder took the form of a link to a help screen entitled 'What if I don't know or don't want to answer?' which provided guidance when clicked. For numeric questions such as income the help screen text also encouraged respondents to provide an estimate if they were unable to provide a completely accurate figure.

Box 5: 'Don't Know' and 'Refusal' options



The screenshot shows a survey interface for the NCDS National Child Development Study. At the top left, there is a logo of three stylized figures. At the top right, the text reads 'NCDS National Child Development Study' and a link 'Help with completing the survey Privacy Statement'. The main content area contains a red error message: 'Please give an answer or select 'Don't know' or 'Don't want to answer''. Below this, the question text asks: 'Have you lived with anybody as part of a couple for one month or more since December 2008? Please include anyone you were living with as part of a couple in December 2008.' There are four radio button options: 'Yes', 'No', 'Don't know', and 'Do not want to answer'. Below the options is a blue 'Next' button and a 'BACK' button. At the bottom left, there is a pink square logo with the letters 'TNS'.

2.9) Logic checks and use of 'fed forward' data

The questionnaires employed in NCDS are typically very complex and make extensive use of 'dependent interviewing' where routing is based not just on

responses to earlier questions within the same survey but also on responses to earlier surveys which has been 'fed forward'.

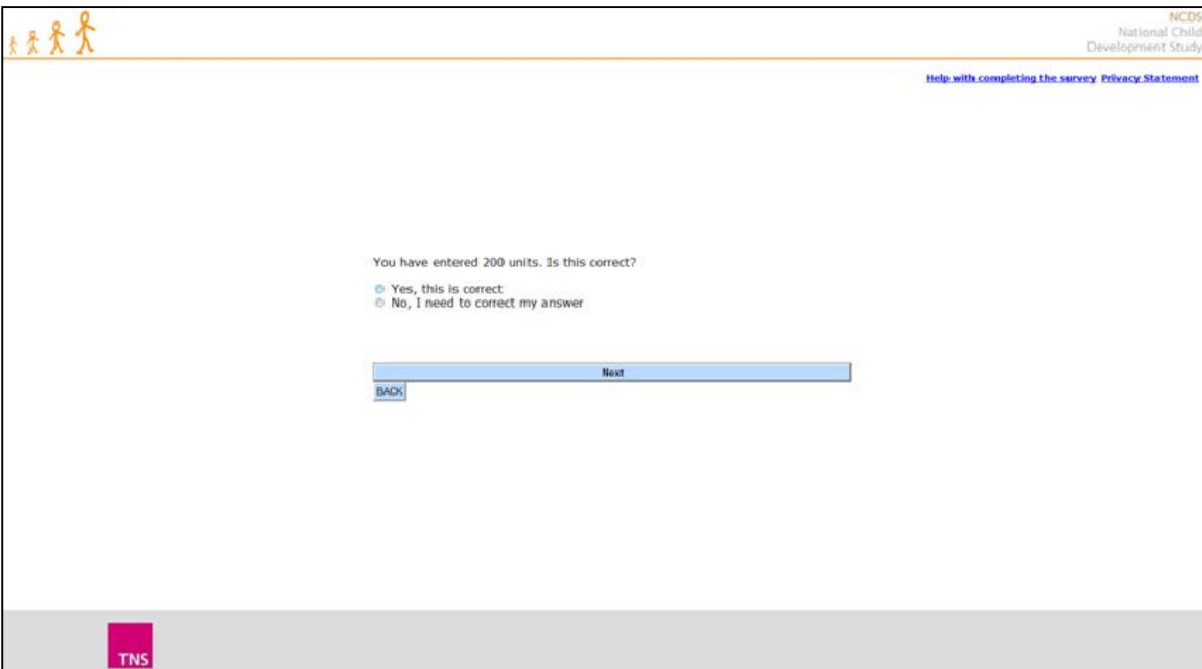
In order to reduce the need for post-fieldwork editing the questionnaires are typically programmed with a comprehensive set of checks which seek to prevent the entering of illogical responses which are either inconsistent with previous responses or, for numeric questions, outside of an expected range.

Two different types of check are typically used; soft checks which question an improbable or inconsistent response but allow the interview to proceed without the response being amended and hard checks which cannot be by-passed unless an 'accepted' response is provided.

Prior questionnaires have been administered by interviewers who are used to working with these logic checks. However, when designing the web survey we were wary of making such extensive use of checks as this would have the potential to disrupt the flow of the interview and make for a frustrating experience. As such, the number of checks was much reduced in comparison to prior waves and in particular hard checks were kept to an absolute minimum so as to avoid the possibility of a respondent becoming 'stuck' and unable to proceed.

Soft checks were presented as additional questions (see Box 6) in which respondents were asked to confirm whether their response had been correct. If the respondent needed to correct their answer they were routed back to the prior question to do so. Hard checks were displayed as error messages in red text above the question text. It was always ensured that the wording of the check made clear the nature of the error.

Box 6: Soft check.



The screenshot shows a survey interface for the NCDS National Child Development Study. At the top left, there is a logo with three stylized figures. At the top right, the text reads 'NCDS National Child Development Study' and a link 'Help with completing the survey Privacy Statement'. The main content area contains the question: 'You have entered 200 units. Is this correct?'. Below the question are two radio button options: 'Yes, this is correct' (which is selected) and 'No, I need to correct my answer'. At the bottom of the question area, there are two buttons: 'Next' and 'BACK'. The TNS logo is visible in the bottom left corner of the page.

As mentioned above the NCDS questionnaires typically make extensive use of information which is 'fed forward' from prior waves. For example, at the outset of the relationship history interview a respondent who was living with a spouse at the time of the interview would be informed that e.g. 'Last time we spoke to you in December 2008 you were married to and living with John. John was male and his date of birth was 12th January 1963'. Inevitably there will be occasions when study members will dispute the fed forward information but in prior waves interviewers have been given only limited opportunities to amend the fed forward data. For the Age 55 survey, where web participants would be completing the survey in isolation, it was felt important that opportunities were provided to correct any information from prior waves that respondents did not agree with, so as to avoid causing frustration. All questions which presented information from prior waves therefore had response options which allowed the respondent to indicate that the fed forward data was incorrect, which then routed to follow-up questions which allowed respondents to re-provide the relevant data.

2.10) Event history calendar

The most complex sections of the questionnaire are the three 'event histories' in which respondents are asked to provide details of their cohabiting relationships, housing circumstances and periods of economic activity since the time they were last interviewed (or since a set reference period if they have not been interviewed in recent waves). In prior waves interviewers have been on hand to provide guidance during the completion of these sections but at 55 this would clearly not be the case for web respondents. It was therefore of vital importance that these sections were carefully designed so as to ensure that participants could navigate their way through with ease whilst providing data of the highest quality.

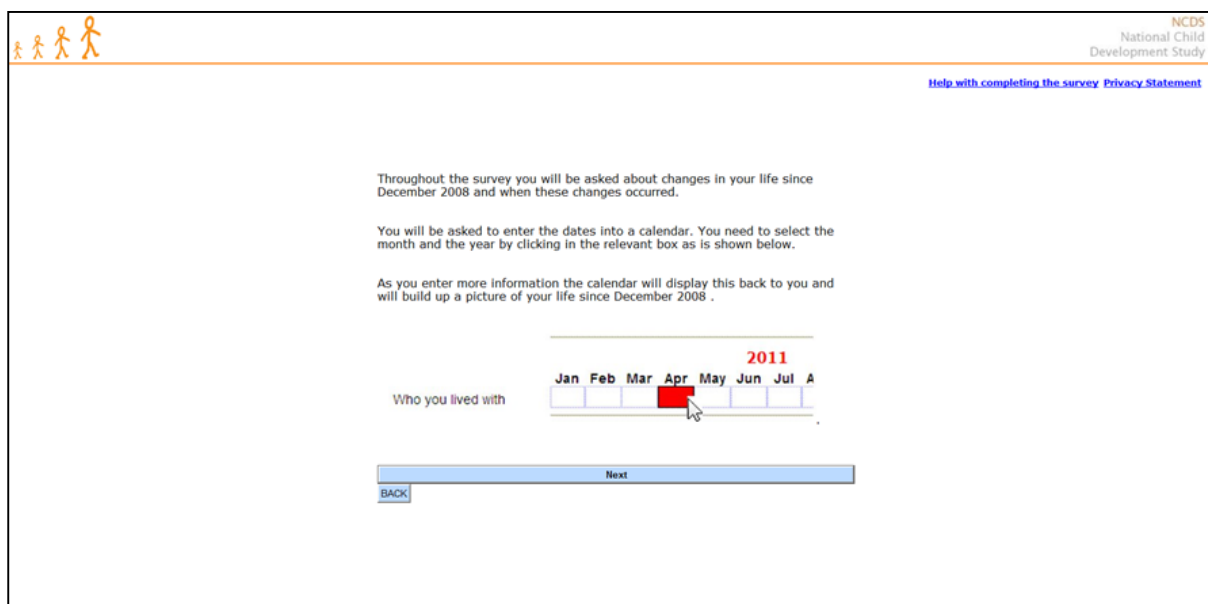
In previous waves a standard questionnaire based approach had been used but evidence suggests that the use of Event History Calendars can increase the quality of reporting of events, relative to standard questionnaire approaches, particularly when reference periods are relatively long (Belli, 1998). Event History Calendars can encourage parallel cueing, whereby the recollection of events in one domain of life can help to trigger the recollection of events in other domains (Belli, 1998). The three event histories which featured in the NCDS age 55 survey also form a core component of all recent waves of the 1970 British Cohort Study (BCS70). In the most recent wave of BCS70 at Age 42 (which was administered face-to-face) a visual calendar was introduced which sought to aid collection of this information by simultaneously displaying transitions across these domains. The introduction of the calendar was found to have had a broadly neutral effect on measurable aspects of data quality (e.g. missing data, illogical data) but it has not yet been feasible to empirically assess the impact that the use of the calendar had on the accuracy of the data collected as this would require comparison with an external source of data. However, anecdotal feedback from interviewers suggested that many BCS70

respondents had found the calendar helpful and this view, coupled with the fact that there had at least been no negative impact on data quality meant that we were keen to make use of a calendar in the NCDS Age 55 survey.

The BCS70 calendar was not interactive. Dates were collected and inputted into the questionnaire by the interviewer and then fed into the calendar which provided a visual display of all responses entered. As the NCDS web survey was to be completed by respondents themselves it was felt necessary to increase the usability of the calendar by improving the visual design and by allowing dates to be entered directly into the calendar. The final design of the calendar was developed over two rounds of “user-testing” and two pilot stages (described in the Technical Report). A brief summary of the key features is provided below. Note that the calendar was also used by the interviewers when conducting the CATI interviews. Obviously in CATI the calendar was not visible to respondents, but it was hoped that the visual calendar would help interviewers to identify improbable answers so that they could query these with respondents.

Two instruction screens were provided at the beginning of the survey: the first provided general advice about completing the survey, whilst the second (see Box 7) focused on the calendar sections, explaining that at various points throughout the survey ‘you will be asked about changes in your life since (the appropriate reference period) and when these changes occurred’. The instructions explained that dates should be entered into the calendar by clicking in the box which corresponded to the appropriate month and year. The screenshot demonstrated that once clicked the box would turn red to show that it had been selected.

Box 7: Calendar instruction screen



The first ‘history’ to be covered was cohabiting relationships. If a respondent was in a cohabiting relationship at the time of their last interview they were asked if they

were still living with that person as part of a couple. If they were not living with anyone at the time of the last interview they were asked if they had done so at any point since then. If there had been a change in their relationship status they would then be shown a blank calendar screen into which they were asked to enter the date that they either started living with someone or the date they stopped living with the person they had lived with when previously interviewed.

The calendar provided boxes for each month between the start of the relevant reference period (usually the month of last interview) and the month of the current interview, with months laid out horizontally and years vertically. Each row was labelled 'Who you lived with'.

Box 8: Relationship history calendar – 1

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When did you first stop living together as a couple with Julie? If you don't know the precise month please give your best estimate.

Select the month and year in the calendar below by clicking the relevant box on the line labelled 'who you lived with'.

2008

Who you lived with Dec

2009

Who you lived with Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

2010

Who you lived with Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

2011

Who you lived with Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

2012

Who you lived with Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

2013

Who you lived with Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

2014

Who you lived with Jan Feb Mar Apr May Jun

Once a month box has been clicked the box turned red (as shown above) and then when the 'Next' button was clicked a bar labelled with that person's name appeared to indicate the time spent living with them (Box 9).

Box 9: Relationship history calendar – 2

The calendar below shows your relationships since December 2008 that you have told us about so far. Please check that the information is correct. If so, please click Next. If you need to change your last answer, please click Back.

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2008 Dec

Who you lived with

2009 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Julie

Who you lived with

2010 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Julie

Who you lived with

2011 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Julie

Who you lived with

2012 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

Who you lived with

2013 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Jane

Who you lived with

2014 Jan Feb Mar Apr May
Jane

Who you lived with

Next

BACK

The relationship history section also collected information about marriage and civil partnerships. Periods of being within a marriage may not correspond to periods of cohabitation and so these were dealt with on a separate row (see Box 10).

Box 10: Relationship history calendar – 3

The calendar below shows your relationships since December 2008. Please check that the information is correct. If so, please click Next. If you need to change your last answer, please click Back.

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2008 Dec

Who you lived with
Who you were married to

2009 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Julie

Who you lived with
Who you were married to

2010 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Julie

Who you lived with
Who you were married to

2011 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Julie

Who you lived with
Who you were married to

2012 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Julie Jane

Who you lived with
Who you were married to

2013 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Jane

Who you lived with
Who you were married to

2014 Jan Feb Mar Apr May
Jane

Who you lived with
Who you were married to

Next

BACK

The second set of questions to make use of the calendar was the 'housing history'. This operated in exactly the same way in that respondents were asked if they had changed their address since the time of their last interview and if they had they were asked to enter the dates of each change into the calendar into additional rows labelled 'Where you lived'. The bars were labelled with either the postcode or the

name of the town in which the respondent had lived, depending on the level of detail that had been provided. Finally came the 'economic activity' history in which dates of any transitions were entered into a fourth row labelled 'What you were doing'. Here bars were labelled with either the 'job title' or the non-working status e.g. unemployed, retired etc (see Box 11). Once all of the histories had been finished a final screen showed the fully completed calendar and the respondent was asked to confirm whether all of the information that had been entered was correct. If this was not the case an open question asked respondents to describe the correction they wished to make so that the data could be edited post-fieldwork if necessary.

Box 11 – Final calendar screen

The calendar below shows your relationships, where you have lived and what you have been doing since December 2008. Is all of this information correct?

		2008												
													Dec	
Who you lived with														
Who you were married to														
Where you lived														
What you were doing														
		2009												
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Who you lived with													Julie	
Who you were married to													Julie	
Where you lived													WC1H 0AL	
What you were doing													Chef	
		2010												
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Who you lived with													Julie	
Who you were married to													Julie	
Where you lived													WC1H 0AL	
What you were doing													Chef	
		2011												
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Who you lived with													Julie	
Who you were married to													Julie	
Where you lived									WC1H 0AL		Current address			
What you were doing													Chef	
		2012												
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Who you lived with													Jane	
Who you were married to														
Where you lived													Current address	
What you were doing													Unemployed	
		2013												
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Who you lived with													Jane	
Who you were married to														
Where you lived													Current address	
What you were doing													Unemployed	
		2014												
		Jan	Feb	Mar	Apr	May	Jun							
Who you lived with								Jane						
Who you were married to														
Where you lived								Current address						
What you were doing								Unemployed						
		<input checked="" type="radio"/> Yes <input type="radio"/> No												
		Next												
		<input type="button" value="BACK"/>												

3. Contact strategy

3.1) Fieldwork period

During the dress rehearsal it had originally been planned that web fieldwork would run for three weeks but towards the end of the third week the daily number of interviews being achieved remained reasonably high and so it was decided to extend web fieldwork for a further week. This proved fruitful, with 5% of dress rehearsal CAWI interviews being achieved in the fourth week of fieldwork which if replicated in the main stage would have resulted in a substantial number of additional web interviews. For the main stage it was therefore planned that telephone calls would commence to web non-respondents after 4 weeks, although the web survey would remain open for the duration of fieldwork as it was felt that once interviewers began calling then a number of study members would be motivated to complete the web survey so as to avoid further calls.

3.2) Invitations

Invitations were sent both by mail and email (where available). The mailed invitations were accompanied by a leaflet and the emailed invitations included a link to a pdf version of the same leaflet (which had been re-formatted to make it suitable for viewing online).

The letters/emails explained that the latest stage of NCDS had begun, was being conducted by TNS BMRB and that for the first time it was possible to complete the survey online. The web address at which the survey was located was provided and the mailed invitations requested that participants 'typed the web address below into your internet browser' whereas the emailed invitations had a link which participants were invited to click to access the survey. The invitations also provided a 'Unique ID' which respondents needed to use to access the survey. The invitations explained that 'If for any reason you can't complete the survey online, one of our interviewers will contact you by telephone in a few weeks and you will be able to complete the survey over the phone' and also told study members how long it would take to complete the survey (35 minutes). Finally a freephone telephone number and an email address were provided so that study members could make contact if they had any questions.

The leaflet provided additional information about the survey including a summary of the topics that would be covered and reassurances about data security.

All respondents were initially invited to participate online. There is much information available from previous waves about computer use (e.g. whether respondents have a computer at home, how often they use it, how often they use the internet, self-rating of computer skills and also whether an email address had been supplied for making contact) and considerable thought was given to whether it would be preferable to allocate the sub-group who made very little or no use of computers to be contacted directly by telephone. However, the team concluded that it was unlikely to be the case that an initial invitation to complete the survey online would have a detrimental impact on response, as long as it was clear that it would be

possible to complete the survey using an alternative mode and so this approach was used in both the pilot study and the dress rehearsal. The dress rehearsal achieved a response rate of 78% (amongst GB cases) which was considered satisfactory given the short fieldwork period and was considered as indicative evidence that inviting everyone to take part online had not proved harmful (although it must be acknowledged that as no experimental evaluation was conducted the counter-factual cannot be known).

Another option that was considered was to only mention the possibility of completing via telephone to the sub-group considered least likely to participate via the web. However, there was some feeling within the study team that this approach would not be ethical and so during the development period it was decided that all study members would be informed about the possibility of completing the survey via telephone upfront. The dress rehearsal web take-up rate was 58% which greatly exceeded our expectations and suggested that explicitly mentioning the possibility of completing the survey by telephone was not depressing the web take-up rate (although again we have no evidence on what the web take-up rate might have been had the telephone option not been mentioned to all).

Invitations were however tailored based on prior participation - there was a 'standard' version for those who had taken part in the prior survey, a 'refusal' version which acknowledged that when last contact the study member had opted not to take and a 'non-contact' version which mentioned that we had not been able to make contact with them at the time of the last survey. The 'refusal' and 'non-contact' versions emphasised that we would be very grateful if they participated this time around.

In addition, invitations were also tailored so that if no telephone numbers were held then study members were informed that if they wanted to take part via telephone they would need to make contact to supply a telephone number.

3.3) Reminders

Study members not completing the web survey after the initial invitation were sent a maximum of two reminders before telephone fieldwork began. The first reminder was sent after 12 days of web fieldwork and the second after 22 days. Reminders were sent simultaneously by post and by email (where email addresses were held). The first reminder was sent to all those who had not responded, the second was sent only to those who had previously provided the study with an email address. In the dress rehearsal two reminders were sent to all non-respondents but evidence from the dress rehearsal confirmed that those who had not previously provided an email address were considerably less likely to participate in the web survey and in particular they were very unlikely to do so after the second reminder. It was therefore felt that a second reminder to this group was not useful and would possibly be counter-productive. At the dress rehearsal reminders were sent on day 7 and day

14 but as the web fieldwork period for the main stage was to be extended to four weeks it was considered preferable to space the reminders more evenly throughout this period.

As per the initial invitations the reminders included the web link needed to complete the survey (which was clickable in the email versions) and the unique id required to complete the survey. Both email and postal reminders included a web link to the information leaflet sent with the original invitation.

Those who had completed partial web interviews were not sent the first two reminders. Once telephone fieldwork began, interviewers began calling those who had completed partial web interviews. When spoken to study members were encouraged to complete their interview via telephone, but if they preferred could opt to complete the survey online.

Towards the end of the telephone phase of fieldwork a further reminder was sent via mail and email to all who had not participated which emphasised that the questionnaire could still be completed online and also encouraged respondents to telephone to arrange an appointment for an interview via phone if they preferred. An alternative version of the reminder was sent to those who had completed partial web interviews which asked respondents to complete the survey, either by web or by telephone.

Details regarding response following each reminder is provided in the NCDS Age 55 Survey Technical Report.

Conclusion

The NCDS Age 55 Survey represented the first use of the web as a primary mode of data collection in any of Great Britain's birth cohort studies and also the first use of a mixed mode data collection strategy. This paper has sought to provide a descriptive account of the design decisions made when developing the design of the NCDS Age 55 web survey and the contact strategy employed to maximise both rates of web completion and the overall mixed mode response rate.

Each of the visual design features of the survey was carefully considered and developed over multiple rounds of user-testing and piloting. The final design was found to work well and received positive feedback from study participants.

Over six in ten (62%) of those invited to complete the survey online chose to do so, a completion rate which vastly exceeded expectations, and which suggests that the convenience of participating online was popular with study members and that the contact strategy described here was effective.

Use of the web as part of a mixed mode approach was found to have no adverse effect on the overall response rate to the survey either. Interviews were achieved with 83% of those invited to participate via the mixed mode approach which is comparable with response rates achieved in prior face-to-face surveys and exceeded the response rate achieved with the single-mode telephone-only approach (78%).

Of course it cannot be known at this point what effect the mixed mode approach might have on subsequent attrition.

A rigorous assessment of the impact of use of the web within a mixed mode context on the quality of the data collected is well underway and the findings will be published shortly.

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