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Working Paper

It is time computers do clever things! The impact of dependent interviewing on interviewer burden

ISER Working Paper Series, No. 2009-07

Provided in Cooperation with:

Institute for Social and Economic Research (ISER), University of Essex

Suggested Citation: Sala, Emanuela; Uhrig, S.C. Noah; Lynn, Peter (2009) : It is time computers do clever things! The impact of dependent interviewing on interviewer burden, ISER Working Paper Series, No. 2009-07, University of Essex, Institute for Social and Economic Research (ISER), Colchester

This Version is available at:

<https://hdl.handle.net/10419/91960>

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“It is time computers do clever things!”. The impact of dependent interviewing on interviewer burden



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No. 2009-07
March 2009

INSTITUTE FOR SOCIAL
& ECONOMIC RESEARCH

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Non-technical summary

While designing surveys one could use different kind of questions. In a panel survey a major distinction is between the questions used in dependent and independent interviewing. Dependent interviewing (DI) questions differ from independent interviewing questions as DI uses information collected in previous waves of a survey to word the questions or route respondents through the questionnaire sections. DI questions have been increasingly used in major longitudinal surveys. They are claimed to improve data quality, reduce interviewer and respondent burden (the physical and mental efforts associated with administering or answering a questionnaire) and to positively impact interviewer-respondent interactions. Although some of these claims have undergone empirical tests, the impact of DI on interviewer burden remains currently unexplored and undocumented. This paper is an attempt to evaluate the impact of DI on interviewer burden and describe the mechanisms by which DI affects it and ultimately data quality. We apply a revised version of the interviewer burden model originally developed by Japac (2008) to analyse qualitative data collected in a survey carried out in 2006 on the British Household Panel Survey (BHPS) interviewers. We find that: (i) DI has a minor impact on interviewer burden, (ii) this impact is perceived by interviewers to be positive, (iii) the mechanisms by which DI reduces interviewer burden are mainly indirect as they are mediated by respondents, and (iv) in most cases the impact of DI on interviewer burden varies in relation to the type of DI questions asked and respondent circumstances. Issues concerning the relationship between interviewer burden and data quality are also discussed and future research areas are identified.

“It is time computers do clever things!”. The impact of dependent interviewing on interviewer burden

Emanuela Sala, S.C. Noah Uhrig and Peter Lynn

Abstract

This paper evaluates the impact of dependent interviewing (DI) on interviewer burden and data quality using qualitative data collected from a survey carried out in 2006 on the British Household Panel Survey (BHPS) interviewers. We find that: (i) DI has a minor effect on interviewer burden, (ii) this effect is perceived by interviewers to be positive, (iii) the mechanisms by which DI reduces interviewer burden are mainly indirect as they are mediated by respondents, and (iv) in most cases the effects of DI on interviewer burden varies in relation to the type of DI questions asked and respondent circumstances.

Acknowledgement:

This paper derives from the project “The Impact of Dependent Interviewing on Interviewing Dynamics: Implications for Longitudinal Survey Design”, funded by the UK Economic and Social Research Council (ESRC), research grant RES-000-22-2118. It forms part of the methodological research programme of the UK Longitudinal Studies Centre (ULSC), which is funded by ESRC grant ES/F3000537/1 and by the University of Essex. We are grateful to our colleagues Annette Jäckle for the useful comments on a preliminary version of the framework developed to evaluate the impact of DI on interviewer burden and Judi Egerton for helping us to locate relevant literature.

Key words:

Dependent interviewing, interviewer burden, measurement error, BHPS.

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“It is time computers do clever things!”. The impact of dependent interviewing on interviewer burden

1. Assessing the current state of dependent interviewing. Meeting the research agenda

Dependent interviewing is a standardised questioning method particular to longitudinal surveys that utilises data gathered in previous interviews of a respondent to formulate question text. This practice can be distinguished from independent interviewing (INDI) which makes no reference to data previously collected to phrase questions or route respondents through questionnaires (Lynn et al. 2006; Mathiowetz and McGonagle 2000). DI questions can be structured either proactively or reactively (Lynn et al. 2006). Proactive dependent interviewing (PDI) presents respondents with previously collected data and asks them to confirm the continuation of their status. If a change has occurred, respondents are asked for details of their current status. PDI is, for example, useful in updating job history details. There are three main designs for PDI questions: the “remind, continue”, “remind, confirm” and “remind, still” designs (Jäckle 2009). The “remind, continue” design provides a boundary before continuing with an independent question, the “remind, confirm” design asks respondents to check and confirm previously recorded answers and the “remind, still” design asks about change. With reactive dependent interviewing (RDI), respondents are asked questions first independently and prior information is used to confirm certain responses. For example, a respondent may report their income, then receive a series of follow-up questions if their current income suggests an unlikely increase or decrease over previous reports. As with PDI, RDI has different designs: the “item non response” and the “corrective follow-up” designs (Jäckle 2009). With an “item non response” RDI design, respondents who do not answer a question or answer “do not know” are reminded of their previous report and asked if that is still correct. Under the “corrective follow up” RDI design, any inconsistency between a current report and a previous report results in a consistency check on the apparent discrepancy.

DI is widely used on major longitudinal surveys internationally. Researchers have introduced DI into the Panel Study of Income Dynamics and the US Current Population Surveys, the Canadian Survey of Labour and Income Dynamics, the German Socio-Economic Panel and major UK longitudinal surveys such as the English Longitudinal Study

of Aging, the Millennium Cohort Study and the British Household Panel Survey. Despite its widespread use, until recently very little was known about its impacts on the survey process.

To better inform survey questionnaire design, Mathiowetz and McGonagle (2000) proposed a research agenda with the core aims of assessing how DI affects (i) data quality, (ii) respondent burden, (iii) interviewer burden, and (iv) interviewer-respondent interaction. Most of the research carried out since then has focused on evaluating how DI affects data quality. Recent research finds that DI can reduce measurement error, spurious transition in life events and item non-response (Moore 2004, Jäckle 2008). DI lessens measurement error in estimates of change in employment characteristics (Hill 1994; Lynn and Sala 2006) and reduces underreporting of income sources and benefit receipt (Lynn et al. 2006; Lynn et al. 2004). PDI also appears to attenuate the likelihood of spurious transitions at the seam between yearly data collection efforts in ongoing panels (Callegaro 2008; Cantor 1991; Hale and Michaud 1995; Hill 1994; Jäckle and Lynn 2007; Mathiowetz and McGonagle 2000).

Research that evaluates how DI affects respondent burden, on the other hand, is quite rare and the findings of these studies are inconclusive. Hoogendoorn (2004, p. 228) found “no substantial reduction in time due to the use of PDI”. Jäckle (2008) compared the administration time of different questionnaire sections in an experimental design and found no appreciable differences in interview time with PDI or RDI. Respondent effort can be characterised by the propensity for cognitive satisficing (Krosnick 1991) or passive agreement with information presented in dependent questions. Research in this area is similarly inconclusive. Pascale and Mayer (2004) concluded that cognitive satisficing due to DI may not be excluded *a priori*, while Hoogendoorn (2004) reports that DI strategy – PDI, RDI, etc., ... -- can actually suppress the problem of ‘cognitive satisficing’. Respondent stress has been operationalised to be indicated by concerns about data confidentiality (Pascale and Mayer 2004). Evidence here, too, is scant. Pascale and Mayer’s (2004) findings seem to indicate that DI does not heighten respondent concern on confidentiality while Hoogendoorn (2004) found very little difference in the way “dependent” and “independent” respondents evaluated their interview experience.

Despite the increasing interest on the assessment of the effects of DI, the impact of DI on interviewer burden and the interviewer-respondent relationship remains currently unexplored and undocumented. Mathiowetz and McGonagle (2000) imply that DI has the potential for increasing data collection efficiency by relieving the interviewer of some responsibilities for probing and clarifying responses. On the other hand, they admit that

nothing is known about the effects of this type of question wording and attendant design elements through computer assisted implementation. Indeed, no research into the effects of DI on interviewers has been conducted at all. Our work, then, is a first attempt to evaluate the effect of DI on interviewer burden.

2. A framework to evaluate the impact of dependent interviewing on interviewer burden

Measurement error is a key determinant of data quality (Biemer and Lyberg 2003). It can be linked to both respondent and interviewer behaviour. Survey methodologists have focused almost exclusively on respondents and on the social and psychological dynamics that lead them to make errors in a survey context (see for example Bradburn 1978, Fisher and Kydoniefs 2001, Haraldsen 2002 and 2004, Tourangeau 1984). Different respondent burden models have, therefore, been developed over time (for a review see Hedlin et al. 2005, pp. 26-32). Although there is evidence showing that interviewers can be a source of survey errors (see for example Collins 1980; Collins and Butcher 1983; Dykema, Lepkowski and Blixt 1997; Fowler and Mangione 1990; O'Muirheartaigh 1976; Smit, Dijkstra and van der Zouwen 1997; Weiss 1968), it is only very recently that a model of survey errors based on respondents *and* interviewers has been developed (Japac 2008). Japac's model is innovative for two reasons. It is focused on the *relationship* between the interviewer, the respondent and the cognitive processes involved in performing survey related tasks and it considers interviewers and interviewer burden as an additional source of error.

Japac (2008) defines interviewer burden as:

“[T]he total amount of perceived effort, both physical and cognitive, an interviewer has to put in to complete an interview according to specifications” (p. 198)

It is worth noticing that interviewer burden is not defined as the *actual* physical and cognitive effort required to complete an interview but it is intended as its *perception*. According to Japac, interviewer burden is the outcome of the interaction of five main factors: (i) social environment; (ii) interviewer characteristics; (iii) respondent characteristics; (iv) tasks; and (v) administration and survey design. We adopt Japac's theoretical framework with one modification (Table 1).

Social environment refers to the *milieu* where the survey request and interview takes place. Social group and setting such as social distance between the interviewer and the

respondent, presence of others while asking questions and the survey climate such as the respondent holding negative attitudes towards surveys are factors that can ease or hamper the interviewer task. Social environment, however, as conceptualised by Japtec, has not incorporated respondent trust and concern. Respondent trust and concern refers to feelings of trust in the interviewer, the survey organisation, interviewer-respondent rapport and generally to a feeling of easiness regarding the overall interview experience.

Interviewer burden is determined, in part, by interviewer and respondent characteristics. Factors such as interviewer and respondent attributes (age, sex, education, religion and so on) as well as their motivation, interest and attitudes to surveys can influence interviewer perceptions of effort required to conduct their tasks. Interested and motivated interviewers, for example, are less likely to find the interview process psychologically tiring and demanding. Respondent language and behaviour can also increase interviewer perception of effort required.

The final factors of Japtec's model are 'tasks', and 'administration and survey design'. 'Tasks' refer to "administering the survey, motivating sampled persons to participate and conducting the interview according to instructions" (p. 202). 'Administration and survey design' include administrative features such as the general survey administration and the workload, survey and instrument features such as mode of data collection, question and questionnaire design, questionnaire length and question repetition, design differences and inconsistencies across surveys and training, feedback and information from the survey agency.

Table 1 Interviewer burden factors affected by dependent interviewing

Interviewer burden factors	Effects of DI
<i>1 Social environment</i>	
Social group and setting	None
Presence of others	None
Survey climate	None
Respondent trust and concerns	-Increases burden (exception: long-running panels) -Same for PDI and RDI
<i>2 Interviewer characteristics</i>	
Attributes	None
Skills	None
Interest and motivation	Vary between PDI and RDI, in relation to changes in respondent circumstances and respondent trust and concern
Attitudes	None
<i>3 Respondent characteristics</i>	
Attributes	None
Skills	None
Interest and motivation	Vary between PDI and RDI, in relation to changes in respondent circumstances and respondent trust and concerns
Attitudes	None
Language	None
Behaviour	None
<i>4. Administration and survey design</i>	
Administrative Features	None
▪ Interviewer workload	None
▪ Number of surveys	None
Survey instrument features	None
▪ Mode	None
▪ Question and questionnaire design	Vary between PDI and RDI and in relation to changes in respondent circumstances
▪ Design differences/inconsistencies across surveys	Same for PDI and RDI
▪ Sensitive questions	None
▪ Instructions	None
▪ Visual design of the instrument	None
▪ Probes	None
▪ Length of the interview	Vary between PDI and RDI and in relation to changes in respondent circumstances
▪ Asking the same question many times	None
Training, feedback, information	
<i>5. Tasks</i>	None

Note: Adapted from Japac (2008). “Respondent trust and concerns” added to the original model.

2.1 The impact of DI on interviewer burden

As shown in Table 1, dependent interviewing would seem to have a minor role in affecting interviewer burden. DI has potential to effect only specific factors, namely “respondent trust and concern”, “interviewer and respondent motivation”, “question and questionnaire design”, “design differences and inconsistencies across surveys” and “interview length.” The different factors can directly and indirectly affect interviewer burden. In other words, an indirect effect of a particular factors is one that is mediated by respondents. Consider, for example, respondent motivation (see Figure 1). When respondents are not motivated, the interviewer task becomes more intense and demanding as he needs to motivate respondents to participate in a survey or complete a questionnaire.

DI questions alter the different factors determining interviewer burden thereby increasing or decreasing interviewer perceptions of effort required to conduct their tasks. In some cases the relationship between DI and the different factors determining interviewer burden varies according to the different types of DI question or changes in respondent circumstances. We first discuss how DI alters the “social environment” and “administration and survey design”. Some of the design features introduced by DI play a crucial role in evaluating the impact of DI on some of the “interviewer and respondent characteristics”.

Social environment

We believe DI to affect “respondent trust and concern” but not other aspects of the survey’s social environment (see Table 1). In particular, DI is expected to have a negative and indirect effect on “respondent trust and concern” and ultimately on interviewer burden (Figure 1, Arrow 1). By incorporating information collected in previous waves of a survey, DI might raise respondent concerns about privacy, confidentiality and data security (Pascale and Mayer 2004). Such concerns increase respondent burden which, in turn, negatively effects how interviewers conduct their tasks. As interviewers may need to deal with additional queries, face respondent concerns and sort out possible inconsistencies in the incorporated data, their task is likely to become more demanding. The influence of DI on this aspect of the social environment does not vary with regard to whether PDI or RDI is used (see Table 1).

Although DI is generally expected to effect respondent trust and concern negatively, we believe the strength of this relationship to decrease with the degree of “maturity” of a

panel. In particular, in long running panels such as the BHPS, respondent concern about privacy, confidentiality and data security are expected to be reduced as trust and rapport between interviewer, respondent and the survey organisation become established over the years. Research looking systematically at these issues has not been conducted so far. Exploratory analysis suggest that although some respondents might have concerns about sharing previously collected information with children and, in particular, about sharing financial information, respondents generally react positively to DI and express no concern about privacy or confidentiality (Pascale and Mayer 2004).

Administration and survey design

DI could have a strong influence on survey instrument features such as “design differences and inconsistencies across surveys”, “question and questionnaire design” and “interview length” (see Table 1) but not on other aspects of administration and survey design. When interviewers work concurrently on multiple surveys, design differences and inconsistencies across surveys can have a direct negative effect on interviewer burden (see Figure 1, Arrow 2). Interviewers get used to a certain question wording and could find it challenging to switch between surveys that use DI and surveys that do not. As in the previous case, the effects of DI here are not expected to vary with type of DI question.

The relationship between DI and other aspects of survey “Administration and Design” may be complicated. DI’s effect on “Questions and Questionnaire Design” and “Interview Length” is difficult to estimate because the relationship is both direct and indirect. It also varies across DI question types and in relation to specific respondent circumstances (see Figure 1, Arrow 3 and 4). We can distinguish amongst three cases: (i) PDI questions under conditions of no change in respondent circumstances, (ii) PDI questions under conditions of change in respondent circumstances and (iii) RDI questions.

When no change in individual circumstances has occurred between waves of a panel study, PDI directly and indirectly reduces interviewer burden. Compared to independent questions, PDI eases interviewer effort by replacing the task of typing in an answer to an open ended question or reading out a list of answer categories with a simpler task of entering an answer to a yes-no question. On the other hand, PDI has an indirect effect on interviewer burden as full respondent recall is substituted with the less demanding task of cued recall (Mathiowetz and McGonagle 2000). Interviewer requests for question clarifications and probing are also reduced (Uhrig and Sala 2009). When no change in respondent

circumstances have occurred, PDI is also expected to ease interviewer and respondent burden by improving the interview flow, shortening the interview length and reducing wave on wave question repetitiveness.

Under conditions of change in respondent circumstances, we believe PDI questions can increase interviewer burden in different situations. PDI ‘remind, still’ protocols can directly increase interviewer burden because, under conditions of change, interviewers will have to administer an additional question. RDI questions can directly and indirectly increase interviewer burden. As explained above, RDI requires interviewers to administer additional check questions which can slightly increase interviewer perceptions of effort required. This also violates the cooperative principle of conversation. It is non-normative to question the validity of a co-participant’s statements so directly (Molenaar and Smit 1996; Raymond 2003; Sacks 1987). Doing so could be off-putting and reduce respondent motivation for cooperativeness. RDI questions also indirectly increase interviewer burden as they complicate respondents’ cognitive tasks. With RDI respondents are in fact faced with previously provided information which they need to process before giving an answer. While performing this task, additional explanations or clarifications by interviewers could be required. We are not aware of any research that evaluates the impact of DI on these components of the interviewer role.

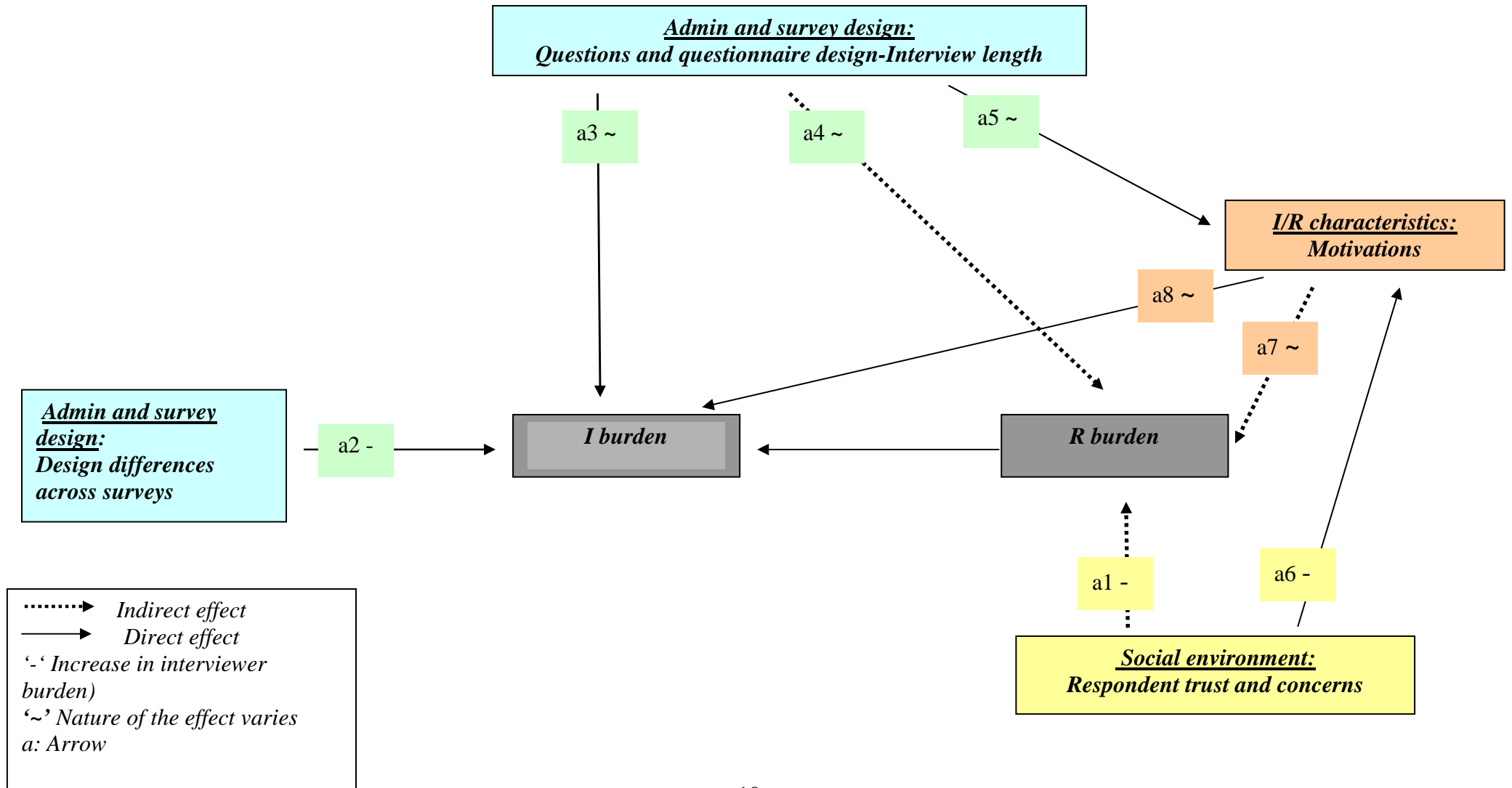
Interviewer and respondent characteristics

DI changes how only certain aspects of interviewer and respondent characteristics relate to interviewer burden. In particular, we believe that DI only affects interviewer and respondent “motivations” while it does not affect interviewer and respondent “attributes”, “skills”, “attitudes” or respondent “language” and “behaviour” (see Table 1). The overall effect of DI on interviewer and respondent motivation, however, is very difficult to estimate as it varies in relation to the type of DI question, individual circumstances, as well as respondent trust and concern (see Figure 1, Arrows 7 and 8). Interviewer and respondent motivation to complete the survey or to take part in further waves of a panel study are directly influenced by “Questions and Questionnaire Design”, “Interview Length” and “Respondent Trust and Concern” (see Figure 1, Arrows 5 and 6).

Concerns about privacy, confidentiality and the use of the data can reduce respondent motivation and this can indirectly increase interviewer burden as interviewers need to put more effort into keeping respondent motivation high (see Figure 1, Arrow 7) at least in the

initial waves of a panel study. In long running panels, as mentioned previously, we do not expect such concerns to increase over time and therefore there should be no effect of confidentiality concerns occasioned by the use of DI on interviewer and respondent motivation. The effects of “Questions and Questionnaire Design” and “Interview Length” on interviewer and respondent motivation and on burden depends on the variant of DI question. Under conditions of no change in respondent circumstances, PDI questions can enhance respondent and interviewer motivation which directly eases interviewer burden (Japac 2008) (see Figure 1, Arrow 8). Higher interviewer and respondent motivation also indirectly eases interviewer burden as convincing respondents to take part in the survey at subsequent waves and answering the questionnaire questions should be easier for interviewers (see Figure 1, Arrow 7). If change is reported while answering PDI questions or when RDI questions are asked then interviewer and respondent motivation can be negatively effected and consequently interviewer burden should increase.

Figure 1 A framework to evaluate the impact of DI on interviewer burden



3. The implementation of dependent interviewing in the BHPS

The British Household Panel Survey (BHPS) is one of the major social research sources in the UK and it is one of the longest running panel studies in the world. Its sample is comprised of about 5,500 households and roughly 10,000 individuals. Annual waves of data collection obtain information on household composition and conditions, education and training, health and use of health services, labour market behaviour, socio-economic values and different income sources. Almost all data are collected by face-to-face interviewing. Since wave 3, a small, but increasing, proportion of interviews are carried out by telephone as part of the refusal conversion process. Traditional pencil and paper interviewing (PAPI) was used for the first eight waves; computer-assisted personal interviewing (CAPI) has been used since wave 9. DI was implemented at Wave 16 of the BHPS and it was introduced in three sections of the individual questionnaire: the current employment section, the employment history and the finance section (for a description of the implementation procedures see Jäckle, Laurie and Uhrig 2007). Only a small portion of the BHPS questionnaire therefore used DI. As the administration of DI questions mainly depends on the availability and quality of previously collected information, it should be noted that in some cases no DI questions were asked.

Employment section

Seven “remind, still” DI questions were asked to obtain details of the respondent’s current employment situation, e.g., occupation, industry, sector, employer size, etc....., if useable information on respondent employment was available. Independent questions were administered in the following two cases, when respondents gave a negative answer to a PDI question or if no prior data were available for use in wording DI questions. Reactive questions were asked if respondents were in employment at the previous wave but did not provide a useable description of their employment circumstances (i. e. “Can I just check, is that the same occupation that you had last time we interviewed you, on the 5th of October?”). Two reactive check questions were also asked if reported net or gross earnings indicated a significant change over the prior wave’s report. Of all DI employment

questions, PDI questions were administered 53% of the time, RDI and INDI questions were asked 26% and 32% of the time¹.

Employment history section

DI was used to change the temporal frame of the employment history section. As stated by Jäckle *et al.* (2007) “we used DI to anchor respondents at their previous interview date and allow them to report on spells in or out of employment chronologically until reaching the interview date” (Jäckle, Laurie and Uhrig, 2007, p. 12). When the information collected previously on respondents’ employment activity was available and valid, a “remind, confirm” PDI question was used for this purpose (“When we last interviewed you, on <INTDATE>, our records show that you were <ACTT1>. Is that correct?”). An independent question was asked in two cases, when no fed forward information or no valid data were available and if respondents gave a negative answer to the PDI question. In most of the interviews the employment history section was not asked (when, for example, the respondent was in employment and no changes in the employment circumstances have occurred since last time they were interviewed or if respondents were retired at the time of the interview). In the employment history section, the PDI question was administered in 19.3% of the interviews while the independent question was asked in 4% of the cases.

Finance section

An RDI question was used to enumerate the different income sources received by the respondents by querying any income sources not mentioned at the current wave but that were mentioned at a previous wave (“Can I just check, do you currently receive the State Retirement Pension?” Or “Can I just check, according to our records you have in the past received <SOURCE1 -- SOURCE12>. Have you received <SOURCE1 -- SOURCE12> at any time since <INTDATE>?”)². An RDI check question was also used when asking about private personal pensions in order to correctly identify the start date of the policy in question based on information gathered in a previous wave (“Can I just check, is this the policy you took out in

¹ The percentages do not sum up to 100 as more than one question could be asked, e. i. when respondents give a negative answer to a PDI question, an independent question is asked.

² The number of RDI questions asked varied in relation to the circumstances of the respondents (age, employment status, presence of children) and the number of income sources reported in the prior three waves of data collection.

<DATE>?”). In the finance section RDI questions were asked in 49% of the interviews.

4. The data

We use qualitative data resulting from a survey conducted on the BHPS interviewers in 2006, when dependent interviewing was first implemented. At the end of the BHPS Wave 16 data collection, all BHPS interviewers (263) were posted a short self-completion and semi-structured questionnaire which was returned by 196 interviewers (74.5%). The interviewer survey had two main aims: (i) to explore the impact of dependent interviewing on perceived interviewer burden and (ii) evaluate the performance of dependent interviewing in the field.

Due to the exploratory nature of the study and the lack of previous research in the field, the questionnaire collected information on interviewer burden mainly by means of open-ended questions. The data we use are interviewers’ answers to the following questions: (i) “In what way was it easy or difficult [to administer DI questions]? (Please include as much detail as possible)” and (ii) “We would appreciate any other comments you may have about using respondents’ previous information in the current interview”. Eighty-seven percent of eligible interviewers gave an answer to the former question while 78% answered the latter question. We also draw upon some closed questions in the interviewer survey about the ease of administration of DI questions.

5. Evaluating the impact of DI on interviewer burden

In this section we explore the impact of DI on interviewer burden. As explained in Section 2 we focus on four main factors that affect interviewer perceptions of effort: (i) “Respondent Trust and Concern”; (ii) “Administration and Survey Design”; (iii); “Design Differences and Inconsistencies across Surveys”; and (iv) “Interviewer and Respondent Motivation”. Unfortunately, due to the exploratory nature of our work we do not have data that allow us to evaluate the effect of DI on the relationship between “Design Differences and Inconsistencies across Surveys” and interviewer burden.

We find that interviewer feedback on the introduction of dependent interviewing in the BHPS is, on the whole, very positive. Comments such as “extremely good amendment” and “very useful” are quite common. Suggestions such

as “all respondents thought it should have been included years ago” or “too long in coming - should have been done a long time ago” and “respondents were sometimes surprised that the information hadn't been on record previously” are not infrequent. Similar views are also shared by interviewers who took part in a debriefing organised for the BHPS Wave 16 pilot study.

5.1 “Respondent Trust and Concern”

As previously stated, in case of long running panels, “Respondent Trust and Concern” is not expected to increase interviewer perceptions of effort required to conduct their task. Interviewer perceptions of respondent concern about the data and their use, trust in the interviewers and the survey organisation seem to support our expectations.

Most BHPS interviewers believe that the introduction of DI and the use of prior wave data is not an issue for their respondents as “nobody seemed to mind that we used this previous information”. As anticipated, the reasons why DI did not raise major concerns about the use of prior wave data is that it was introduced in the BHPS during Wave 16, when interviewer-respondent rapport as well as trust in the survey and the survey organisation may have been well established. Many interviewers volunteered comments like the following:

“We have been interviewing the same people for years. They trust us”.

“I found no problem with the question of confidentiality as we have gained the respondents confidence over the years”.

Interviewer comments also indicate that respondents expect the survey organisation to store the data previously collected and to make use of them if and when appropriate. Two interviewers, in particular, clarified that:

“Respondents thought it very appropriate that we should have all the information about them”.

“The respondents sometimes expect you to have the information anyway. No-one minds that we already have the information”.

It is no surprise, therefore, to conclude that concerns about the use of the data and confidentiality are rarely mentioned by interviewers. The few times that they are mentioned, respondents seem to be preoccupied by the way the data are “carried around”:

“I only had one person comment on their previous interview information and that was somewhat derogatory not entirely happy about their answers being still accessible”.

“Some respondents were concerned about the security of such personal information being carried about on a personal computer”.

Comments of this sort, however, were exceptionally rare.

DI, generally, does not seem to indirectly increase interviewer burden. Surprisingly, DI seems to affect interviewer burden directly. The nature of this relationship, however, is not entirely clear. It may be that respondent trust is improved by a heightened sense of interviewer competence and professionalism.

“It gives a more professional feel to the interview”

“For years the respondents have been saying "I told you that previously". Having the information to check gives a totally professional air to the interview”

“Providing text makes the interview appear more professional and generally impresses the respondent”.

On the other hand, interviewers, rather than respondents, appear to be the most concerned about the introduction of DI and how respondent will react to it. Comments such as the ones reported below are not infrequent.

“Surprisingly no one said "where did you get this information from?" No one was suspicious or remembered the fact that their information had been saved”.

“I was surprised to find that having previous info did not elicit any comment from the respondents. I found it helpful to the interviewer”.

“From my point of view I didn't know whether certain people would like the fact that information was being brought forward from the previous year”

5.2 “Administration and Survey Design” and “Interview Length”

“Design Differences and Inconsistencies across Surveys” as well as “Administration and Survey Design” and “Interview Length” are believed to affect interviewer perceptions of required effort. Design differences across surveys is expected to directly increase perceptions of effort required while both survey administration and interview length directly and indirectly affect interviewer burden. The effect of “Administration and Survey Design” and “Interview Length” vary in relation to respondent circumstances and the type of DI questions asked. Our

expectations regarding how other factors affect interviewer burden appear, on the whole, to be confirmed.

BHPS interviewers clarified the mechanisms by which DI questions eases or hampers their perceptions of required effort. Compared to independent questions, DI questions seemed easier to administer to them. These questions, as pointed out by an interviewer, are “just like check questions”. This implies that under conditions of no change, administration was simple. The quotes below clarify this point.

“All I had to do was check that they had not changed job details in any way”.

“It was easy to simply check with respondent that everything was as before”.

“Just had to read out what was said last year - ask if correct- move on”.

What this means, in practice, is that the use of PDI can save interviewers from typing in an answer to an open ended question. This feature of DI seems to be appreciated by many interviewers:

“As typing isn't my forte it makes my life a little easier.”

“It made it easier for us and quicker (especially those of us who still do not get quicker at typing)”

Interviewers seem to be well aware of the positive impact of DI on their task, though interestingly, they are also aware of the conditions under which this positive effect is removed. If change in respondent social and economic circumstances occurs, DI questions do not offer major advantages if compared to independent questions. And, if respondents do not agree with the information that was fed forward interviewer tasks could become more demanding. As mentioned by these interviewers, such cases are not very frequent.

“It was a lot quicker if none of the forwarded details had changed. On the few occasions when it had changed it was longer because you had to read out the forwarded info and then ask and record the new”.

“Ok if job and finance and benefits hadn't changed. If they changed it complicated it a bit especially if they no longer received benefits or had changed jobs”.

“Sometimes respondents contradicted what was recorded which made it confusing”.

DI features, implementation and performance can also contribute to making interviewer tasks more intense. A few interviewers reported difficulties associated

with the content of the text fills when used, the wording of some DI questions and with their general familiarity with DI.

“[The text fills] would take me by surprise sometimes- but as I knew the respondent's history (this is my 5th year) I was able to make sure it made sense before reading it aloud”

“[Administration] was generally easy depending on previous year's entries. Because the information was entered previously by the same interviewer the interviewer would tend to know immediately the context of the text”.

“Bit of confusion over the wording. "and you still have no management or supervisory responsibilities?" YES/NO. They say no when they mean yes. They do not have any responsibilities”³.

Some interviewers mention respondent burden and provide examples that clarify the mechanisms by which DI can simplify the respondent task and, in particular, ease the cognitive effort required in answering a survey question. As argued by Tourangeau (1984) the response process is structured in four main steps: (i) understanding the question; (ii) retrieving the relevant information; (iii) making a judgment; and (iv) selecting a response. Some interviewers seem to believe that DI affects the second and the fourth components of this process. DI stimulates respondent memory while facilitating the retrieving of information required. In case of open ended questions, DI eases the selection process by transforming an open ended question which entails an intense verbalisation task into a yes/no question. In case of questions with numerous answer categories, it narrows the set of response options thereby simplifying the selection task.

“Sometimes it is difficult to put into words what a job entails. If the information is fed forward it saves the respondent from trying to explain”.

“In the past if a job description was difficult to put into words they have said ‘what did I say last time?’”

“When you explained to respondent [*sic*] what they had said previously (2005) it jogged their memory and sometimes made them realise what they had said previously”

As we shall discuss in the final part of the paper, one can not exclude *a priori*, however, that simplification of the respondent cognitive task (i.e., DI “saved them [respondents] having to think”) has negative drawbacks on data quality. One

³ The DI question concerning management responsibilities in-filled the category from the previous wave which were “Manager”, “Supervisor” or “No management or supervisory duties”. The third category rendered the DI question awkward to read.

interviewer, in particular, stated that “I think it is best if you let the respondents tell you their situation on employment and then the information would be more accurate”. Statements like this, however, are very rare.

5.3 “Motivation”

BHPS interviewers widely agree that DI reduces wave on wave question repetitiveness, shortens the interview length and improves questionnaire flow. Although not explicitly stated, this is reported to have a positive effect on interviewer perceptions of effort required and the burden on respondents in answering survey questions. Thus, DI boosts both interviewer and respondent motivation.

Although some rotation occurs in questionnaire content, the BHPS questionnaire carries a core set of questions that are asked every year and have never been modified. This implies that respondents who participated in all waves of the survey have been asked the same set of core questions for sixteen years, i.e. they were asked to give a description of their job on sixteen occasions, although no change may have occurred in the meantime. This repetitiveness is perceived to be very burdensome by BHPS respondents, as frequently reported by interviewers.

“They appreciated the fact the prior information did not have to be repeated (possibly for the 16th time!)”.

“They say ‘we gave this information last year! I get fed up repeating it’”.

“I think people were tired of having to repeat details of job descriptions etc. in the past. They often said it is the same as last year”.

“Some respondents had answered some questions by saying "you already have this information" which is correct but of course then we did not”.

Interviewers also explained that wave on wave question repetitiveness had a strong emotional impact on their work not only because they have to administer the same set of questions year on year but also because they have to deal with respondent impatience, irritation, boredom and embarrassment. The comments reported below clarify this point.

“Respondents are pleased they do not have to go through all the detail previously given. This was a cause of much impatience”.

“I know I didn't find it as tiring as from previous years. I know that when I got to the employment section my heart used to sink at the amount of concentration needed”

“It was easier to confirm employment details, and avoided the irritation of asking the question year upon year”

DI is often reported to effect interview flow and length positively. Comments such as “the interview flowed without a break”, “it flow better” or “it speeded things up” are quite common. Some interviewers, however, are more cautious and comment, more realistically, that in some cases DI might impact on the interview length negatively.

“The use of previous information with regard to employment did help the flow and the length of the interview. Whether this would be the same with other information eg finance/health is debatable as these change more.”

In sum, the analysis of interviewer feedback on the whole implies that DI eases respondent burden. BHPS interviewers showed in a direct way their happiness regarding the introduction of DI by asking for more applications of DI in the BHPS questionnaire and by explicitly suggesting areas in which DI could be implemented:

“More of it if possible”

“Hope we can have more next time”

“Could be extended i.e. in household section- How many rooms do you have?”

“Could use in Household Section especially in the questions about area and neighbourhood”

“I was asked ‘why the contact name was not on the interview?’ as most of the job history etc. was.”

6. Discussion

Based on qualitative feedback from interviewers, it seems that dependent interviewing has a minor impact on interviewer burden. The effects are minor because DI directly influences only a few factors that contribute to interviewer perceptions of the effort required to administer surveys. Nevertheless, when looking at the role DI plays, we find evidence that suggest that DI usually reduces interviewer burden. This is also confirmed by the fact that when BHPS Wave 16 interviewers were asked “How easy or difficult was it to administer the question with the respondent’s prior interview information in them?” 64% answered that it was easy and only 0.5 % thought that it was difficult. When asked “Which version would you say was easier to administer?” for both the employment and the job history sections, 77% answered that DI versions were easier to administer.

In this paper we have tried to disentangle the processes by which DI affects interviewer burden. Overall, the model we discussed in Section 2 finds empirical support when looking at interviewer comments. However, the mechanisms by which “Respondent Trust and Concern” impact interviewer burden needs further clarification. From interviewer comments it appears evident that the association between the use of DI and respondent trust also directly effects interviewer burden. However, this effect might be only transitory as it may only apply the first time DI is introduced. The nature of this relationship is not clear as some interviewers were worried about the introduction of DI and feeding respondents with information collected previously while others thought that DI gave them a professional “touch”.

Analysing interviewers comments together suggests areas of intervention in which interviewer burden can be reduced. Interviewer tasks can be complicated by poor quality data used to fed into DI questions as this might negatively influence how interviewers conduct their interviewing activities. Under such circumstances, interviewer burden can be eased in three ways. First, while preparing the verbatim data to be fed into DI questions, an intense check of the quality and, in particular, of the wording of the text to be used should be performed. Second, survey designers should also evaluate the possibility of assigning a particular interviewer to a particular respondent for each wave of the survey. Some interviewers indicated that they could make sense of text-fills used in DI questions only because they were familiar with their respondent’s circumstances as they had known them for many years. However, doing say may run counter to the prescriptions of standardised interviewing commonly deployed by most survey organisations. Alternatively, researchers should develop a set of guidelines or a protocol that explains how to accommodate poor quality data and the problems this may cause while administering DI questions. Although the Interviewer Instructions prepared for Wave 16 of the BHPS provided an explanation of DI and how it was implemented, they were silent with respect to how to deal with problematic situations. Building such procedures would clearly be helpful.

As noted by Japac (2008) interviewers and interviewer burden are important components of the survey error model. This means that interviewers are officially recognised as a source of error with a potential detrimental effect on the quality of survey data (Lessler, Tourangeau and Beranek 1989). We found two examples of the

ways in which interviewers can affect data quality and in particular can contribute to overestimating stability in the change of individual social and economic circumstances over time. On the one hand, it seems that interviewers are more concerned with checking the correctness of the information fed into DI questions rather than collecting information on change. On the other hand, we can not exclude *a priori* the possibility that interviewers could adopt some form of short cutting, in particular when ambiguous situations occur or minor changes in respondent circumstances are reported. Although concerns about the latter remains, a well developed training programme can reduce the likelihood that the former occurs. The overestimation of stability in individual circumstances over time, as some interviewer comments suggest, could also be due to respondent behaviour and, in particular, to the tendency to agree with reported information, regardless of whether that is true or not (satisficing).

Research on interviewer burden and, in particular, research that looks at the effect of DI on interviewer burden and data quality represents a fresh and possibly very fruitful research field. Future studies should focus on the evaluation of the theoretical framework originally formulated by Japac (2008) and the exploration of the link between interviewer burden defined as the perceived effort required to conduct interviewing and data quality. With regard to the first research area, the contribution of our study has some limitations as it is based on data from a long running panel where DI was introduced after 16 years of operation. We believe that similar studies carried out on panels of different duration or in which DI is introduced from the start of the panel may raise issues of a different nature, visibly related to respondent trust and concern. Due to the exploratory nature of our research we did not collect information that enabled us to evaluate the impact of DI on the all the factors contributing to interviewer burden, namely “Design Differences and Inconsistencies across Studies”. However, these are issues that are worth further exploration as they could increase interviewer burden.

A second area of future research is into the links between dependent interviewing, interviewer burden and data quality. Although this was not the main focus of our study, we found evidence showing that interviewers could have a detrimental impact of data quality and, in particular, they could contribute to the underestimation of change in social and economic circumstances of individuals.

Given the significance implied by these findings, exploring the effect of DI on interviewer burden and data quality needs systematic analysis. We examined the effect of DI on interviewer burden as described by interviewers. It would also be interesting to look at the relationship between interviewer perceptions and actual interview characteristics such as interview length, number of questions asked, and respondents' cooperation.

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