

Solving the Problem of Attrition in Longitudinal Surveys

National Centre for Social Research and Longview

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1. NON-TECHNICAL SUMMARY

The aim of this collaborative project was to improve understanding of, and find optimum solutions to, the problem of drop-out or 'attrition' in longitudinal surveys, aiming to update and extend further the theoretical framework for non-response developed in the US by Groves and Couper (1998) and Lepkowski and Couper (2002).

The further practical aim was to develop improved strategies for increasing respondent cooperation in longitudinal surveys and reduce drop-out. The first part of the project involved secondary analysis by teams based in the University of Essex, the Institute of Education, the University of Southampton and the National Centre for Social Research (NatCen) to identify predictors of attrition in three longitudinal studies: The British Household Panel Study, the 1970 British Birth Cohort Study and the Family & Children's Survey.

In the light of the results, earlier theory was re-appraised for longitudinal surveys with a special focus on the role of interviewers in reducing non-response and maintaining participation in longitudinal surveys. Key factors identified were interviewer quality and experience and continuity from one data collection to the next. In the light of the secondary analysis findings, the effects were then tested further through the use of the NatCen Omnibus survey comprising a series of representative samples (n=1,500) surveyed at two month intervals. Respondents in one of the surveys were followed up one year later under different randomly assigned interviewer attribute conditions. The results of the experiment and conclusions drawn will be disseminated to academic and survey constituencies.

2. PROJECT OVERVIEW

Objectives

The present study aimed to identify through the analysis of large scale longitudinal datasets optimum ways of reducing attrition in longitudinal surveys. Its objectives were:

1. to investigate the causes of non-response in longitudinal surveys through statistical modelling of attrition processes in established longitudinal surveys – BHPS, NCDS, BCS70, FACS
2. to formulate, in the light of the results of the modelling, optimum strategy for encouraging continued participation as a basis for reducing attrition
3. to design and implement an exemplar field experiment to test the new strategy using a survey or (surveys) from a series of repeated cross-sectional ('Omnibus') surveys to supply the first wave of a longitudinal survey, with respondents allocated randomly in the second wave to different field work approaches
4. to draw conclusions from the experimental results for improved theory and practice in the field as applied to longitudinal surveys and to appraise the value of the approach for further field experimentation to test and develop the theory further
5. to communicate the results of the work widely to constituencies concerned with

commissioning and carrying out longitudinal surveys, and with training the next generation of longitudinal survey researchers

Methodology

Please describe the methodology that you employed in the project. Please also note any ethical issues that arose during the course of the work, the effects of this and any action taken. [Max: 500 words]

The project was carried out in two stages: (1) secondary analysis of existing longitudinal data; (2) design and analysis of the field experiment.

(1) Secondary Analysis:

The project began with the identification of suitable datasets for secondary analysis and foci for the work. The three selected were:

- BHPS – Peter Lynn and Noah Uhrig, U of Essex
- BCS70 – John McDonald and Sosthenes Ketende, Institute of Education
- FACS – Harvey Goldstein, U of Bristol; Gabi Durrant U of Southampton; Rebecca Taylor, NatCen; Shaun Scholes, NatCen

Secondary analysis of the selected longitudinal datasets comprised modelling of propensity to drop-out (non response: non-contact and refusal) in each longitudinal survey in terms of respondent attributes, household circumstances and neighbourhood characteristics, paradata about the contacting procedure and interviewer characteristics.

Modelling of non-response in longitudinal surveys ideally embraces all patterns of non-response (non-contact and refusals) across a series of follow-ups in a longitudinal survey. In practice the BHPS analysis focussed on wave on wave response over a number of BHPS waves, the FACS analysis on the most recent five waves of the survey (4 to 8) with separate analysis of the last two (7, 8) and the 1970 cohort study analysis of wave non-response over the whole life of the survey and on the effect on attrition of participation of selected samples of cohort members in sub-studies.

Following consolidation of results by Harvey Goldstein (October, 2008) the field experiment was designed and implemented through 2009.

(2) Field Experiment:

In the light of the results of the secondary analysis and the further information available from the NatCen interviewer survey, it was decided to formulate the Omnibus design as follows. All respondents who had taken part in the Omnibus wave 1 survey were allocated to interviewers in accordance with two factors: performance grade grouped as A/B, C and D/S/T in which D/ST) is the highest grade and A/B the lowest) and whether the same or a different interviewer was involved. The allocation was very successful producing a balanced design comprising roughly equal numbers of respondents in all twelve cells of the design.

Field work took place over the 12 week period from 2nd March to 15th June. The final figures for completed fieldwork (NatCen Technical Report, July 2009) were: 1,188 respondents eligible for the follow-up interview of which 844 completed an interview. Of the others 179 had refused or fell into one of a number of the different non-response categories of non-contact (119), or 'unproductive', i.e. illness etc (35), or ineligible (11).

These data were then analysed to model the factors affecting non-response at follow-up. Interest focussed on interviewer characteristics conditional on a range of covariates. Preliminary descriptive analysis was followed by more advanced modelling of the relationships and interactions of the variables involved.

A further extension of the work assessed the magnitude of measurement error in the predictor variables repeated over the two waves of the Omnibus survey and evaluated its effect on attrition bias and on the weights used to adjust for it.

Project Findings

Secondary analysis

Those who live in 'difficult to reach' accommodation are less likely to be contacted. This includes gated developments, shared entrances and apartments. Once contacted, however, there seems to be no relationship of these variables with refusal to participate. Factors related to the respondent being present when an interviewer calls include both high income, and ill health. Factors assessed in previous waves that predict non-contact are willing to move, dislike of neighbourhood and unemployment.

Those who refuse tend to have low levels of interest in the topic of the survey and are more likely to have a history of refusal. There appears to be an association with educational level, where those with low levels of education are more likely to refuse. Those who have low income are less likely to refuse, although this was not detectable in the FACS analysis. The FACS analysis also failed to find an association between refusal and tenure type and number of dependent children. The older the respondent the less likely they were to respond; higher refusal rates were found for Asians compared to Whites; Blacks had an intermediate refusal rate. In the 1970 cohort study male rather than female cohort members were more often lost to the study over time. It was also found that, controlling for other factors, those who were more mobile were less likely to be contacted. Involvement in sub-studies appeared to increase the propensity to participate.

There appeared to be some between-interviewer variation in the probability of refusal. A change of interviewer between waves was also associated with a higher level of refusal. The NatCen interviewer survey shows that more experienced interviewers are better at persuading respondents to participate. Interviewers who are most interested in the job are also better than others at persuading survey members to respond and to stay in the survey. It also seems to be the case that interviewers as a whole are less willing to work evenings and weekends even though the opportunities for contact are higher.

Results of experiment

There was no differentiation between the grades above the grade group A/B, i.e. both the C grade and D/S/T grade interviewers appeared to be equally successful compared with the A/B grade interviewers in gaining a response. Using the same interviewer, as in the first Omnibus survey, also predicted reduced drop-out from the survey.

Further modelling showed that the likelihood of refusal reduced where there was interviewer continuity with a comparable effect for non-contact. The analysis suggests that such reductions may be restricted to the higher interviewer grades. If the interviewer is changed this is most deleterious where the new interviewer is of a lower grade. It was also found that these overall effects were not the same for all respondents – for example varying in terms of tenancy and employment status.

Measurement error showed only modest effects on the prediction of non-response across the two Omnibus waves, indicating little need for adjustment of sample weights to reduce sample bias.

e) Contributions to wider ESRC initiatives (eg Research Programmes or Networks)

If your project was part of a wider ESRC initiative, please describe your contributions to the initiative's objectives and activities and note any effect on your project resulting from participation. [Max. 200 words]

The project was one of seven supported under the Survey Design and Measurement Initiative (SDMI). The research was presented in joint team meetings organised by Professor Patrick Sturgis, Director for the Programme. With his facilitation the work was also presented at wider research meetings, including the European Survey Research Methods conference in Warsaw in 2009, a Survey Methodology workshop in Bremen, a US conference, the ESRC 2010 Research Methods Festival and one RSS meeting. The findings are also due to be presented at another SDMI-based RSS meeting in April 2011.

The project was relatively self-contained and implemented in accordance with the design as agreed between the PI (John Bynner) the statistical coordinator (Harvey Goldstein) and the four participating teams (University of Essex, University of Southampton, Institute of Education, National Centre for Social Research). Valuable inputs were also gained from the project's Advisory Committee comprising longitudinal survey experts. Apart from the opportunity to meet and interact with researchers from other teams at the SDMI meetings and the help with dissemination, there were no other notable effects on the project's progress or outputs from participation in the programme.

3. EARLY AND ANTICIPATED IMPACTS

a) Summary of Impacts to date

Impact of the research will be through papers currently being produced and associated dissemination events.

Working papers:

Uhrig N, (2008) *The Nature and Causes of Attrition in the British Household Panel Study*, ISER Working Paper 2008-05.

Durrant, G.B. and Goldstein, H. (2010): *Analysing the Probability of Attrition in a Longitudinal Survey*, S3RI Methodology Working Paper, M10/08.

Kaminska, O. Lynn, P Goldstein, H. (2010) *Panel Attrition: How Important is it to Keep the Same Interviewer?* (2011) ISER) Working Paper 2.

Ketende. S. McDonald, J. and Dex, S. (2010) *Non-response in the 1970 British Cohort Study (BCS70) from birth to 34 years*, CLS Working Paper 2010/4.

Presentations

Durrant, G.B., Staetsky, L. and Steele F. (2008): *The Effects of Interviewer Characteristics and Attitudes on Refusal in Face-to-Face Surveys*, 19th International Workshop on Household Survey Nonresponse, Ljubljana, September 2008. Presenter: Durrant.

Bynner, J., Goldstein, H. and Durrant, G.B. Lynn, P., Uhrig, McDonald, J. A & Ketende, S. (2009) *Solving the Problem of Attrition in Longitudinal Surveys?*, European Survey Research Association (ESRA), Warsaw, July 2009. Presenter: Bynner.

Bynner, J., Goldstein, H. and Durrant, G. (2009) *Solving the Problem of Attrition in*

Longitudinal Surveys, European Survey Research Methods Conference, Bremen, 2009.
Kaminska, O., Lynn, P. and Goldstein, H. (2010) *Panel Attrition: How Important is it to Keep the Same Interviewer?* International Workshop on Household Survey Non-Response, Nurnberg, August 2010. Presenter: Kaminska.
Kaminska, O., Lynn, P, and Goldstein, H. (2010) *Panel Attrition: How Important is it to Keep the Same Interviewer?* ESRC Methods Festival, Oxford, 2010. Presenter: Kaminska.
Vassallo, R., Durrant, G.B. and Smith, P.W.: *Interviewer Effects on Wave Non-response in a Longitudinal Survey: A Multilevel Analysis*, 58th Conference of the International Statistical Institute, Dublin 2011. Presenter: Vassallo.
Kaminska, O. Lynn, P Goldstein, H. (2011) *Panel Attrition: How Important is it to Keep the Same Interviewer?* SDMI Symposium, RSS London 2011. Presenter: Kaminska
Bynner, J., Goldstein, H. and Durrant, G.B. Lynn, P., Uhrig, McDonald, J. A & Ketende, S. (2011) *Factors affecting attrition and non-response in longitudinal surveys* SDMI Symposium, RSS London 2011. Presenter: Bynner.

Papers submitted or in preparation for publication

Kaminska, O., Lynn, P. and Goldstein, H. *Panel Attrition: How Important is it to Keep the Same Interviewer?*
Durrant, G.B. and Goldstein, H. *Analysing the Probability of Attrition in a Longitudinal Survey.*
Uhrig, S.C.N. *The Changing Nature of Attrition over 18 Years of the British Household Panel Study: A Comparison of Early and Later Waves*, JOS (forthcoming).

b) Anticipated/Potential Future Impacts

The findings can affect the work of fieldwork agencies in assigning interviewers in longitudinal surveys, especially whether to maintain interviewer continuity between surveys and where this is not possible when to restrict involvement to experienced and highly rated interviewers. They also point to the importance of sophisticated training of interviewers working on longitudinal surveys. The life course perspective for viewing response in longitudinal surveys argues for matching the approach to the respondent's situation and needs at the particular life course stage they have reached. Training interviewers to acknowledge these features of respondent-interview interaction, and develop the skills to convert negative into positive interview appraisal, will produce returns for field work agencies and academic investigators.

Planning is underway to ensure that these messages reach the relevant practitioner communities. Evaluation of future practice will be aided if there is an expansion of routinely collected 'paradata' on the setting up and operations of field work and on interviewer characteristics - another anticipated impact of the research.

Finally, the successful use of the NatCen Omnibus survey to supply the field experiment, points to further innovative use of standard survey instruments to test out new developments in survey practice.