The effect of interviewer personality, skills and attitudes on respondent co-operation with face-to-face surveys

Annette Jäckle
Institute for Social and Economic Research
University of Essex

Peter Lynn
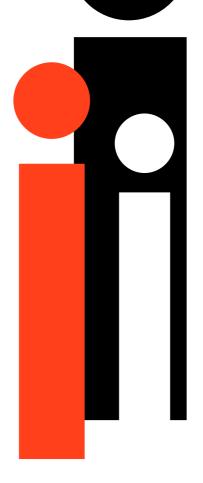Institute for Social and Economic Research
University of Essex

Jennifer Sinibaldi
Institute for Employment Research

Sarah Tipping
National Centre for Social Research

INSTITUTE FOR SOCIAL & ECONOMIC RESEARCH

Non-technical summary

The interviewer is arguably one of the most important factors in persuading respondents to participate in a face-to-face interview. Interviewers vary hugely in how successful they are at persuading respondents: in this study the least successful interviewers only managed to persuade 37% or fewer of the respondents they had contacted, while the most successful interviewers managed to persuade 72% or more. We examine which characteristics of the interviewer explain why some interviewers are more successful than others at persuading respondents to participate. We examine the role of interviewers' experience, attitudes, personality traits and inter-personal skills. We take the perspective that these characteristics influence interviewers' behaviour and hence influence the doorstep interaction between the interviewer and respondent.

We use a large sample of 842 face-to-face interviewers working for a major survey institute and analyse the co-operation outcomes for over 100,000 respondents contacted by those interviewers over a 13-month period.

The interviewer's attitudes towards the legitimacy and usefulness of persuading reluctant respondents seem to play a role: interviewers who believe that even the most reluctant respondents can be persuaded with enough effort are more likely to be successful. Similarly, interviewers who do not believe that refusals should be accepted, and who do not believe that reluctant respondents provide less reliable answers are more successful at persuading respondents to participate. The interviewer's personality traits also seem to play a role, although this is less clear. More extrovert interviewers are more likely to gain cooperation. Contrary to our expectations interviewers who are more agreeable or more open to new experiences are less likely to gain cooperation. The interviewer's inter-personal skills also seem to play some role: interviewers with better verbal communication skills are more successful. Contrary to expectations, more adaptable, assertive and deliberate interviewers are less successful. More experienced interviewers are more successful at gaining cooperation. Around one quarter of this effect seems to be due to differences between the more and less experienced interviewers in their personality traits, skills and attitudes. Finally, female interviewers have higher cooperation rates than male interviewers. About one half of the difference between male and female interviewers seems to be due to differences in their attitudes, personality traits and skills.

Our findings suggest some implications for the recruitment and training of face-to-face survey interviewers. If we consider that personality traits are fixed characteristics of an individual, while skills can be learned and improved and attitudes are likely to be influenced by skills and by on-the-job experiences, then we can conclude that only the personality traits could be relevant at the recruitment stage. As the traits make only a marginally significant contribution to explanation of variation in co-operation probabilities, we find no justification for taking them into account in recruitment. The impact of attitudes and, to a lesser extent, skills is slightly more substantial. There is then certainly a case for taking these into account in training. It would seem worthwhile to train interviewers to not be too assertive, to demonstrate to them that reluctant respondents do not necessarily provide poor data, and to give them confidence that most people can be persuaded and that they should not accept a refusal lightly. These ideas are broadly consistent with current good practice.

The Effect of Interviewer Personality, Skills and Attitudes on Respondent Co-operation with Face-to-Face Surveys

Annette Jäckle, Peter Lynn, Jennifer Sinibaldi and Sarah Tipping

Abstract:
This paper examines the role of interviewers' experience, attitudes, personality traits and inter-personal skills in determining survey co-operation. We take the perspective that these characteristics influence interviewers' behaviour and hence influence the doorstep interaction between interviewer and sample member. We use a large sample of 842 face-to-face interviewers working for a major survey institute and analyse co-operation outcomes for over 100,000 cases contacted by those interviewers over a 13-month period.

Address for correspondence:
Annette Jäckle (aejack@essex.ac.uk), Institute for Social and Economic Research, University of Essex, Colchester, CO4 3SQ, UK.

1 Introduction

In face-to-face surveys the interviewer is arguably the most important factor in securing co-operation from a sample unit. Understanding the mechanisms by which interviewers gain co-operation, and the factors determining their success, has implications for the recruitment, selection, training and evaluation of interviewers. Despite the importance of these issues, little research investigating interviewer characteristics and behaviours has been done to date. We use data on a large sample of face-to-face interviewers to investigate personality traits and inter-personal skills which are likely to determine interviewer behaviour on the doorstep, and hence their success at gaining co-operation.

The doorstep interaction between the householder (sample unit) and the interviewer, which determines the householder's decision whether or not to participate in the survey, is thought to be influenced by interactions between the characteristics of the social environment, the survey design, the householder and the interviewer (Groves and Couper 1998). The various influences are illustrated in Figure 1. In this paper we focus on the role of the interviewer. We therefore attempt to control the effects of social environment and survey design in order to study the effects of interviewer characteristics (experience, socio-demographics, personality traits, inter-person skills and expectations). The interviewer has both an active and a passive influence on the householder's decision. The householder may be influenced passively by their perception of the interviewer, that is, by the interviewer's observable characteristics, and actively by the interviewer's behaviour. The behaviours thought to be the key to obtaining co-operation are the ability to *tailor* the survey request to the householder's motivations and concerns and to *maintain the interaction* with the householder for long enough in order to learn about their concerns (Groves and Couper 1998).

Various studies have attempted to test the hypothesis that tailoring the doorstep approach increases the likelihood of co-operation. The strongest evidence comes from Groves and McGonagle (2001): interviewers who had gone through a special training to increase their tailoring skills achieved substantially higher co-operation rates than an experimental control group. The training covered aspects such as learning to identify and classify types of respondent concerns, learning how to respond to these and increasing the speed of performing these tasks. Other studies have attempted to measure the interviewer's doorstep behaviour and to test which behaviours are associated with obtaining response (Beerten 1999; Campanelli, Sturgis, and Purdon 1997; de Leeuw, Hox, Snijkers, and de Heer 1998; Durrant

et al. 2010; Groves and Couper 1998; Hox and de Leeuw 2002; Martin and Beerten 1999). These studies surveyed interviewers, asking them to report the techniques they use on the doorstep, including what they typically say and do and specific persuasion and contacting strategies. The behaviours measured are related to the principles thought to govern the respondent's decision whether or not to participate in the survey (see Cialdini 1984): invoking norms of reciprocity (e.g. mentioning an incentive), making arguments of scarcity (e.g. 'this is your chance to have a say'), making arguments of social validation (e.g. 'most people enjoy the survey'), playing out principles of liking (e.g. complimenting the sample member), making arguments of authority (e.g. showing ID card, explaining random selection), or using foot in the door tactics (e.g. beginning to ask questions), etc. The behaviours measured in the interviewer surveys were however not predictive of interviewer-level contact, co-operation or response rates in any of the studies.
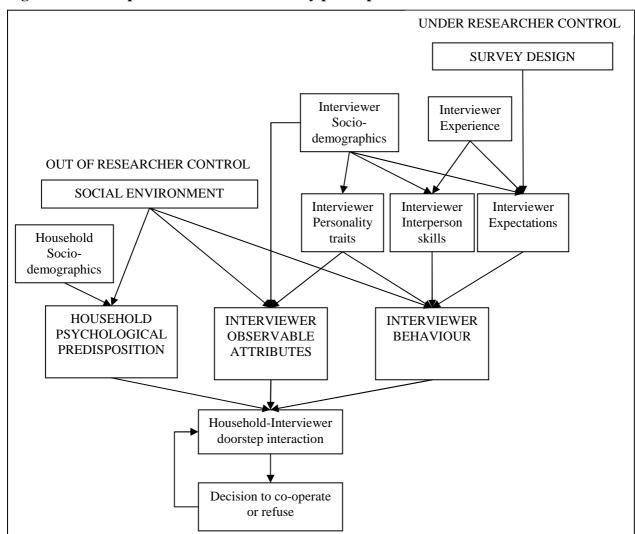
Figure 1: A conceptual framework for survey participation

Adapted from Groves and Couper (1998), Figure 2.3.

2

Groves and Couper (1998) and Campanelli et al. (1997) in addition asked interviewers to complete a contact form immediately after each contact attempt and to record information about various verbal and physical behaviours they had performed during the particular interaction. Campanelli et al. (1997) further recorded and transcribed the doorstep interaction for a small number of interviewers. Groves and Couper used the contact form data to derive a rough measure of tailoring, which indicated whether or not the interviewer had changed tactics from one call to the next. Although positively associated with response, this indicator was not a significant predictor of response either at the level of the call or at the level of the sample unit. Campanelli et al. found that certain statements made by the interviewer (over all calls to a sample unit) were positively associated with response at the level of the sample unit. The results from the tape recordings of the interaction are however inconsistent with the results of the contact forms: statements made by the interviewer that are significantly related to response in the taped data are not related to response in the contact data, and vice versa.

There may be several reasons why the interviewer behaviours measured in the interviewer surveys, contact forms and tape recordings are not predictive of survey outcomes in these studies. This may in part be a problem of power, since all studies were conducted with small numbers of interviewers, often fewer than 100. A second problem appears to be related to measurement. Interviewers apparently find it hard to remember the exact components of an interaction, even if they are asked to record it immediately after the event. As a result, in Campanelli et al.'s (1997) study, contact forms completed immediately after each call differed substantially from recorded transcripts of the interaction. A third problem might be related to the level of measurement. Interviewer surveys ask about usual behaviours and whether interviewers tend to tailor their approaches. Durrant et al. (2010) however argue that the interaction between interviewers and individual respondents is probably more important than the interviewer's average or usual behaviours. In other words, it is not merely the *extent* to which an interviewer tends to tailor that matters, it is the *nature* of the tailoring in specific cases.

Other authors have examined which interviewer characteristics are related to survey response, without attempting to measure the mechanisms through which these characteristics have an effect. Experienced interviewers, and interviewers with more positive expectations about the likely reactions of sample units, are usually found to be more successful at obtaining co-operation (Beerten 1999; de Leeuw et al. 1998; Groves and Couper 1998; Hox and de Leeuw 2002; Lehtonen 1995; Lievesley 1983; Martin and Beerten 1999; Singer,

Frankel, and Glassman 1983). It is thought that experience and expectations matter, because they affect how the interviewer behaves on the doorstep. Further studies have examined associations between specific personality traits and survey outcomes. Emotional stability and a tendency towards introversion seem to be associated with success (McFarlane Smith 1972). Self-monitoring, a concept which includes other-directedness, extroversion and acting ability, does not appear to be predictive (Campanelli, Sturgis, and Purdon 1997; Groves and Couper 1998). Groves and Couper (1998) concluded that the role of personality is still an unresolved issue. They speculate that the reasons why no research has found strong links between interviewer personality traits and success is either because the interviewers studied tend to be homogeneous or because tailoring is a skill that can be learnt, rather then being related to fixed personality traits. Accordingly, some studies have investigated the role of social skills. Persuasion and personal organisation skills appear to be related to success (Johnson and Price 1988), as are appearing trustworthy, friendly and being able to react to the respondent (Morton-Williams 1993).

Our study offers a number of advances over previous research. First, given the difficulties of measuring doorstep interactions, we attempt to measure the main internal determinants of interviewers' behaviour on the doorstep and their skills in tailoring and maintaining interaction. This involves simultaneous measurement of personality traits, social skills and attitudes. Second, we use a large sample of interviewers, with information about interviewer characteristics from administrative records plus data from a survey of interviewers. Third, our co-operation data is not limited to a single survey, but instead covers surveys on a range of topics and with some variation in design features.

We examine the extent of variation between interviewers in the co-operation rates they achieve and test which interviewer characteristics are associated with higher co-operation rates: experience, expectations, personality traits, or inter-personal skills. We assess, in a multivariate framework, which of these are most important. Finally, to aid understanding of the common finding of an association between interviewer experience and co-operation rates, we investigate how the more experienced interviewers differ from their colleagues in respect of personality traits and inter-personal skills. The results have implications for interviewer selection and training.

Section 2 outlines the hypotheses we test, Section 3 provides a description of the contact data, from which survey outcomes are derived, and the data about interviewers and geographic areas, Section 4 describes the measures of interviewers' personality, inter-personal skills and attitudes in more detail, Section 5 provides an overview of the data,

Section 6 describes the analysis methods, Section 7 presents and discusses the results and Section 8 contains a summary and conclusion.

2   Hypotheses tested

Groves and Couper (1998) hypothesized that interviewers' behaviours are determined by experience and socio-demographic characteristics. We would argue that other key determinants of the interviewer's doorstep behaviour are the interviewer's personality traits and inter-personal skills.

Our hypotheses are illustrated in Figure 1. We expect the interviewer's socio-demographic characteristics, their personality traits, inter-personal skills, expectations and experience all to be related to the co-operation rates they achieve - conditional upon the predispositions of the sample members they approach - because these characteristics influence both how the householder perceives the interviewer and how the interviewer behaves. We expect more experienced interviewers to achieve higher co-operation rates because the more experienced interviewers have different expectations, personality traits and skills. (In the current analysis we do not distinguish whether the differences between more and less experienced interviewers are due to learning or due to less successful interviewers dropping out over time.) Similarly, we expect any associations between interviewer co-operation rates and socio-demographic characteristics to be partly due to differences in the traits, skills and expectations between different socio-demographic groups of interviewers. Based on this framework, we test the following specific hypotheses:

H1: The probability that a sample unit co-operates increases with interviewer experience. The assumed mechanism is that more experienced interviewers dispose of a larger repertoire of ways of describing the survey request, and are better at identifying respondents' concerns and maintaining interaction.

H2: The probability that a sample unit co-operates increases with positive interviewer attitudes towards persuading respondents. It is supposed that interviewers who believe that it is justified and fruitful to persist with reluctant respondents, are more likely to do so.

H3: Controlling for other interviewer characteristics, the probability that a sample unit co-operates is related to the interviewer's personality traits, increasing with:

5

H3a: …agreeableness, as agreeable interviewers are likely to be more compassionate and better at identifying the concerns of sample units and/or because respondents may find it harder to refuse a request from an agreeable person,

H3b: .…conscientiousness, as conscientious interviewers are likely to be more diligent and thorough,

H3c: …extroversion, as extrovert interviewers are likely to be better at creating and maintaining an interaction with the respondent,

H3d: …emotional stability, as emotionally stable interviewers are likely to be more resilient to setbacks and discouragement,

H3e: …openness, as open interviewers are likely to be interested in meeting different people and the challenges presented.

H4: Controlling for personality traits and other characteristics, the probability that a sample unit co-operates is associated with the interviewer's inter-personal skills, increasing with:

H4a: …the ability to read other people and pick up cues, as these interviewers are likely to be better at identifying the sample unit's concerns and motivations,

H4b: …greater verbal and non-verbal communication skills, as these interviewers are likely to be better at maintaining interaction and at allaying concerns,

H4c: …the ability to quickly adapt and react to new situations, as these interviewers are likely to be better at tailoring the survey request to particular respondents,

H4d: …persuasion and assertiveness, as these interviewers are more likely to convince hesitant respondents to co-operate,

H4e: … resilience to setbacks, as these interviewers are less likely to be discouraged by experiences with reluctant respondents.

H5: More experienced interviewers score higher on the personality traits, skills and expectations associated positively with co-operation, controlling for socio-demographics. This is assumed to be a partial explanation for the positive association posited in H1 between the probability that a sample unit co-operates and interviewer experience.

H6: The probability that a sample unit co-operates differs by socio-demographic characteristics of interviewers. It is supposed that different socio-demographic groups

of interviewers score differently on the traits, skills and expectations associated positively with co-operation.

3   Data

We use data about the face-to-face survey fieldwork undertaken by interviewers working for the UK National Centre for Social Research (NatCen) between December 2007 and December 2008. NatCen is a not-for-profit organisation that carries out surveys for public sector and academic clients. The majority of its survey fieldwork is accounted for by large-scale surveys for central government departments. We include all cross-sectional surveys of general population samples fielded during that time. These all used the same sampling frame, the Postcode Address File[1]. We exclude specialist samples, second and subsequent waves of longitudinal surveys, screening exercises, pilots and dress rehearsals as the task of achieving co-operation is somewhat different in these cases. The criterion for including a case is the date of the first contact attempt, so for several surveys only a subset of sample cases are included in the analysis. The analysis data set was created by linking data from four separate sources, namely:

- Field call records,
- Administrative data regarding interviewers,
- A survey of interviewers,
- Small-area data derived from the 2001 Census.

Each of these are described in turn below.

3.1   Field call records

In January 2006, NatCen introduced a standardised electronic system for capturing information about the process and outcomes of face-to-face survey fieldwork. The system, known as the NatCen CAPI Management System (CMS), captures the dates, times and locations of all trips made by interviewers as well as the date, time and outcome of each visit to a sample address. All interviewer trips made between December 2007 and December 2008 on relevant surveys (see criterion above) were extracted.

3.2   Interviewer administrative data

The following items were extracted from NatCen administrative records and linked to the CMS data: interviewer age, sex, number of years working for NatCen (to measure

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[1] A list of all addresses to which the Royal Mail deliver mail, apart from "large users", defined as those – mainly businesses – who receive more than 25 items of mail per day, on average.

experience), grade (which is based on the number of projects an interviewer has completed and his/her performance on those projects), team leader status, fieldwork area and whether still working for NatCen in May 2008. Durrant et al. (2010) use interviewer pay grade as a measure of experience, on the grounds that promotions are based on performance and therefore grade reflects interviewer skills and should be more strongly associated with co-operation rates than a simple measure of years of experience. We prefer to use years working for NatCen as a measure of experience, precisely because grade is endogenous by definition. Furthermore, unlike Durrant et al. we have explicit measures of skills and do not therefore need to use grade as a proxy for skills. Our measure of experience should therefore allow us to identify any impact of experience over and above that which is due to differences in skills.

3.3 Interviewer survey

A postal self-completion survey was carried out in May 2008 of all interviewers who had worked for NatCen at some time since January 2006. Just over three-quarters of these were still currently working for NatCen. Of 1478 interviewers mailed, 1198 (81%) provided a completed questionnaire. Interviewers currently working for NatCen had a higher response rate (85%) than ex-interviewers (69%). The majority of the questionnaire was taken up with measurement of personality traits and inter-personal skills assessments. These measures, which are central to our analysis, are discussed in Section 4 below and listed in full in the appendix. The survey also asked about interviewing experience, job expectations, job support and satisfaction, and availability to conduct interviews during a typical week.

Of the 1198 responding interviewers, 845 had carried out some fieldwork during the 13 month period included in our analysis. Of these, three had only worked on sample units that had also been worked on by another interviewer. As we limit our analysis to sample units worked on by a single interviewer (see section 5), data relating to 842 interviewers are included. The survey data for these 842 interviewers were linked to the CMS and administrative data.

To account for non-response to the interviewer survey, a non-response weight was developed. The following variables were used to predict response: interviewer age and sex, NatCen interviewer grade, time spent working for NatCen (in years), current interviewer status, NatCen field area, whether the interviewer was based in London and whether the interviewer was a team leader. Only those variables that were significant were included in the final weighting model: age of interviewer, interviewer grade and current interviewer status. The predicted response probabilities were used to calculate inverse propensity weights. A

small number of large weights were trimmed (at the 99.5[th] percentile). As a final step the non-response weight was calibrated (on age, sex, interviewer grade, current interviewer status and field area) using raking ratio methods. The calibrated non-response weights were then scaled to the responding sample size to give a mean weight of 1.00. No further trimming was carried out. The weights are used for all descriptive analyses, while the multivariate analyses include as controls each of the three variables in the final weighting model.

3.4 Census data

A number of Census variables, defined at the postcode sector level, were linked to the analysis data set. Postcode sectors are geographical areas containing an average of around 2,500 households and they serve as primary sampling units for most of the surveys included in the analysis. There will therefore tend to be some confounding of sector with interviewer within surveys, though most interviewers will have worked in several sectors, and on several surveys, during the period covered by our data.

Census variables added to the data included an indicator of Government Office Region, population density, measures of socio-economic classification, indicators of ethnic group and religious distribution, indicators of the distribution of types and ownership of housing, age and household composition indicators, and indicators of employment and economic inactivity in the sector.

4 Measures of traits, skills and attitudes

Measures of personality traits, inter-personal skills and attitudes were collected via the self-completion interviewer survey. The full wording of questions and response options appears in the Appendix. Here we describe the key sets of measures, the rationale for including them, the reasons why particular question forms were chosen and the indicators derived for our analyses.

4.1 The "Big Five"

Personality psychologists tend to agree that five broad dimensions can adequately organise the range of possible personality descriptors (e.g., assertive, friendly, nervous). These dimensions are the traits of Extroversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience (John and Srivastava 1999), each of which refers to individual differences in a number of underlying traits or behaviours. Extroversion refers to sociability, gregariousness, level of activity, and the experience of positive affect. Agreeableness refers to altruistic behaviour, trust, warmth, and kindness. Conscientiousness refers to self-control,

task-orientation, and rule-abiding. Neuroticism refers to the susceptibility to distress and the experience of negative emotions such as anxiety, anger, and depression. Openness to Experience refers to the propensity for originality, creativity, and the acceptance of new ideas. The "Big Five" provide standard measures that have been used to describe personality differences at the broadest levels. This standardisation has enabled the accumulation of knowledge regarding the association between personality traits and a range of life outcomes.

Personality traits tend to be assessed using large numbers of questionnaire items. However, recent scale-development studies have indicated that the Big Five traits can be reliably assessed with a small number of items (e.g. Gosling, Rentfrow, and Swann 2003). For instance, pilot work from the German Socio-Economic Panel (GSOEP) Study led to a 15-item version of the well-validated Big Five Inventory (Benet-Martinez and John 1998) that can be used in large-scale surveys. In our interviewer survey, we included this 15-item version (see Appendix for wording).

For each of the Big 5 traits, we reverse coded those items that measured the opposite of a trait (see Appendix) and then derived a mean score which was simply the mean of the scores on all the items related to the trait. These mean scores are used as indicators of the respective personality traits in our analyses.

4.2 Inter-personal skills

The interviewer survey further included a number of indicators of skills that we expect to be related to the interviewer's doorstep behaviour. Ideally, we would have assessed skills by observing interviewers as they carry out a series of specified tasks. Instead we asked interviewers to evaluate how they see themselves (in relation to other people they know of the same sex and similar age), by judging to what extent a series of statements applied to them. The statements tap into person and inter-personal skills relevant for the doorstep interaction. For some of these, the distinction between a skill and a trait may be somewhat fuzzy. However, in contrast to the Big Five items which measure broad fixed personality traits, the skills items relate to more specific characteristics that translate into specific relevant skills that can be learnt. Note that both the Big Five and the skills questions asked about how the interviewers see themselves in general and did not refer specifically to survey interviewing.

Many of the skills indicators were inspired by indicators on the "**International Personality Item Pool"** database, at `http://ipip.ori.org`. In total, 52 skills items were

included in the questionnaire. However, not all were expected to be related to co-operation, some were only expected to be related to contact (not addressed in this article).

For analysis purposes, the 35 items related to co-operation were combined into 10 factors using Principal Components Analysis. For each factor (group of indicators) the mean score was derived. The indicators and factors are described in the Appendix.

4.3 Attitudes towards persuading reluctant respondents

The final set of relevant items from the interviewer survey is a series of questions about interviewers' attitudes towards persuading reluctant respondents. These items have been used in previous studies and found to be associated with non-response. The items ask interviewers, using a 4-point response scale, whether they agree or disagree with statements about persuading reluctant respondents: 1) "reluctant respondents should always be persuaded to participate", 2) "with enough effort, even the most reluctant respondent can be persuaded", 3) "an interviewer should respect the privacy of the respondent", 4) "if a respondent is reluctant, a refusal should be accepted", 5) "one should always emphasise the voluntary nature of participation", 6) "it does not make sense to contact reluctant target persons repeatedly", 7) "if you catch them at the right time, most people will agree to participate", and 8) "respondents persuaded after great effort do not provide reliable answers".

Items 1 to 5 were first used by Lehtonen (1995) and later by De Leeuw et al. (1998), Campanelli et al. (1997), Hox and De Leeuw (2002) and Blohm, Hox and Koch (2007). Hox and De Leeuw in addition used item 7, and Blohm, Hox and Koch in addition used items 6 to 8. Other studies used just one or two items similar to these, such as Groves and Couper (1998) who used an item similar to 2 and Durrant and Steele (2009) and Durrant et al. (2010) who used two items similar to 1 and 2.

De Leeuw et al. (1998) derived a single attitude index from items 1 to 5. Blohm, Hox and Koch (2007) use all eight items to derive two factor scores: willingness to accept refusal and doubting data quality if subject is coerced. They created the scores using all eight items for both scores, but with different weights. Hox and De Leeuw (2002) used confirmatory factor analysis to derive two independent factors: whether the interviewer is oriented towards persuading respondents or towards emphasizing the voluntary nature of participation and accepting refusals.

Our descriptive analyses suggested that the relationship between interviewer attitudes and co-operation is not linear, and that co-operation rates are sometimes highest for one of the middle categories. We therefore decided against deriving summed attitude scores, and

instead include the attitude items as separate variables in the multivariate models. Following Durrant et al. (2010) each item is collapsed to a dichotomy by combining "agree" with "strongly agree" and "disagree" with "strongly disagree". Agree is coded 1 and disagree is coded 0, so odds ratios presented in the tables relate to the status of agreeing rather than disagreeing with the statement.

5   Data description

The data used in the analysis come from 28 different surveys, though some of these are different rounds of the same study. We exclude ineligible sample units (addresses with no resident household) and those addresses for which contact was not made at any call (6,971 addresses), since our focus is on the propensity to gain respondent co-operation conditional upon contact having been achieved.[2] Thus defined, the data consist of 108,314 sample units (addresses). Following Durrant and Steele (2009) we exclude 1,216 sample units (1.1%) that were approached by more than one interviewer, leaving 107,098 sample addresses in the analysis file.

The surveys contributing the largest number of cases to our study were the Home Office Citizenship and Communities Surveys (19,817 cases), the Family Resources Survey (16,457), the Health Survey for England (16,086) and the National Travel Survey (12,160). The number of interviewers working on each survey in the eligible time period ranges from 1 to 371 and the number of contacted cases per interviewer per survey ranges from 1 to 443, with a mean of 37.7.

The total number of interviewers represented in the analysis data set is 842. For these, data are available from administrative records (see Section 3.2 above). A summary of known characteristics of these interviewers appears in Table 1. Just over half (52.8%) are female and most are aged between 40 and 69 (just 7.1% are under 40 and 6.9% are 70 or over). Median length of service with NatCen is 3 years (not shown in table), but 19.7% of interviewers had worked for NatCen for less than one year. At the other extreme, 24.6% had worked as a NatCen interviewer for seven years or more. The mean total experience of interviewing on social surveys (not just for NatCen) reported by interviewers was 6.5 years and nearly half (47.6%) reported having worked as a survey interviewer for another organisation at some time. 7.1% of the interviewers were team leaders, a characteristic that is strongly associated with experience: none of the interviewers who had been working for NatCen less than four

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[2] We focus here on co-operation as refusals and other non-co-operation account for 86.6% of all non-response in our data.

years were team leaders, but 22.7% of those who had been working for seven years or more were.

Table 1: Distribution of interviewer socio-demographics and experience and their association with interviewer co-operation rates

		Distribution		Mean ICR	
		Col %	N	%	P-value
Age	<40 years	7.1	44	49.5	
	40-49 years	14.5	113	55.8	
	50-59 years	34.7	286	57.3	
	60-69 years	36.8	333	56.6	
	70+ years	6.9	66	55.9	0.048
Sex	Female	52.8	453	58.2	
	Male	47.2	389	53.9	0.000
Status	Current interviewer	99.2	836	56.2	
	Ex-interviewer	0.8	6	51.4	0.611
Years working for survey organisation	<1 yr	19.7	147	51.9	
	1-2 yrs	28.2	233	55.1	
	3-6 yrs	27.5	237	56.7	
	7+ yrs	24.6	225	60.1	0.000

Notes: Based on 842 Interviewers. ICR – Interviewer Cooperation Rate. P-values from a Wald test of the equivalence of means across subgroups, adjusted for clustering in PSU and weighted for non-response to the interviewer survey.

Figure 2: Interviewer co-operation rates

Our key dependent variable is co-operation rate. The interviewers in our study exhibited considerable variation in achieved co-operation rates (Figure 2), with a median of 57.4%, but 10th and 90th percentiles of 37% and 72%. It is this variation that we seek to explain in the analysis that follows.

6   Analysis methods

To test the hypotheses we first examine bivariate associations between co-operation and interviewer experience, attitudes, personality traits and skills. The co-operation indicator takes the value 1 if the sample unit co-operated, and 0 if the sample unit was contacted, but did not co-operate. All bivariate analyses are weighted for non-response to the interviewer survey as described in section 3.3 above and account for clustering by Primary Sampling Unit.

We then use multivariate models to test the conditional effects of interviewer characteristics on co-operation, using the co-operation indicator as the dependent variable. To account for the clustering of sample units within interviewers, we use random effects logit models. In the empty model, that is, before including any explanatory variables, the proportion of total variance that is at the level of the interviewer is 0.067. The proportion is similar in a model allowing for cross-classification of area and interviewer.

To reduce the potential confounding of interviewer effects with area and study effects (see Figure 1), all reported models include additional controls. First, the models account for the non-random allocation of interviewers to areas and hence to sample units (due to the fact that most interviewers work in areas close to their home) by including variables that capture area socio-demographic characteristics that are related to co-operation. We tested the relationship between co-operation and a number of small area summary variables derived from the 2001 Census and added to the models nine which exhibited a significant association. These relate to six underlying measures: region, population density, socio-economic classification, ethnic group, religion, and housing type. Second, the models account for non-random allocation of interviewers to surveys, by including control variables for the 14 separate survey projects (some of which had multiple rounds or components in the field during the window of observation). This is necessary since there are differences in mean co-operation rates between surveys that are due to differences in content and design. Once the controls for survey project and area characteristics are included in the model, the proportion of unexplained variance that is at the level of the interviewer reduces from 0.067 to 0.042.

Finally the multivariate models include the weighting variables: interviewer age, sex and whether currently working for NatCen. Once the weighting variables are added to the model, the proportion of unexplained variance at the interviewer level is 0.041.

Results from models allowing for the cross-classification of interviewers and areas are very similar to models allowing only for the clustering of sample units within interviewers: in the full model (with a similar specification to Model 6 in Table 2), the interviewer level variance is 0.036, the area level variance is 0.017 and the coefficients and standard errors are also similar. We therefore present the results from the simpler models allowing for the clustering of sample units within interviewers, but without the cross-classification of interviewers and areas.

7 Results

H1: Probability of co-operation increases with interviewer experience
The bivariate test suggests that there is a linear relationship between experience (proxied by the number of years working for NatCen) and co-operation (Table 1): mean interviewer co-operation rates range from 51.9% among interviewers with less than 1 year tenure, to 60.1% among interviewers with 7 or more years tenure (P=0.000). This result is robust in the multivariate models.

In a model including the weighting variables and controlling for survey project, area characteristics and experience as predictor variables, experience is a significant predictor of co-operation, with the odds of co-operation increasing exponentially with years of experience (Model 2 in Table 2). Comparing ten years of experience with just one year, the odds ratio for co-operation is 1.30. Adding experience reduces the amount of between-interviewer variance in co-operation rates that remains unexplained, though this is only a very small proportion of the total variance in co-operation ($\rho = 0.039$).

As robustness checks we also examined other indicators of interviewer experience. First, the total number of years working as an interviewer on social surveys produced similar bivariate results and a similar but weaker effect in the multivariate test. Unlike the years working for NatCen, which comes from administrative data, the total experience measure is from the interviewer survey and therefore affected both by item non-response and potential recall problems. We therefore conclude that years working for NatCen is a more reliable measure of experience and use this in all further analyses. Second, the interviewer survey also included questions about whether interviewers had had any experience in other jobs requiring

15

Table 2: Probability of cooperation

Cooperation	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
Age	1.021	*	1.026	**	1.024	*	1.021	*	1.019		1.024	*
Age squared	1.000		1.000	**	1.000	*	1.000	*	1.000		1.000	**
Female Interviewer	1.139	***	1.096	***	1.147	***	1.103	***	1.126	***	1.062	*
Current Interviewer	1.287		1.290		1.293		1.283		1.307		1.335	
Experience			1.037	***							1.028	***
Experience squared			0.999	**							0.999	
Should persuade					0.995						0.997	
All can be persuaded					1.130	***					1.125	***
Should respect privacy					0.884						0.930	
Should accept refusal					0.944	*					0.942	*
Voluntary nature					0.925	**					0.946	
No repeated contacts					1.027						1.027	
Most agree if right time					1.031						1.041	
Reluctant poor data					0.892	***					0.926	*
Agreeableness							0.964	*			0.962	*
Conscientiousness							1.027				1.027	
Extroversion							1.037	**			1.021	
Neuroticism							1.010				1.003	
Openness							0.970	*			0.968	*
Reading others									1.021		1.031	
Connectedness									1.014		1.002	
Verbal communication									1.049	*	1.008	
Nonverbal comm.									0.995		1.003	
Small talk									1.002		1.004	
Adaptability									0.949	**	0.982	
Ability to conform									1.010		1.017	
Assertiveness									0.974	*	0.968	**
Deliberation									0.962	*	0.980	
Emotional resilience									1.002		1.003	
N	107036		107036		101336		105002		102252		95622	
Log-likelihood	-69817		-69798		-66106		-68476		-66638		-62315	
Rho	0.041		0.039		0.040		0.040		0.040		0.035	

Notes: Odds ratios from random effects logit models. All models include controls for survey project and area characteristics. *** $P \leq 0.01$; ** $0.01 < P \leq 0.05$; * $0.05 < P \leq 0.10$.

related skills: whether they had ever done any other survey interviewing (including market research and telephone interviewing), any other non-survey interviewing, activities involving interaction with the general public, activities involving cold calling at peoples' homes, activities where they needed to persuade people. Only experience with 'activities involving cold calling' is positively associated with co-operation rates in bivariate and multivariate

tests, but the effect is small. The count of the number of these experiences shows no systematic relationship with co-operation, in either the bivariate or multivariate tests.

We conclude that the hypothesis that interviewer experience is positively related to co-operation is supported, even after controlling for a range of characteristics of the geographical location of the sample units, for differences between surveys, and for interviewer age, sex and status. It therefore remains of interest to explore the mechanisms behind this relationship between experience and success at gaining co-operation.

H2: Probability of co-operation increases with positive interviewer attitudes towards persuading respondents

The bivariate tests indicate a significant association of co-operation rate with two of the eight attitude items (Table 3) – both in the hypothesized direction. Co-operation rates are higher for interviewers who disagree that "if a respondent is reluctant, a refusal should be accepted", and for those who disagree that "respondents persuaded after great effort do not provide reliable answers". This suggests that interviewers who are more positive about the justification, feasibility and usefulness of persuading reluctant respondents may actually persuade more to participate. These findings confirm those from earlier studies.

These two attitude items remain significant in the multivariate tests after including the weighting variables and controls for survey project and area characteristics (Model 3 in Table 2), though only the latter item, regarding reliability of answers, is strongly significant ($P < 0.01$). However, two further attitude items are significant in the multivariate model once area characteristics are controlled. Agreement that "with enough effort, even the most reluctant respondent can be persuaded to participate" is associated with an increased probability of co-operation ($P < 0.01$), as is disagreement with the statement that "one should always emphasise the voluntary nature of participation" ($0.01 < P \leq 0.05$).

The results therefore suggest support for the hypothesis that co-operation is related to interviewer attitudes. This is consistent with the findings of Durrant et al. (2010) who, though using different measures, concluded that interviewers with positive attitudes towards persuasion tend to have higher co-operation rates.

Table 3: Distribution of interviewer attitudes and their association with interviewer co-operation rates

		Distribution		Mean ICR	
		Col %	N	%	P-value
Reluctant Rs should be persuaded	(Strongly) disag.	55.6	467	56.5	
	(Strongly) agree	44.4	366	55.7	0.416
Even most reluctant can be persuaded	(Strongly) disag.	81.7	689	56.1	
	(Strongly) agree	18.3	149	56.4	0.874
Should respect privacy of respondent	(Strongly) disag.	0.9	8	59.0	
	(Strongly) agree	99.1	833	56.1	0.546
Should accept refusal	(Strongly) disag.	50.3	418	57.4	
	(Strongly) agree	49.7	411	54.8	0.009
Always emphasise voluntary nature	(Strongly) disag.	34.3	284	57.3	
	(Strongly) agree	65.7	550	55.7	0.129
No sense re-contacting reluctant Rs	(Strongly) disag.	27.8	229	56.1	
	(Strongly) agree	72.2	605	56.2	0.983
Most people will agree to participate	(Strongly) disag.	22.1	186	55.4	
	(Strongly) agree	77.9	652	56.3	0.451
Reluctant Rs provide unreliable data	(Strongly) disag.	78.1	648	57.2	
	(Strongly) agree	21.9	182	52.3	0.000

Notes: Based on 842 Interviewers. R – respondent. ICR – Interviewer Cooperation Rate. P-values from a Wald test of the equivalence of means across subgroups, adjusted for clustering in PSU and weighted for non-response to the interviewer survey.

H3: Probability of co-operation is associated with interviewer personality traits

The bivariate tests show significant associations of interviewer co-operation rate with two of the five traits (Table 4). The association with extroversion is in the hypothesised direction: greater extroversion is associated with higher co-operation rates (P = 0.001). However, the association with openness is in the opposite direction to that hypothesised: greater openness is associated with lower co-operation rates (P = 0.0003). This finding regarding openness is unexpected. The other three traits did not show any association with co-operation.

Table 4: Distribution of interviewer personality traits and their association with interviewer co-operation rates

	N	Mean	Std. Dev.	Min	Max	Correlation with ICR	
						Corr	P-Value
Agreeableness	839	5.79	0.812	2.3	7	-0.008	0.826
Conscientiousness	837	5.80	0.862	2.7	7	0.040	0.250
Extroversion	839	4.95	1.215	1	7	0.111	0.001
Neuroticism	838	3.03	1.171	1	6.7	-0.022	0.528
Openness	837	5.22	1.020	2	7	-0.126	0.000

Notes: ICR – Interviewer Cooperation Rate. Summary statistics and correlation coefficients adjusted for non-response to the interviewer survey.

The multivariate tests confirm the positive association of extroversion and the negative association of openness, after controlling for the weighting variables, survey and area characteristics (Model 4 in Table 2). However, the effect of extroversion is no longer significant once interviewer experience and attitudes are also included in the model (Model 5). The models also show that, after controlling interviewer experience and attitudes, agreeableness too is weakly associated with co-operation ($0.05 < P \leq 0.10$), but in the opposite direction to that hypothesised: a greater propensity to co-operate is associated with less agreeable interviewers. This would be in line with a study by Snijkers, Hox and De Leeuw (1999), who found that interviewers who were more respondent oriented and thought it important to please respondents tended to achieve lower response rates than interviewers who were less respondent centred. Neither conscientiousness nor neuroticism show any association with co-operation.

The results therefore provide support for the hypothesis that personality traits are associated with co-operation rates, although the associations are not all in the expected direction. As expected, extroversion is positively associated, though this association appears to be explained by differences in interviewer attitudes. Openness and agreeableness are related to co-operation, but in the opposite direction to the one hypothesized.

H4: Probability of co-operation increases with interviewer inter-personal skills

In the bivariate tests the results for hypotheses H4a-e are mixed (Table 5). To test H4a, that the ability to pick up cues is positively associated with co-operation, we use the factors that we have labelled "ability to read others" and "connectedness with ones surroundings". (See the appendix for the full list of indicators on which these factors are based.) The results are in the expected direction but not significant. To test H4b, we examine the factors "verbal communication", "non-verbal communication" and "small talk". The associations with co-operation are in the expected direction for the first and last factor, but close to zero for non-verbal communication skills. None of the three associations are significant. To test H4c, that the ability to adapt quickly has a positive effect, we examine the factors "adaptability" and "conformability". Here the results are significant and in the expected direction for the second factor, but not significant for the first. To test H4d, that persuasion and assertiveness matter, we examine the factors "assertiveness" and "deliberation". Assertiveness has no significant association with co-operation rates, but deliberation has a negative association. One could argue that this is the hypothesised direction of association as an interviewer who likes to take more time to make a decision and to consider the respondent's views might be less assertive.

Finally, to test H4e we examine the factor "emotional resilience", which does not show any association with co-operation. In sum this suggests some support for H4c and H4d. For the other hypotheses the results are not significant.

Table 5: Distribution of interviewer inter-personal skills and their association with interviewer co-operation rates

	N	Mean	Std. Dev.	Min	Max	Correlation with ICR	
						Corr	P-Value
Reading others	838	5.58	0.752	2.7	7	0.0270	0.435
Connectedness	830	5.08	0.869	2.4	7	0.0118	0.735
Verbal communication	833	5.28	0.874	1.7	7	0.0524	0.131
Nonverbal comm.	841	5.15	1.092	1	7	-0.0010	0.976
Small talk	840	4.24	1.742	1	7	0.0514	0.137
Adaptability	840	5.51	0.819	2.5	7	-0.0254	0.462
Ability to conform	839	5.27	0.803	2	7	0.0717	0.038
Assertiveness	836	4.73	1.177	1	7	-0.0416	0.229
Deliberation	836	5.50	0.765	2.3	7	-0.0610	0.078
Emotional resilience	837	4.17	1.049	1.3	7	0.0032	0.926

Notes: ICR – Interviewer Cooperation Rate. Summary statistics and correlation coefficients adjusted for non-response to the interviewer survey.

In the multivariate tests, the effects of verbal communication, adaptability, assertiveness and deliberation all contribute significantly after controlling for the weighting variables, survey and area characteristics (Model 5 in Table 2), though the effects of assertiveness and adaptability are in the opposite direction to that hypothesised: greater assertiveness and greater adaptability are associated with lower co-operation propensity. After controlling additionally for interviewer attitudes and personality traits (Model 5), only the effect of assertiveness remains significant ($0.01 < P \leq 0.05$), but is still in the opposite direction of that hypothesised.

We conclude from these results that the inter-personal skills as measured in the interviewer survey are only weakly predictive of co-operation and that these effects are mainly explained by differences in attitudes and personality traits.

H5: More experienced interviewers score higher on the personality traits, skills and attitudes that are positively associated with co-operation

The more experienced interviewers are more likely to be female and also older than their less experienced colleagues: while 49.4% of interviewers with less than 1 year working for NatCen are male, only 38.1% of those with seven or more years of experience are male.

Similarly, the mean age increases from 50.2 to 62.3 between these two groups. In testing the association between experience and traits, skills and attitudes we wish to account for these differences in sample composition. Consequently, we do not conduct bivariate tests but instead focus on multivariate tests, in which we control for interviewer age, sex and current status.

Comparison of Models 2 and 6 in Table 2 shows that there is a modest reduction in the effect of experience on co-operation when traits, skills and attitudes are introduced into the model: the odds ratio changes from 1.037 to 1.028. This suggests that the effect of experience is only partly explained by differences in these characteristics.

Table 6 presents a formal test of the association between experience and traits, skills and attitudes. The results are from OLS regressions of log experience. (The log transformation is used because experience is highly skewed). Unlike all previous models, this analysis is at the level of the interviewer rather than the sample unit. The results suggest that two of the attitude items, one of the personality traits and three of the skills factors are associated with experience. Five of these six associations are in the expected direction.

For the attitude items, the associations are both in the expected direction: more experienced interviewers are less likely to agree that they should always emphasise the voluntary nature of participation or that reluctant respondents provide unreliable data. The effects of these attitudes on co-operation rates are independent of differences in personality traits or skills (comparison of Models 1 and 4 in Table 6).

As far as personality traits are concerned, the more experienced interviewers are less conscientious than others, the opposite of what we would have expected. The other personality traits show no significant association with experience.

Finally examining the skills, the more experienced interviewers have better verbal communication skills, are more connected to their surroundings, and are less conformist. These associations are all in the direction we would expect.

We conclude that although interviewer experience is associated to some extent with traits, skills and attitudes, these characteristics (as measured in our interviewer survey) only partly explain the mechanisms by which experience is associated with co-operation.

Table 6: Association between interviewer experience and attitudes/traits/skills

Log experience	Model 1		Model 2	Model 3		Model 4	
Should persuade	0.003					0.012	
All can be persuaded	-0.016					-0.016	
Should respect privacy	-0.295					-0.210	
Should accept refusal	-0.077					-0.073	
Voluntary nature	-0.246	***				-0.236	***
No repeated contacts	-0.067					-0.058	
Most agree if right time	-0.073					-0.046	
Reluctant poor data	-0.207	**				-0.203	**
Agreeableness			-0.047			-0.047	
Conscientiousness			-0.045			-0.112	**
Extroversion			0.019			-0.001	
Neuroticism			-0.013			-0.012	
Openness			-0.056			-0.060	
Reading others				0.029		0.078	
Connectedness				0.102	**	0.116	**
Verbal communication				0.133	**	0.112	*
Nonverbal comm.				-0.088	**	-0.066	
Small talk				-0.015		-0.020	
Adaptability				-0.076		-0.018	
Ability to conform				-0.115	**	-0.111	**
Assertiveness				-0.018		-0.034	
Deliberation				-0.074		-0.002	
Emotional resilience				-0.035		-0.034	
Constant	-0.376		-0.285	-0.139		0.721	
N	802		830	807		760	
Adjusted R^2	0.212		0.193	0.207		0.214	

Notes: Coefficients from OLS models of log experience. Interviewer-level analysis. All models include controls for interviewer age, sex and current status. *** $P \leq 0.01$; ** $0.01 < P \leq 0.05$; * $0.05 < P \leq 0.10$.

H6: The associations between socio-demographic characteristics and co-operation are due to differences between interviewer groups in the personality traits, skills and attitudes related to co-operation

Some of the socio-demographic characteristics of interviewers are clearly associated with co-operation. Table 1 shows that interviewer cooperation rates vary with interviewer age and that female interviewers have higher cooperation rates (58.2%) than male interviewers (53.9%). These associations hold when controlling for survey project and area characteristics as explanatory variables (Model 1 in Table 2).

Table 7: Association between interviewer sex and attitudes/traits/skills

Female Interviewer	Model 1	Model 2		Model 3		Model 4		Model 5	
Experience	1.068							1.106	*
Experience squared	1.003							1.001	
Should persuade		0.685	**					0.661	**
All can be persuaded		1.051						1.101	
Should respect privacy		1.103						0.847	
Should accept refusal		0.937						1.014	
Voluntary nature		1.185						1.218	
No repeated contacts		0.890						0.876	
Most agree if right time		0.953						1.037	
Reluctant poor data		0.952						1.044	
Agreeableness				1.096				1.161	
Conscientiousness				1.309	***			1.347	***
Extroversion				1.556	***			1.366	***
Neuroticism				1.522	***			1.369	***
Openness				0.848	**			0.859	
Reading others						1.751	***	1.594	***
Connectedness						1.106		1.042	
Verbal communication						0.683	***	0.592	***
Nonverbal comm.						1.119		1.219	**
Small talk						1.309	***	1.245	***
Adaptability						0.885		0.896	
Ability to conform						1.031		1.099	
Assertiveness						0.942		0.996	
Deliberation						0.855		0.817	
Emotional resilience						0.888		0.902	
N	842	802		830		807		760	
Log-likelihood	-543.1	-535.6		-517.6		-505.1		-432.7	
Pseudo R^2	0.066	0.034		0.096		0.094		0.176	

Notes: Odds ratios from logit models. Interviewer-level analysis. All models include controls for interviewer age and current status.*** P≤ 0.01; ** 0.01<P≤0.05; * 0.05<P≤0.10.

As a first indication of whether these differences between socio-demographic groups are due to differences in attitudes, traits and skills between these groups, Models 2-6 in Table 2 test whether the associations of age and sex change if additional interviewer characteristics are included in the models. The effect of age on co-operation rate seems to be independent of any differences in experience, attitudes, traits and skills between age groups: the coefficient for age varies little between the models. The effect of interviewer sex on co-operation is more sensitive to control of the other variables. The sex effect appears to be strengthened by inclusion in the model of the attitude measures (the odds ratio increases), but weakened by

inclusion of experience, personality traits and skills. The overall effect of including all four sets of variables (Model 6) is a reduction in the association of sex with co-operation rate: perhaps more than half of the effect of interviewer sex is explained by these interviewer characteristics.

As a more formal test, we examined the differences between male and female interviewers. Table 7 presents the results of interviewer-level logit models, predicting whether an interviewer is male or female. The results indicate that female interviewers are more likely than male interviewers to have some of the characteristics that were found to be associated with higher co-operation propensities. Women interviewers have greater experience than their male counterparts. Women are more conscientious, extroverted and more likely to be able to read others, to be willing to engage in smalltalk and to have good non-verbal communication skills. However, gender differences in characteristics are not universally in the direction of women having a greater propensity to possess those characteristics associated with higher co-operation rates. Women are also more likely to be neurotic and open, less likely to (think they) have good verbal communication skills and less likely to agree that reluctant respondents should always be persuaded to participate.

We therefore conclude that the differences in personality traits, skills and attitudes do in part explain the mechanism of how the sex of the interviewer is related to co-operation rates.

8 Summary and conclusion

This paper has provided new evidence on the effects of interviewers on survey co-operation. Data on a large sample of face-to-face interviewers from a UK national survey organisation suggest that there is considerable variation between interviewers in the co-operation rates they achieve. Just over a third of this variation is explained by non-random assignment of interviewers to areas and survey projects; further variation is explained by interviewer characteristics.

We examine a comprehensive set of characteristics which are likely to determine the way interviewers behave on the doorstep and to be predictive of their tailoring and communication skills. The results first support previous findings that interviewer experience is predictive of success: co-operation probabilities increase linearly with experience, even after controlling for area and survey characteristics. Second, we find weak support for previous findings that interviewer attitudes toward the legitimacy and usefulness of persuading reluctant respondents are predictive of co-operation. Third, we find some

evidence that interviewer personality traits are associated with co-operation: co-operation probabilities are higher for more extrovert interviewers and for interviewers who are less open. Fourth, we find only modest evidence that inter-personal skills, as measured in our survey, are predictive of co-operation. Four of the skills - verbal communication, adaptability, assertiveness and deliberation - are associated with co-operation in multivariate models that control for area characteristics, survey, and interviewer demographics. However, after controlling additionally for interviewer attitudes and personality traits, only the effect of assertiveness remains significant.

We further test hypotheses about the mechanisms through which interviewer experience is related to co-operation. The results indicate some support for the hypothesis that more experienced interviewers are more successful because they score higher on the personality traits, skills and attitudes that are positively related to co-operation. However, although there are some differences between interviewers in the expected directions, these explain only around one quarter of the association between experience and co-operation. There is also some support for the idea that higher response rates amongst female interviewers are the result of women scoring higher on the personality traits, skills and attitudes positively related to co-operation. Differences between men and women in these characteristics explain about one half of the association between interviewer sex and co-operation rates, though the differences between men and women in the individual characteristics are something of a mixed bag.

Our findings suggest some implications for the recruitment and training of face-to-face survey interviewers. If we consider that personality traits are fixed characteristics of an individual, while skills can be learned and improved and attitudes are likely to be influenced by skills and by on-the-job experiences, then we can conclude that only the personality traits could be relevant at the recruitment stage. As the traits make only a marginally significant contribution to the explanation of variation in co-operation propensity, we find no justification for taking them into account in recruitment. The impact of attitudes and, to a lesser extent, skills is slightly more substantial. There is then certainly a case for taking these into account in training. It would seem worthwhile to train interviewers to not be too assertive, to demonstrate to them that reluctant respondents do not necessarily provide poor data, and to give them confidence that most people can be persuaded and that they should not accept a refusal lightly. These ideas are broadly consistent with current good practice.

However, the significant conditional effect of interviewer age and sex, and indeed the remaining unexplained interviewer effect, suggests to us that there remains scope for further

investigation of the effects of interviewer skills and behaviour on co-operation. It may be that our study has not measured the skills well enough, or has not measured the pertinent skills. Or it may be that the remaining difference between interviewers is explained by what we described in section 1 as the passive effect of interviewers. It would be useful to study explicitly these passive effects. An alternative explanation is that it is not so much personality and interpersonal skills that are important, but rather work orientation and work ethic: in other words the kinds of features that would be relevant for any job rather than anything specific to survey interviewing.

So, while our results provide some new evidence on the mechanisms through which interviewers gain co-operation and the factors determining their success, they also leave many questions open. First, our results do not go far in explaining the mechanisms through which interviewer experience is related to co-operation. Since experience has a strong effect, further exploration of the mechanisms by which it occurs is of interest. Second, we have not addressed the question of whether experience has a positive effect due to learning or selective drop-out of less successful interviewers. To adequately address this question, longitudinal data over several years would be needed. Third, we believe that the modest effects of inter-personal skills may be related to the difficulty of measuring these skills well, rather than to the fact that they are not relevant. The question then is how such skills may be measured more successfully.

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Appendix – Questions from the interviewer survey

Attitudes towards persuading reluctant respondents

Below follow a series of statements on persuading respondents. Interviewers may differ in their opinions about these strategies. There are no right or wrong answers. We are interested in your opinion, based on your experience as an interviewer.

(Response categories: strongly agree, agree, disagree, strongly disagree)

– Reluctant respondents should always be persuaded to participate.
– With enough effort, even the most reluctant respondent can be persuaded to participate.
– An interviewer should respect the privacy of the respondent.
– If a respondent is reluctant, a refusal should be accepted.
– One should always emphasise the voluntary nature of participation.
– It does not make sense to contact reluctant target persons repeatedly.
– If you catch them at the right time, most people will agree to participate.
– Respondents persuaded after great effort do not provide reliable answers.

Big 5 personality traits

The following questions are about how you see yourself as a person. Please circle the number which best describes how you see yourself where 1 means 'does not apply to me at all' and 7 means 'applies to me perfectly'.

Please describe yourself as you generally are now, not as you wish to be in the future. Describe yourself as you honestly see yourself, in relation to other people you know of the same sex as you are, and roughly your age.

(Note: Items are presented in the groups in which they are analysed, not in the order in which they appeared in the questionnaire.)

I see myself as someone who…

Agreeableness	Is sometimes rude to others (r)
	Has a forgiving nature
	Is considerate and kind to almost everyone
Conscientiousness	Does a thorough job
	Tends to be lazy (r)
	Does things efficiently
Extroversion	Is talkative
	Is outgoing, sociable
	Is reserved (r)
Neuroticism	Worries a lot
	Gets nervous easily
	Is relaxed, handles stress well (r)
Openness	Is original, comes up with new ideas
	Values artistic, aesthetic experiences
	Has an active imagination

Notes: (r) = reverse coded.

Inter-personal skills

(These items were included in the same format as those for the Big 5. Response categories from 1 'does not apply to me at all' to 7 'applies to me perfectly'.)

I see myself as someone who…

Factor	Indicator	Loading
Ability to read others	Is good at sensing what others are feeling	0.76
	Anticipates the needs of others	0.74
	Senses others' wishes	0.71
	Can tell a lot about people from how they live	0.69
	Is very aware of my surroundings	0.61
	Knows what to say to make people feel good	0.44
Verbal communication skills	Is never at a loss for words	0.72
	Can talk my way out of anything	0.70
	Can talk others into doing things	0.68
	Finds it difficult to persuade others (r)	0.68
	Is good at explaining things to people	0.55
	Expresses myself easily	0.53
Ability to adapt to new situations	Catches on to things quickly	0.74
	Adapts easily to new situations	0.72
	Quickly bounces back from setbacks	0.45
	Remains calm under pressure	0.37
Connectedness with surroundings and other people	Feels that others don't understand what I'm trying to say (r)	0.59
	Tends to miss things that other people notice (r)	0.53
	Lets others make the decisions (r)	0.52
	Sometimes realises that I'm not paying attention when others are speaking to me (r)	0.47
	Has trouble guessing how others will react (r)	0.43
Emotional resilience	Can't help but look upset when something bad happens (r)	0.71
	Gets upset if others change the way that I have arranged things (r)	0.65
	Is hard to convince (r)	0.37
Ability conform to surroundings	Pays little attention to my appearance (r)	0.68
	Is always aware of how I present myself	0.66
	Likes to follow standard routines (r)	-0.54
Non-verbal communication skills	Uses body language to help me get my point across	0.77
	Tends to use people's body language to help me understand what they mean	0.59
Assertiveness	Says 'no' to requests from others at times, without feeling guilty	0.73
	Sticks up for myself	0.52
Deliberation	Likes to take time making decisions	0.74
	Respects the viewpoints of others	0.47
	Listens to others, even if I disagree	0.43
Small talk	Avoids 'small talk' (r)	0.82

Notes: (r) = reverse coded. Method of grouping the skills items: Principal Components Analysis. Rotation method: Varimax with Kaiser Normalization. Rotation converged in 13 iterations.