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Non-response in a survey among immigrants in Denmark

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Abstract: The purpose of this paper is to study how various characteristics of respondents and interviewers affect non-response among immigrants. We use a survey conducted among immigrants in Denmark and ethnic Danes. First, we analyse the determinants of overall non-response. Second, we analyse how the determinants of contact and of response given contact differ. We find that characteristics of the respondents are important for the response rate – especially they are important for the probability of getting in contact with the respondent. The lower probability of response among immigrants compared to ethnic Danes persists after controlling for all the other variables. We also find - contrary to expectations - that none of the observable interviewer-characteristics seem to affect the response rate.

Keywords: Non-response, non-contacts, refusals, immigrants

1. Introduction

During the last 20 years, the number of immigrants has increased significantly in Denmark as well as in other European countries, and so has the need for knowledge about these immigrant groups. Consequently, in recent years immigrants have constituted a larger share of national surveys and, in addition, special surveys have been conducted among different immigrant groups. The basic lesson learned from these surveys is that non-response rates are typically relatively large among immigrants. Hence, the surveys have revealed that interviewing immigrants requires other considerations than interviewing the majority population. However, only few studies have focused on non-response among immigrants (see e.g. Feskens et al. 2004; Dale and Haraldsen 2000; Schmeets, van den Brakel and Vis-Visschers 2004).

The purpose of the paper is to study non-response in a survey among immigrants in Denmark with origin in Turkey, Iran and Pakistan. This survey more than fulfilled the expectation that non-response among the immigrants would be high – on average the response rate among the three immigrant groups were about 20 percentage points lower than the response rate for the ethnic Danes. However, the survey collecting process also revealed that there are large differences between the countries and in reasons for non-response – for instance, it was very problematic to get in contact with the immigrants from Pakistan, while refusals were a greater problem among the immigrants from Turkey. The aim of this paper is to analyse these differences and thus enable future surveys to be tailored to the specific group in greater detail.

First, we analyse how response depends on various characteristics for the respondents and for the interviewers. We do this using register information for all the individuals selected for interviews and information from the survey organisation about the interviewers. We also analyse how the factors affecting response differ between the different groups. Second, we analyse different factors explaining non-contacts and refusals, respectively. For the estimations, we use multilevel models.

The paper is organised as follows. Section 2 reviews previous literature about non-response. Section 3 describes the survey analysed in this paper. Section 4 presents the strategy of the analysis. Section 5 presents results from the multivariate analyses. Finally, section 6 concludes.

2. Previous Literature

The main reason for worrying about high non-response rates is that it may generate bias problems. In particular, non-response poses a problem if it is correlated with the variables of interest. If non-response is distributed randomly across sample groups, the effect would basically be a smaller, but still representative sample. But unfortunately, non-response is seldom randomly distributed across the sample, but is higher among some groups than others (Burkell 2003; Groves and Couper 1998). For instance, some studies find that low education and a high level of unemployment are correlated with non-response (see e.g. Groves and Couper 1998; Pedersen 2002).

Non-response occurs in every step of the survey design, and it is typical to classify interview attempts in the following categories: interviews (both complete and partial), refusals, non-contacts, and other non-interviews, where the other non-interviews category consists of those that were unable to respond due to physical or mental reasons, for language reasons, or for other reasons not related to reluctance of being interviewed (Groves and Couper 1998). The analyses of non-response should consider all the different categories of non-response, as the causes of each of the categories can be different (Groves and Couper 1998). For instance, Turner (1999) and Campanelli and O'Muircheartaigh (1999) find that the group of refusals and the group of non-contacts differ with respect to central characteristics.

The experience of previous surveys among or including immigrants is that interviewing this particular group involves specific problems, such as higher non-response rates (see e.g. Feskens et al. 2004; Dale and Haraldsen 2000; Schmeets et al. 2004). Furthermore, the non-response rate varies according to country of origin. Some European studies find that there is a significant difference between immigrants from Western countries and immigrants from non-Western countries, where the latter imposes specific problems.[1] For instance, Feskens et al. (2004) find that the response pattern of individuals with a Western foreign background is very similar to the response pattern of the native population, but that response among individuals with a non-Western foreign background is considerably lower.

[1] The exact definition of Western vs. non-Western countries can differ according to the demarcation of the European Union. Typically, however, Western countries are defined as countries in the European Union, Iceland, Norway, Switzerland, Liechtenstein, USA, Canada, Australia and New Zealand. All other countries are defined as Non-Western countries.

Two Danish studies based on survey data collected among immigrants show bias in the samples as a consequence of non-response. Persons with a low level of education and persons without employment have a relatively high non-response (Nielsen and Pedersen 2000; Jakobsen 2004). However, Feskens et al. (2004) finds for immigrants in The Netherlands that the single most important factor in getting a response is the degree of urbanisation. And concerning establishing contact with the respondents, this factor is even more important. The authors thus claim, that much of the apparent negative effect of ethnicity on response rates is explained by the fact that immigrants are more urbanised than the majority population. Furthermore, ethnicity is found to have a positive effect on participation for those respondents that were actually contacted.

Except for mail surveys, completing questionnaires involves both a respondent and an interviewer, and it is natural to expect that the interviewer may unintentionally affect the response-rate. Interviewer effects have been analysed in some studies without a clear pattern (e.g. Campanelli and O'Muircheartaigh 1999; Pickery og Loosveldt 2002). Campanelli and O'Muircheartaigh (1999) study whether easily measured characteristics of interviewers (such as age, gender, experience, and grade level) influence non-response. They control for characteristics of the area, where the interviewer carry out interviews (such as population density, proportion of flats in the area, percentage of non-white residents). Interestingly, whether an interviewer effect as well as an area effect can be found strongly depends on model specification. The authors conclude that this suggest that what is making a difference in terms of non-response is more subtle and elusive than the easily measured characteristics of interviewers and area.

Pickery and Loosveldt (2002) analyse the possible interviewer effect on non-response (gender, age, education and experience as an interviewer). They control for characteristics of the respondents (gender, age and urbanization). Pickery and Loosveldt find that both the chances of refusals and non-contacts are subject to interviewer effects; especially the experience of the interviewer is important (Pickery and Loosveldt 2002). The positive correlation between interviewers experience and response rate may be due to self-selection (Campanelli and O'Muircheartaigh 1999). Interviewers' expectations and attitudes may also affect the non-response, but only few studies have looked at this (Campanelli and O'Muircheartaigh 1999).

3. The survey

Data used for the analysis is survey data from Denmark including 18-45-year-old immigrants from Turkey, Iran and Pakistan as well as 18-45-year-old ethnic Danes collected in 2006.[2] The immigrants have immigrated to Denmark before 2006 (i.e. December 2005 at the latest). Roughly 4,050 individuals were selected for interview – nearly 1,000 from each of the immigrant groups and about 1,100 Danes. The survey was conducted for research purposes and included questions about family structure, years since migration, education (from Denmark and the country of origin), employment, working hours, job search, working experience, proficiency in Danish, social networks, housework, religion, and attitudes towards employment and gender roles.

The survey data has subsequently been merged to administrative register data from Statistics Denmark. The register data includes register information for all the individuals selected for interview, e.g. information about gender, age, family situation, region, citizenship, education obtained in Denmark, employment history in Denmark and years since migration. All of these background variables are from 2006, except for the variables on education and employment that are from 2005 and 2003, respectively (the latest available information).

In addition to the information about the respondents, we have some information about the interviewers that were assigned to the survey. This includes age, gender, experience as interviewer, and the number of interviews the interviewer was assigned to. The information about the interviewers is obtained from the survey organisation (SFI-Survey). Because the interviewing period was very long (see below), in some cases several interviewers were assigned to a specific respondent. Unfortunately, we only have information about the last interviewer assigned to the respondent. Likewise, we do not know how many different interviewers each respondent has been assigned to during the survey period.

The data collection process

The interviewing was carried out both by visits and by telephone. An introductory letter was sent to announce that an interviewer would contact the respondents by telephone or by visit to make an appointment for the interview. The immigrants received two letters: One in Danish and one in Turk-

[2] The selection of respondents in immigrants and ethnic Danes is based on Statistics Denmark's classification of the population into three groups: immigrants, descendents of immigrants and ethnic Danes (see Poulsen and Lange 1998). Descendants are not included in the present analysis.

ish, Farsi or Urdu. The interview should be carried out in Danish if possible, but the questionnaire was translated into the relevant languages (Turkish, Farsi and Urdu) and interviewers speaking the relevant language could be assigned to the interview. The duration of the interview was 40 minutes.

The survey was expected to be difficult. Therefore, the interviewers were allowed a great deal of flexibility in terms of how to contact the respondents. Some interviewers had the experience that the best contact was made through the telephone, while others preferred visits. The problem with telephoning was that a large share of the respondents did not have a registered phone number (e.g. secret number or a mobile phone with a calling card). The problem with visits was for instance problems getting into apartment buildings and doors not being opened. Because the survey was expected to be difficult, the survey period was very long – at first it was planned to be from February to June 2006. However, by June the response rate was so low – especially among the Pakistanis – that the interviewing period was extended to November 2006.

Response and non-response

Out of the 4,045 individuals selected for interview, a total of 2,448 individuals were interviewed, corresponding to an overall response rate of 60.5 (Table 1).[3] However, the response rate varies a lot across countries of origin: Roughly speaking, it is app. 40% among the Pakistanis, 55% among the Turks, 60% among the Iranians, and 80% among the Danes. Thus, the survey clearly demonstrates that the immigrant groups are more difficult to survey than the majority population. In addition, the survey demonstrates the differences between the various ethnic groups.

For the aggregate response rates, gender does not seem to be very important. The only group with a significant gender difference in response rates is Danes, where women have a higher response rate than men. A priory, we expected that immigrant women would be more difficult to survey than immigrant men, but this expectation is not confirmed by the overall response rate.

Table 1 around here

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[3] Only few interviews were only partially completed – about 1%. Likewise it should be mentioned that there are only very few item non-responses. The reason is probably that the interviewers had very clear instructions about getting answers to all questions (naturally, 'don't know' is included as a category)

Table 1 also shows the distribution of the non-response in four categories: 1) Failed to contact including the subcategories Not met, Fictive address, and Moved; 2) Refusal including the subcategories Refusal – do not have time, Refusal – suspicious, Refusal by parent, Refusal by spouse, Refusal due to the gender of the interviewer, and Refusal – other reasons; 3) Language problems including the subcategory Language problems; and 4) Other reasons including the subcategories Illness, Hospitalised/away from home, Handicapped, Moved out of the country, and Dead. The distribution of all subcategories is presented in Table A.1 in the Appendix.

Table 1 reveals marked differences in the reasons for non-response across the groups. Generally, it has been much more difficult for the interviewers to get in contact with the immigrants, and especially so regarding the respondents from Pakistan: The share of non-contacts for Pakistan immigrants are about twice the share for the other immigrant groups. On the other hand, refusals are a greater problem among the immigrants from Turkey than for any of the other groups. In fact, the share of refusals are relatively similar across Danes, Iranians and Pakistanis, which underlines that the low response rate for the Pakistan immigrants is due to contact problems rather than refusals.

Whereas language problems only were minor concerning the immigrants from Iran and concerning the men from Pakistan and Turkey, about 5% of the women from Pakistan and Turkey did not respond to the survey due to language problems. In principle, the language problems category should not exist as the interview could be reassigned to a bilingual interviewer in this case. However, although the respondent accepted being contacted by a bilingual interviewer, this contact was not successful in all cases, and especially not so among the Pakistan and Turkish women.

As mentioned above, the category ‘refusals’ is made up by six sub categories. Of these, the dominant ones are refusal due to lack of time (especially for the men) or refusal for other reasons (Table A.1). However, for 4-5% of the Turkish and Pakistani women their husbands refused on their behalf (whereas no women refused on behalf of their husbands). This situation poses a special problem for the interviewers that have to convince another person before they get the chance to convince the respondent herself. Finally, among the ‘other reasons’ the dominant reason is that the respondent moved out of the country.

4. Strategy of analysis

In the empirical analysis, we focus on the determinants of non-response and on the different determinants of non-contacts and refusals. Therefore we estimate three different models:

- The probability of response versus non-response: we estimate the probability of response for all respondents in the survey.
- The probability for contact versus non-contact: we estimate the probability of contact, i.e. individuals who participated, who refused to participate or where the interview could not be carried out due to language problems versus individuals who were not contacted (in this sub analysis, we exclude individuals where non-response were classified as other reasons, as typically done in non-response analyses).
- The probability of refusals versus response given that contact has been established: we estimate the probability of response given contact, i.e. participation in the survey versus individuals who refused or where the interview could not be carried out due to language problems.

We estimate the three models for the pooled sample using both respondent-specific variables and interviewer specific variables. However, to study potential differences between the ethnic groups we also estimate separate models for the four groups. In addition, because previous studies have showed that response is especially difficult to obtain in urban areas we estimate separate models for Copenhagen (the Danish capital).

All analyses apply logistic random multilevel models, more precisely a logistic random intercept model.[4] Multilevel models have become quite standard in the analysis of survey non-response because this type of data very often includes clustered information for instance on interviewers (Pickery and Loosveldt 2002).

Explanatory variables

The variables for the respondents include information on gender, age, family situation (couple/single, no children/children), region (Copenhagen/urban/rural), and citizenship (Danish/non-Danish). These variables are from 2006. Education is from 2005 and is the official duration of education obtained in Denmark. There is some information in the registers about education obtained outside Denmark, but the quality and coverage of this information is poor. Instead, we include a

[4] For the estimations, we use the stata command GLLAMM.

dummy-variable for everybody without Danish education. Employment status is from November 2003 (the latest available information). For a minor share of the sample, this information is not available – primarily because some individuals were not in Denmark in 2003 (they have immigrated or re-immigrated in 2004 or 2005). Finally, we include years since migration (only for immigrants). The latest information in the registers regarding time of immigration is from 2004; however, using other register information we can identify individuals who immigrated in 2005. Consequently, 'years since immigration' is only unknown for about 1% of the immigrant sample. The means of the respondent-specific variables are presented in Table 2 for the pooled sample and in Table 3 for each of the subgroups.

Table 2 around here

Table 3 around here

Table 3 reveals significant differences between the countries especially in terms of family situation, region, education, and employment status. Immigrants from Pakistan and Turkey more often live in couples and more often have children than Danes and Iranians. Almost all the immigrants from Pakistan live in Copenhagen. Immigrants from Pakistan and especially Turkey have less Danish education than Danes, while Iranians have the same educational level as Danes. Employment rates are much lower among the immigrant groups than among Danes. Concerning years since migration, the three immigrant groups are very similar, but the large standard deviation clearly reflects great variation within the immigrant groups: Some immigrants have only been in Denmark for a few years, while others have been in Denmark almost all their life. All these factors potentially influence non-response.

In Table 4, we present the interviewer-specific variables. These variables include gender, age, seniority in the survey-organisation and number of interview per interviewer. The interviewers are relatively old – with a mean age of 58 years. This reflects that the survey organisation does not employ

students as interviewers, but only people over 30 years of age, as the organisation has better experience with relatively older interviewers. In addition, the interviewers are quite experienced – 5 years on average. This should imply better chances for positive responses. Number of interview is the average number of respondents assigned to the specific interviewer – this number is very large (and due to the long survey period), underlining the need for taking account of the clustered observations in the empirical framework.

Table 4 around here

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5. Estimation results

Response

We begin the analysis by looking at the probability of response, see Table 5. Looking at the estimation results for the pooled sample shown in the first column, we find that response was more probable for the age group 18-29 years compared to the left out category (30-39 years). Typically young people are considered to be more difficult to interview especially because they are more difficult to get in touch with. This is not confirmed here, perhaps because the young immigrants are less suspicious towards the interviewers than the older immigrants. We also find that it is easier to get a positive response from individuals that live in couples and have children. On the other hand, gender is insignificant, i.e. after controlling for the other variables in the model gender does not seem to be important.

Comparing individuals living in Copenhagen to individuals living in other urban areas, we find that response is significantly lower in Copenhagen. On the other hand, there is no significant difference between response in urban and rural areas. The results indicate that the negative effect on response from living in the Copenhagen area persists after controlling for all other factors (including the country dummies). Of course the problem of lower response rates in a highly urbanised area like Copenhagen is especially problematic when a relatively large share of the sample lives in this specific area and calls for special attention by the survey organisation. And in this case, we know that

92 % of the immigrants from Pakistan live in Copenhagen (Table 3), which is then partly the explanation for the low response rate among the Pakistanis.

As expected, we find that response is higher for individuals with more education and lower for non-employed individuals. Higher socio-economic status has also in other surveys been associated with higher response rates. On the other hand, 'years since migration' is insignificant, although we would expect response to be higher among the immigrants that have been in Denmark the longest.[5] We do, however, find a positive effect on response from being a Danish citizen. 'Years since migration unknown' is associated with a lower probability of response. There is no intuitive explanation for this finding, but note that it is a very small group (only 1 %).

The country dummies show that the response for all three immigrant groups was lower than for Danes. Apparently this effect persists after controlling for all other factors, indicating that there is a negative effect on response not being captured by the other variables. This effect might be interpreted as a cultural effect.

Turning to the interviewer variables, these are not important for response in this analysis. In the pooled sampled, none of the interviewer variables are significant. This result is quite remarkable as we did expect to find, for instance, that more experienced interviewers would have a higher response rate than newly recruited interviewers. This appears not to be the case. Also we did expect that gender of the interviewer in some cases would have an effect on the possibility to get contact or to be allowed to carry out the interview among some immigrants. However, gender of the interviewer has not any significant importance for the probability of response in this survey. To look further into this hypothesis, we interact the dummy for the respondent being a woman with the dummy for the interviewer being a woman. A positive sign for this coefficient would indicate that it was easier for female interviewers to get female respondents to participate. However, also this coefficient is insignificant.

Dividing the sample into the four subgroups, the findings are very similar to the pooled sample, see column (2)-(5) in Table 5. The most important factor across all groups appear to be living in Copenhagen: Both for native Danes and for immigrants we find that response is significantly lower for

[5] The variables concerning migration history are interacted with a dummy for being an immigrant.

individuals living in Copenhagen than for individuals living in other urban areas or rural areas. Apart from that, which variables are significant differ from group to group (in many cases due to the small sample size). However, none of the respondent-specific variables point in the opposite direction than the results from the pooled sample. For the native Danes, we find that age, being single and years of education matter for response. For the Iranians, having children and being employed are positive factors in relation to response. For the Pakistanis, being young, employed and being a Danish citizen affects response positively. And for the Turks, being in a couple and being a Danish citizen have a positive impact.

Concerning the interviewer variables, contrary to the pooled sample we find a few significant results for the Danish and the Iranian sub samples. The oldest interviewers thus have a higher probability of getting a positive response among Danes than younger interviewers and, furthermore, the number of interviews per interviewer appears to have a positive impact, possibly due to a better knowledge of the questionnaire. For the Iranians, we find that the new interviewers (with 1 year of seniority only) have a lower probability of getting positive responses. A reason for this can be that the immigrants from Iran are not very used to surveys from their home country and that more experienced interviewers are better at dealing with this.

Because the variable for living in the Copenhagen area is persistently associated with a lower probability of response both for the pooled sample and for each of the sub samples, we estimate a model only for Copenhagen (column (6) in Table 5). It is mostly the same variables that influence the probability of non-response for individuals living in Copenhagen as for the individuals in the pooled sample: being young, having children, being employed and being a Danish citizen have positive impact on the probability of response. But even within the Copenhagen area, we find significant negative country effects, i.e. even within this very urbanised area some unexplained 'cultural' factors matter for the probability of response.

Table 5 around here

Contact and response given contact

Next, we turn to the analysis of getting in contact and of getting a response, given that contact has been established. In the second and third column in table 6, the results from these two models are presented for the pooled sampled (the results for the four country subgroups and the Copenhagen subgroup are presented in the Appendix). In addition, we reshow the results for the overall response model in the first column (the same results as in the first column of Table 5) to facilitate the comparison.

First, we look at the probability of getting in contact with the respondents. As the table demonstrates, the probability of getting in contact is very similar to the probability of achieving a response (column 1). With respect to the respondent-specific variables, the only differences between columns (1) and (2) are Danish education and years since migration. The first increases the probability of overall response, but is insignificant with respect to the probability of getting in contact. The second increases the probability of getting in contact, but is insignificant with respect to overall response. Hence, we find that the same factors to a large extent determine both the overall response and probability of contact. Also the models for overall response and contact for the subgroups are very similar (see Table A2).

Contrary to the model of overall response, we find indications of interviewer effect for the model of contact. We find that the oldest interviewers (60 years old or more) have a higher probability of getting in contact with the respondents and, in addition, we find that female interviewers have a higher probability of getting in contact with female respondents. We expect this result to be driven mainly by the immigrant groups but interestingly, this coefficient is not significant in any of the subgroups (Table A2).

The third column in table 6 shows the probability for response among persons in the sample that interviewers got a contact with – a contact that ended in either a response or a refusal. The main difference between this model and the previous models is that fewer factors are significant. For the pooled sample, the only factors affecting response given contact are living in the Copenhagen area, having more Danish education, not being employed and years since migration unknown. In addition, only one country dummy is significant – being Turkish implies that the probability of response given contact is lower. None of the interviewer-specific variables are significant in this model. The

same picture applies when looking at the subgroups (Table A3). This suggests that there are structural differences between the determinants of contacts and refusals, respectively.

Table 6 around here

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6. Conclusion

A number of surveys conducted among immigrants have revealed that non-response rates are typically relatively large among this group and thus that interviewing immigrants requires other considerations than interviewing the majority population. However, studies focusing on non-response among immigrants are scarce. The purpose of this paper is to study the influence of various characteristics of respondents and interviewers on non-response among immigrants. For the analysis, we use a survey conducted among immigrants in Denmark with origin in Turkey, Iran and Pakistan and among ethnic Danes.

In the present survey, the average response rate among the three immigrant groups were about 20 percentage points lower than the response rate for the ethnic Danes. The low response rate among immigrants is to a high extent due to great difficulties for the interviewers to get in contact with the immigrants. Especially, it has been difficult to get in contact with the respondents from Pakistan. On the other hand, refusals are a greater problem among immigrants from Turkey than for any of the other groups. Interestingly, the share of refusals is relatively similar across ethnic Danes, Iranians and Pakistanis.

We use multilevel models for the estimation of the influence of the various factors (characteristics of respondents and interviewers) on the probability of response. First, we analyse how the factors influence the probability of overall non-response. Second, we analyse how the factors influence the probability of contact and the probability of response given contact has been established.

The results show that the characteristics of the respondents (age, family situation, education, employment situation, citizenship, region and country of origin) are important for the probability of response. It is easiest to get a positive response from individuals that: live in couples, have children,

do not live in Copenhagen area, have relative many years of education, are employed and are Danish citizens. Furthermore, the probability of response is lower for immigrants from all three groups than for Danes, also after controlling for all the other factors, suggesting a 'cultural' determinant of non-response that is different from the observable socio-economic characteristics.

We find that the same factors to a large extent determine the probabilities of contact and of overall response, while fewer factors are significant in the estimation of the probability for response given contact. The only factors affecting the response given contact is living in the Copenhagen area, having more Danish education, not being employed and having Turkey as country of origin. Thus, the results indicate that in the contact-phase the observable characteristics are more important than in the phase where respondents should be persuaded to participate. In the contact phase, for instance family-factors like couple/single and children/no children are important (factors that relate to the probability of being at home), whereas the phase of persuasion involves much more subtle factors such as if the interviewer looks trustworthy.

Apart from this, there are two main results regarding the effect of the characteristics of the respondents. First, no matter which model and no matter which subgroup, Copenhagen is special. It is more difficult to get in contact with respondents living in Copenhagen and it is more difficult to persuade the Copenhageners to participate in the survey. Second, it should be mentioned that the country-specific effect appear to be more important in relation to the contact-phase than in relation to the persuasion-phase. In the contact-phase, even though we control for at large number of individual-specific characteristics for the respondents, still part of the differences in the probability of getting in contact is attributed to the country-dummies. Immigrants from all three countries – Iran, Pakistan and Turkey – have lower contact probabilities than Danes. But in the persuasion-phase, the only significant country-dummy is the one for Turkey. Hence, we find a lower probability of response given contact for immigrants from Turkey, but no significant difference between immigrants from Iran or Pakistan and Danes. The culture-specific problem of getting low response-rates for immigrant groups thus seems to be especially related to the contact-phase.

Finally, another main result is the very low significance of the interviewer-specific variables. Apparently, the more experienced interviewers do not have a higher probability for achieving an interview than newly recruited interviewers and gender of the interviewer seems to be without impor-

tance. Unquestionably, the individual interviewer is very important for the data collecting process, but this impact cannot be measured by the type of very aggregate information that is available about the interviewers in this survey.

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Tables

Table 1. Response and non-response, percentages

	Denmark		Iran		Pakistan		Turkey	
	Men	Women	Men	Women	Men	Women	Men	Women
Response	76.87	82.03	62.65	64.87	41.37	42.32	55.04	55.28
Non-response	23.13	17.97	37.35	35.13	58.63	57.68	44.96	44.72
Causes of non-response:								
Failed to contact	8.21	4.09	16.75	14.36	32.75	29.68	16.09	12.63
Refusals	13.62	12.81	13.44	14.36	16.86	17.05	22.87	25.47
Language problems	0.00	0.00	1.92	2.05	3.14	5.05	2.91	5.59
Other reasons	1.31	1.07	5.24	4.36	5.88	5.89	3.10	1.04
Total	100	100	100	100	100	100	100	100
# observations	536	562	573	390	510	475	516	483

Table 2. Means of respondent variables – pooled sample

	N	Mean	Std dev
Woman	4045	0.472	0.499
Age	4045	33.468	7.511
Age group 18-29	4045	0.329	0.470
Age group 30-39	4045	0.398	0.489
Age group 40-45	4045	0.273	0.446
Couple	4045	0.644	0.479
Single	4045	0.356	0.479
No children	4045	0.419	0.493
Children	4045	0.581	0.493
Copenhagen	4045	0.597	0.491
Urban area	4045	0.302	0.459
Rural area	4045	0.101	0.302
Danish education (in years)[1]	2485	11.886	2.579
No Danish education[1]	4045	0.386	0.487
Employed[2]	4045	0.581	0.494
Non-employed[2]	4045	0.391	0.488
Employment status unknown[2]	4045	0.028	0.166
Years since migration	2917	15.119	8.225
Years since migration unknown	2947	0.010	0.100
Danish citizen	4045	0.618	0.486
Danish sub sample	4045	0.271	0.445
Iranian sub sample	4045	0.238	0.426
Pakistani sub sample	4045	0.244	0.429
Turkish sub sample	4045	0.247	0.431

[1] Information from 2005
[2] Information from 2003

Table 3. Means of respondent variables - by country

	Denmark		Iran		Pakistan		Turkey	
	Mean	Std dev	Mean	Std dev	Mean	Std dev	Mean	Std dev
Woman	0.512	0.500	0.405	0.491	0.482	0.500	0.483	0.500
Age	32.607	7.721	34.591	8.298	33.382	6.936	33.418	6.873
Age group 18-29	0.369	0.483	0.320	0.467	0.317	0.465	0.307	0.462
Age group 30-39	0.382	0.486	0.273	0.446	0.470	0.499	0.464	0.499
Age group 40-45	0.250	0.433	0.407	0.492	0.213	0.410	0.228	0.420
Couple	0.597	0.491	0.508	0.500	0.707	0.456	0.764	0.425
Single	0.403	0.491	0.492	0.500	0.293	0.456	0.236	0.425
No children	0.498	0.500	0.587	0.493	0.334	0.472	0.252	0.435
Children	0.502	0.500	0.413	0.493	0.666	0.472	0.748	0.435
Copenhagen	0.344	0.475	0.486	0.500	0.918	0.275	0.665	0.472
Urban area	0.360	0.480	0.451	0.498	0.071	0.257	0.322	0.468
Rural area	0.296	0.457	0.063	0.244	0.011	0.105	0.013	0.113
Education (in years)[1]	12.506	2.394	12.493	2.582	10.993	2.358	10.354	2.319
No Danish education[1]	0.013	0.112	0.400	0.490	0.621	0.485	0.550	0.498
Employed[2]	0.789	0.408	0.480	0.500	0.463	0.499	0.566	0.496
Non-employed[2]	0.209	0.406	0.482	0.500	0.480	0.500	0.416	0.493
Employment status unknown[2]	0.003	0.052	0.038	0.192	0.057	0.232	0.018	0.133
Years since migration	-	-	14.040	6.860	14.446	8.995	16.808	8.380
Years since migration unknown	-	-	0.009	0.096	0.017	0.130	0.004	0.063
Danish citizen	1.000	0.000	0.677	0.468	0.362	0.481	0.391	0.488
# observations	1098		963		985		999	

[1] Information from 2005
[2] Information from 2003

Table 4. Means of interviewer-specific variables

	Mean	Std dev
Woman	0.564	0.501
Age	58.200	9.952
Age group 30-39	0.073	0.262
Age group 40-59	0.364	0.485
Age group 60+	0.564	0.501
Seniority (years)	4.945	3.955
Seniority 1 year	0.164	0.373
Seniority 2-5 years	0.455	0.503
Seniority 6+ years	0.382	0.490
Bilingual	0.091	0.290
Number of interviews	70.036	71.702
# observations	55	

Table 5. Probability of response

	Pooled sample		Denmark		Iran		Pakistan		Turkey		Copenhagen	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Women	0.085	0.106	0.114	0.249	0.113	0.246	0.151	0.220	0.062	0.184	0.128	0.126
Age group: 18-29	0.273	0.099***	0.599	0.219***	-0.075	0.232	0.407	0.203**	0.307	0.188	0.261	0.123**
Age group: 40-45	0.105	0.098	0.055	0.218	0.061	0.215	0.331	0.205	-0.142	0.186	0.152	0.123
Single	-0.336	0.103***	-0.537	0.219**	-0.210	0.189	-0.266	0.231	-0.360	0.218*	-0.202	0.132
Children	0.232	0.108**	0.218	0.236	0.447	0.210**	0.264	0.234	0.087	0.225	0.280	0.136**
Copenhagen	-0.869	0.122***	-0.641	0.242***	-0.740	0.226***	-1.446	0.379***	-0.781	0.193***		
Rural area	0.025	0.169	-0.017	0.230	0.210	0.382	-0.048	0.854	0.335	0.643		
Danish education (in years)	0.062	0.021***	0.169	0.040***	-0.018	0.047	-0.006	0.054	0.050	0.046	0.033	0.027
No Danish education	0.367	0.258	1.413	0.771*	-0.475	0.633	-0.308	0.625	0.179	0.501	-0.044	0.326
Non-employed	-0.281	0.083***	-0.268	0.205	-0.419	0.180**	-0.312	0.171*	-0.156	0.147	-0.184	0.105*
Employment unknown	0.229	0.277			0.069	0.527	-0.152	0.427	0.385	0.569	0.142	0.335
Years since migration	0.006	0.006			0.025	0.015	-0.002	0.010	0.013	0.010	0.005	0.007
Years since migration unknown	-1.473	0.562***			-0.781	0.958	-1.891	0.857**			-1.219	0.741
Danish citizen	0.227	0.101**			-0.106	0.214	0.551	0.188***	0.279	0.161*	0.306	0.120**
Iran	-0.282	0.164*									-0.438	0.222**
Pakistan	-0.628	0.189***									-0.687	0.232***
Turkey	-0.569	0.194***									-0.612	0.246**
Interviewer women	0.076	0.241	0.281	0.294	-0.324	0.368	0.066	0.455	0.197	0.279	0.010	0.350
Interviewer age: 30-39	0.258	0.436	0.275	0.650	0.328	0.641	0.058	0.739	-0.545	0.481	0.019	0.566
Interviewer age: 60+	0.326	0.255	0.688	0.288**	0.549	0.389	-0.458	0.460	-0.107	0.278	-0.219	0.378
Interviewer seniority 1 year	-0.209	0.334	-0.629	0.508	-1.135	0.550**	-0.143	0.582	-0.277	0.348	-0.183	0.425
Interviewer seniority 6+ years	-0.059	0.243	-0.123	0.252	-0.099	0.362	0.136	0.426	-0.095	0.262	0.067	0.352
Number of interviews per interviewer	0.001	0.001	0.003	0.001**	0.001	0.002	-0.002	0.002	0.000	0.001	-0.001	0.002
Women*interview women	0.049	0.151	0.168	0.336	0.060	0.326	-0.001	0.308	-0.176	0.288	-0.160	0.192
Constant	0.349	0.477	-1.428	0.687**	1.143	0.892	1.494	1.033	0.214	0.699	0.179	0.671
Number of level 1 units	3852		1081		929		867		975		2227	
Number of level 2 units	55		47		49		44		52		43	
Log L	-2181		-481		-515		-544		-623		-1379	

* significant at 10 %, ** significant at 5 %, *** significant at 1 %.

Table 6. Probability of response, contact and response given contact, pooled sample

	Response		Contact		Response given contact	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Women	0.085	0.106	0.098	0.140	0.051	0.125
Age group: 18-29	0.273	0.099*	0.365	0.132***	0.177	0.119
Age group: 40-45	0.105	0.098	0.143	0.134	0.074	0.114
Single	-0.336	0.103***	-0.550	0.139***	-0.071	0.124
Children	0.232	0.108**	0.272	0.147*	0.107	0.128
Copenhagen	-0.869	0.122***	-1.357	0.186***	-0.646	0.139***
Rural area	0.025	0.169	0.293	0.314	0.015	0.192
Danish education (in years)	0.062	0.021***	0.030	0.031	0.062	0.026**
No Danish education	0.367	0.258	0.057	0.369	0.212	0.306
Non-employed	-0.281	0.083***	-0.325	0.112***	-0.246	0.099**
Employment unknown	0.229	0.277	-0.142	0.343	0.584	0.394
Years since migration	0.006	0.006	0.013	0.008*	0.005	0.008
Years since migration unknown	-1.473	0.562***	0.126	0.640	-1.781	0.672***
Danish citizen	0.227	0.101**	0.572	0.132***	0.174	0.120
Iran	-0.282	0.164*	-0.595	0.236**	-0.056	0.200
Pakistan	-0.628	0.189***	-0.975	0.261***	-0.245	0.229
Turkey	-0.569	0.194***	-0.498	0.276*	-0.564	0.230**
Interviewer women	0.076	0.241	-0.104	0.397	0.229	0.213
Interviewer age: 30-39	0.258	0.436	0.819	0.715	0.041	0.361
Interviewer age: 60+	0.326	0.255	0.891	0.415**	0.073	0.220
Interviewer seniority 1 year	-0.209	0.334	-0.568	0.523	0.206	0.293
Interviewer seniority 6+ years	-0.059	0.243	-0.219	0.408	-0.036	0.203
Number of interviews per interviewer	0.001	0.001	-0.002	0.002	0.001	0.001
Women*interview women	0.049	0.151	0.355	0.208*	-0.101	0.179
Constant	0.349	0.477	2.564	0.742***	0.739	0.495
Number of level 1 units	3852		3749		3214	
Number of level 2 units	55		55		53	
Log L	-2181		-1312		-1611	

* significant at 10 %, ** significant at 5 %, *** significant at 1 %.

Appendix

Table A1. Response and non-response in the survey, percentages

	Denmark		Iran		Pakistan		Turkey	
	Men	Women	Men	Women	Men	Women	Men	Women
Response:	**76.87**	**82.03**	**62.65**	**64.87**	**41.37**	**42.32**	**55.04**	**55.28**
a. interview completed	75.75	82.03	61.78	63.08	40.00	41.68	54.07	53.83
b. interview partially completed	1.12	0	0.87	1.79	1.37	0.63	0.97	1.45
Non-response:	**23.13**	**17.97**	**37.35**	**35.13**	**58.63**	**57.68**	**44.96**	**44.72**
Failed to contact								
c. moved	0.56	0.71	0.52	1.03	3.14	1.89	1.74	0.41
d. not met	7.46	3.38	15.36	12.56	28.43	27.58	13.76	11.80
e. fictive address	0.19	0	0.87	0.77	1.18	0.21	0.58	0.41
Refusal								
f. refusal – lack of time	6.90	6.76	7.16	5.38	8.04	4.21	12.60	10.77
g. refusal – suspicious	0.75	0.36	1.40	1.28	1.18	1.89	1.94	2.07
h. refusal by parent	0	0	0	0	0.20	0.42	0	0.41
i. refusal by spouse	0.37	0.36	0	1.28	1.37	4.21	0.97	4.97
j. refusal due to the gender of the interviewer	0.0	0	0	0.26	0	0.42	0	0.21
k. refusal – other reasons	5.60	5.34	4.89	6.15	6.08	5.89	7.36	7.04
Language problems								
l. language problems	0	0	1.92	2.05	3.14	5.05	2.91	5.59
Other reasons								
m. illness	0	0	0.35	1.03	0	0.84	0.19	0.21
n. hospitalised/away from home	0.37	0.53	0.70	1.28	1.18	2.74	0.58	0.21
o. handicapped	0.56	0.18	1.05	0.77	0.39	0.0	0.39	0.21
p. moved out of the country	0.37	0.36	2.97	1.28	4.12	2.32	1.74	0.41
q. dead	0	0	0.17	0	0.20	0	0.19	0
Total	100	100	100	100	100	100	100	100.0
N	536	562	573	390	510	475	516	483

Table A2. Probability of contact

	Pooled sample		Denmark		Iran		Pakistan		Turkey		Copenhagen	
	Coef.	Std.Err.	Coef.	Std.Err.	Coef.	Std.Err.	Coef.	Std.Err.	Coef.	Std.Err.	Coef.	Std.Err.
Women	0.098	0.140	0.416	0.574	0.064	0.330	0.117	0.244	-0.017	0.245	0.100	0.153
Age group: 18-29	0.365	0.132***	0.722	0.400*	-0.151	0.306	0.714	0.238***	0.635	0.266**	0.378	0.152**
Age group: 40-45	0.143	0.134	0.764	0.498	0.066	0.285	0.235	0.248	-0.201	0.254	-0.039	0.153
Single	-0.550	0.139***	-0.852	0.432**	-0.401	0.254	-0.544	0.261**	-0.683	0.289**	-0.390	0.161**
Children	0.272	0.147*	0.877	0.489*	0.218	0.285	0.212	0.266	0.084	0.305	0.311	0.167*
Copenhagen	-1.357	0.186***	-1.771	0.559***	-0.809	0.304***	-2.113	0.510***	-1.280	0.333***		
Rural area	0.293	0.314	-0.518	0.523	1.754	0.797**			-0.586	0.963		
Danish education (in years)	0.030	0.031	0.270	0.082***	-0.022	0.065	0.004	0.067	-0.100	0.067	0.022	0.036
No Danish education	0.057	0.369	3.308	1.551**	-0.669	0.866	0.037	0.778	-1.334	0.737*	0.008	0.428
Non-employed	-0.325	0.112***	-0.124	0.380	-0.334	0.243	-0.447	0.198**	-0.067	0.207	-0.236	0.128*
Employment unknown	-0.142	0.343			-0.344	0.686	-0.431	0.492	-0.757	0.714	-0.166	0.399
Years since migration	0.013	0.008*			0.026	0.020	0.026	0.013**	0.013	0.014	0.014	0.009
Years since migration un-known	0.126	0.640			0.479	1.233	0.517	0.946			0.840	0.787
Danish citizen	0.572	0.132***			0.337	0.279	0.756	0.224***	0.832	0.236***	0.635	0.147***
Iran	-0.595	0.236**									-0.646	0.298**
Pakistan	-0.975	0.261***									-1.056	0.306***
Turkey	-0.498	0.276*									-0.550	0.328*
Interviewer women	-0.104	0.397	-0.561	0.681	-0.557	0.579	-0.220	0.633	0.166	0.572	-0.261	0.494
Interviewer age: 30-39	0.819	0.715	-0.117	1.178	0.769	0.974	0.292	1.051	1.175	1.044	0.349	0.811
Interviewer age: 60+	0.891	0.415**	1.745	0.657***	0.947	0.576	-0.177	0.648	0.804	0.604	-0.115	0.529
Interviewer seniority 1 year	-0.568	0.523	-1.037	0.965	-2.038	0.756***	-0.610	0.794	-0.524	0.738	-0.693	0.594
Interviewer seniority 6+ years	-0.219	0.408	-0.314	0.629	-0.548	0.571	0.203	0.615	-0.345	0.582	0.119	0.507
Number of interviews per interviewer	-0.002	0.002	0.002	0.003	-0.003	0.003	-0.005	0.003	-0.001	0.003	-0.004	0.003
Women*interview women	0.355	0.208*	-0.130	0.705	0.550	0.440	0.221	0.366	0.268	0.435	0.300	0.243
Constant	2.564	0.742***	-0.237	1.455	3.225	1.298**	3.226	1.358**	3.604	1.174***	2.082	0.929***
Number of level 1 units	3749		1071		892		827		959		2153	
Number of level 2 units	55		47		49		44		52		43	
Log L	-1312		-170		-321		-426		-373		-976	

* significant at 10 %, ** significant at 5 %, *** significant at 1 %.

Table A3. Probability of response given contact

	Pooled sample		Denmark		iran		Pakistan		Turkey		Copenhagen	
	Coef.	Std.Err.	Coef.	Std.Err.	Coef.	Std.Err.	Coef.	Std.Err.	Coef.	Std.Err.	Coef.	Std.Err.
Women	0.051	0.125	0.042	0.270	0.338	0.315	0.157	0.277	0.030	0.211	0.126	0.151
Age group: 18-29	0.177	0.119	0.538	0.256**	-0.188	0.293	0.268	0.259	0.090	0.214	0.205	0.149
Age group: 40-45	0.074	0.114	-0.128	0.235	-0.124	0.261	0.528	0.259**	-0.024	0.212	0.217	0.145
Single	-0.071	0.124	-0.360	0.247	0.092	0.234	0.075	0.299	-0.026	0.257	0.028	0.161
Children	0.107	0.128	0.085	0.264	0.493	0.253*	0.162	0.298	-0.024	0.266	0.106	0.164
Copenhagen	-0.646	0.139***	-0.382	0.245	-0.743	0.249***	-1.072	0.437**	-0.621	0.214***		
Rural area	0.015	0.192	0.133	0.251	-0.192	0.434			0.780	0.825		
Danish education (in years)	0.062	0.026**	0.116	0.043***	-0.030	0.060	0.008	0.069	0.116	0.057**	0.040	0.033
No Danish education	0.212	0.306	0.505	0.815	-0.723	0.817	-0.384	0.800	0.639	0.596	-0.131	0.394
Non-employed	-0.246	0.099**	-0.214	0.238	-0.463	0.225**	-0.344	0.219	-0.118	0.167	-0.212	0.126*
Employment unknown	0.584	0.394			0.549	0.702	0.039	0.598	1.891	1.113*	0.378	0.451
Years since migration	0.005	0.008			0.035	0.019*	-0.012	0.014	0.014	0.012	0.006	0.009
Years since migration un-known	-1.781	0.672***			-1.462	1.119	-2.101	0.976**			-1.380	0.855
Danish citizen	0.174	0.120			-0.185	0.268	0.403	0.234*	0.227	0.185	0.240	0.143*
Iran	-0.056	0.200									-0.326	0.272
Pakistan	-0.245	0.229									-0.373	0.284
Turkey	-0.564	0.230**									-0.679	0.294**
Interviewer women	0.229	0.213	0.488	0.290*	-0.088	0.329	0.282	0.465	0.423	0.308	0.302	0.283
Interviewer age: 30-39	0.041	0.361	0.836	0.868	0.172	0.488	-0.296	0.705	-0.806	0.499	0.078	0.413
Interviewer age: 60+	0.073	0.220	0.149	0.280	0.653	0.341*	-0.466	0.470	-0.216	0.296	-0.068	0.290
Interviewer seniority 1 year	0.206	0.293	-0.697	0.542	0.205	0.535	0.554	0.647	0.254	0.370	0.298	0.327
Interviewer seniority 6+ years	-0.036	0.203	-0.065	0.227	-0.027	0.293	-0.217	0.405	0.010	0.277	-0.025	0.264
Number of interviews per interviewer	0.001	0.001	0.002	0.001**	0.003	0.001*	0.000	0.002	0.000	0.001	0.001	0.001
Women*interview women	-0.101	0.179	0.171	0.379	-0.414	0.413	-0.120	0.390	-0.327	0.328	-0.315	0.229
Constant	0.739	0.495	-0.181	0.722	1.293	1.024	1.989	1.200*	-0.138	0.806	0.336	0.649
Number of level 1 units	3214		1013		763		608		830		1705	
Number of level 2 units	53		43		49		44		51		41	
Log L	-1611		-388		-347		-355		-492		-987	

* significant at 10 %, ** significant at 5 %, *** significant at 1 %.