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Paid work versus accessibility in surveys: Are we running the risk of nonresponse bias? The example of ESS 5 in Poland

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Research data shows that nonresponse in surveys is increasingly connected with respondents' lack of time caused, among others, by respondents' performance of paid work. Since paid work is one of the key sociological characteristics, the underrepresentation of working citizens creates a risk of nonresponse bias in surveys. This paper draws on data from the fifth round of the European Social Survey in Poland to demonstrate how realistic this risk is. Apart from paid work, the paper analyses three dimensions of workload: total work hours, regular/irregular nature of work and place of residence/place of work (the same or different location) and time spent commuting to/from work. The results of our analysis show that there is a risk of nonresponse bias associated with the performance of paid work and time spent commuting to/from work in another location. This risk may be reduced by increasing the number of contact attempts with hard-to-reach respondents.

Key words: accessibility in surveys, nonresponse bias, paid work as a variable in surveys, European Social Survey

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INTRODUCTION

There has been a trend observed in 1980s and 1990s regarding the declining response rate (de Leeuw and de Heer 2002). This was reinforced in the early 2000s as an increasing problem for survey researchers in developed countries (Curtin et al. 2005). This problem does not only relate to the common belief that a high response rate reflects high quality of a survey, but also points to the growing risk of nonresponse bias. Groves (2006) showed that nonresponse bias depends on the strength of the relationship between survey variables and response propensity (the likelihood of responding), which indicates that the nonresponse rate does not directly increase this bias. Yet, the risk of nonresponse bias is reduced when nonresponse rates decrease (Biemer and Lyberg 2003: 213).

One can assume that in many surveys there is a high likelihood of a link between the response propensity and survey variables and, therefore, the occurrence of nonresponse bias. If the title of a survey clearly defines its topic (or a range of topics), then the propensity to participate will be higher among those who are interested in such a topic.¹ Such individuals will have more knowledge of the topic, will have better-formed opinions, and are likely to have been engaged in a higher number of activities relevant to the topic (Groves et al. 2006). Another example comes from time use surveys, where less common participation of busy people may lead to nonresponse bias.² In such cases the risk of nonresponse bias may affect the majority of variables.

The relationship between the response propensity and the survey variables is not obvious in many other studies, such as, for instance, the General Social Survey or the European Social Survey. In these cases, the title disclosed in the advance letter and/or specified by the interviewer does not provide potential respondents with any hints as to the topic of the survey. However, in the vast majority of surveys, the risk of nonresponse bias may be related to the underrepresentation or overrepresentation of respondents in terms of key sociological characteristics such as gender, age, category of domicile etc., which are usually correlated with many other survey variables. Paid work is also included in essential respondent characteristics.

Drawing on data from the European Social Survey Round 5 in Poland (ESS 5), I will show the extent to which the workload and performance of paid work may pose the risk of nonresponse bias arising from non-contacts with some of the sampled individuals. A total of three workload dimensions will be considered: (i) total work hours, including overtime and extra work as well as temping, (ii) the nature of work, i.e. whether or not it is performed during regular hours or in irregular working time; (iii) work performed outside one's place of residence and time spent commuting to/from work.

“BUSYNESS” VERSUS RESPONDENT ACCESSIBILITY IN SURVEYS

The increasing number of contacts which the interviewer must undertake in order to complete an interview in a face-to-face survey has been an ever more perceptible problem in the ESS fieldwork in Poland. This problem is illustrated below (Table 1). According to the ESS guidelines, an interviewer is obligated to undertake at least four contact attempts with each sampling unit before it is abandoned as non-productive, and the first contact with a potential respondent must be made face-to-face whereas follow-up contacts may be made on the phone (European Social Survey, Round 5 2009).

Table 1 Percentages of interviews completed during subsequent contact attempts in ESS 1, ESS 3 and ESS 5 (N=100%)

| No. of contact attempts | ESS 1 (2002) Response rate: 73.2% N=2110 | ESS 3 (2006) Response rate: 70.2% N=1721 | ESS 5 (2010) Response rate: 70.3% N=1751 |
|--|--|--|--|
| 1 | 56.2 | 48.1 | 46.6 |
| 2 | 26.5 | 26.3 | 26.4 |
| 3 | 10.9 | 13.3 | 13.4 |
| 4 | 4.3 | 6.4 | 6.8 |
| 5 | 1.1 | 3.5 | 3.2 |
| 6 | 0.5 | 1.0 | 1.8 |
| 7 or more | 0.5 | 1.4 | 1.9 |
| Average number of contact attempts per a completed interview | 1.71 | 1.99 | 2.07 |

With a stable response rate in all ESS rounds, the easy-to-get respondents (i.e. cases where the interview was completed during the first or second contact attempt) represented over 4/5 of all respondents in ESS 1 (2002), whereas hard-to-get respondents who needed to be contacted 5 or more times to complete an interview represented only 2.1%. The ESS 3 data shows that over the course of merely four years, the accessibility of respondents fell dramatically, declining even further (but not so radically) in the subsequent four years. In ESS 5 (2010) the share of easy-to-get respondents shrunk in comparison by nearly 10 percentage points compared to the ESS 1, whereas the share of hard-to-get respondents rose by nearly five points.

A similar trend was also identified in other countries, which have had relatively stable response rates. For instance, in Belgium, the share of easy-to-

get respondents dropped by 14 percentage points between ESS 1 and ESS 5, and the share of hard-to-get respondents rose by more than 10 points during the same period. The respective values for the Netherlands are over 7 and over 9 points, and in Norway the share of easy-to-get respondents dropped by 11 points, whereas the percentage of moderately hard-to-get ones (3–4 contact attempts) rose by nearly 14 points.

The percentages provided in Table 1 (data for Poland) cover both the re-issue in the case of ‘soft’ refusals and contact attempts with hard-to-reach respondents. In ESS 5, where complete documentation of re-issue cases is available, only 265 refusal conversion attempts were made, with 87 cases (3.3% of the effective sample) successfully converted (interviews completed). In ESS 3, the number of converted refusals totalled 53. This shows that problems with respondents’ accessibility are less associated with their reluctance to take part in a survey and more strongly related to their busyness, which means that interviewers face problems when trying to find the respondents at home or the sampled persons have problems with finding time to take part in a survey.

The everyday burden of various tasks translates not only into low accessibility of the sampled individuals, but also into nonresponse, especially with regards to non-contacts. This is shown in the data from follow-up surveys conducted with nonrespondents in Poland, for instance in ESS 2 (2004) and ESS 4 (2008). The mail questionnaire which had been posted about one month after the end of fieldwork contained, among others, a question about the reason(s) for nonresponse. The answer option *‘I refused to participate because I am very busy’* was selected by 11.8% of the nonrespondents in 2004 and by as many as 20.9% in 2008, which marks a nearly two-fold increase. As regards to the answer option *‘I refused to participate because the interviewer came at a wrong time, I had to take care of other things at that time’* the percentages were 11.3% (2004) and 18.4% (2008) respectively. However, the highest increase in mentions (by nearly 2.5 times) was recorded in the case of *‘I was often away from home and the interviewer could never find me home.’* In the follow-up survey after ESS 2 this option was chosen by 15.2% of nonrespondents, whereas in a similar survey after ESS 4 it was selected by 36.7%. It is worth stressing that answers indicating lack of time were mentioned more frequently than any other reasons for nonresponse in the follow-up survey after ESS 4. The second most common answer (refusal due to intrusion into privacy) was selected by only 11.4% of the nonrespondents (Sztabiński 2012). Therefore, the results obtained in the follow-up surveys correspond with the aforementioned conclusion that busyness is the most common reason behind respondents’ poor availability, especially in the case of hard-to-contact individuals.

Of course, one might wonder whether the claims about ‘having no time’ provided as a reason for nonresponse are indeed true (Brehm 1993, Stoop 2005). However,

analyses conducted by Vercruyssen, van de Putte, and Stoop (2011) show that there is in fact a relationship between busyness claims and indicators of busyness revealed in interviews. Presumably, such a relationship, perhaps even a stronger one, also occurs in the case of mail questionnaire. Even if nonrespondents had not gauged reasons for their eventual (non-) participation in the survey, the mail survey offered an opportunity for them to do so. It is fairly unlikely that someone who took the trouble to complete a mail survey and drop it in a mailbox would give random, rushed answers to the questions.

The difficulties in contacting the respondents and the refusals caused by lack of time might be related to various aspects of busyness: household chores, paid work, subjective time pressure etc. The findings from our follow-up surveys with nonrespondents indicate the growing importance of paid work in Poland. While the two aforementioned reasons related to busyness (*'I am very busy'* and *'The interviewer came at a wrong time'*) were mentioned by 18.9% and 12.2% of employed individuals in ESS 2 (2004) respectively, their shares nearly doubled in 2008 (ESS 4), to 34.6% and 21.0% respectively. The increase in the share of working people among non-contacted persons was even greater, increasing from 16.2% in ESS 2 to 37.0% in ESS 4.

The data quoted above indicate that surveys in Poland (at least in the ESS) face the risk of underrepresentation of busy people, particularly working ones. This risk is associated, in particular, with poor contactability of busy persons.

The results of studies and analyses on the relationship between work/employment and availability in other countries do not provide a clear picture. Such analyses were undertaken primarily in time use surveys. Van Ingen, Stoop and Breedveld (2009) used the Dutch Time Use Survey data to analyse, among others, various dimensions of paid work. They compared respondents with nonrespondents who refused to participate (where short interviews were conducted with the latter during the doorstep interaction) and respondents with varying degrees of contactability (based on the number of contacts needed to complete an interview). The fact of being employed had no impact on survey participation, whereas individuals who do more travelling were more likely to agree to participate. It must be added that those who rejected to take part did not differ from those who did in terms of other time pressure indicators, whether objective ones (having children at home), or subjective ones (feeling rushed).

With regard to contactability, a higher number of contact attempts were required in the case of employed individuals and, among them, with those who spend more time working and commuting. In turn, easy-to-contact respondents were those who spent more time on housekeeping.

In their analysis of the American Time Use Survey (ATUS) data, Abraham, Maitland and Bianchi (2006) focused on work time, including varied working time

in different weeks. The sample was drawn from the preceding Current Population Survey, and, consequently, the data on ATUS nonrespondents were also available. As regards people working full time (35–44 hours a week), the response rate was lower than among those working part-time (less than 35 hours), yet the response rate for people who worked more than full time was comparable to that for people who worked part-time. The response rate for those whose work time varied was similar to the rate recorded for people working full time, which was also relatively lower than in the case of those who worked a relative number of hours. This might indicate that having varying working hours implies somewhat lower contactability of that particular individual.

The comparison of the cooperation rates and the refusal rates for the four aforementioned categories of working people reveals similar trends. Therefore, the hypothesis that busy people are less likely to respond to the American Time Use Survey was not unambiguously proven.

Other time pressure indicators, which were unrelated to work, such as the presence of children in the household (age 5 and under, and age 6–17), were not strongly related to response propensity.

In turn, in their study of daily time use and consumption in Danish families, Bonke and Fallesen (2010) found that people working 37 or more hours per week were participating in surveys to a higher extent than people working less. This indicates that busier people, especially because of their work, are more willing to take part in time use surveys since such participation allows them to demonstrate their high status (this hypothesis was also proposed by van Ingen, Stoop, and Breedveld 2009).

A similar result was obtained by Robinson (1998), who compared, among others, working time of the respondents participating in the first wave of the University of Michigan time use survey to the working time of the respondents participating and not participating in the second wave of the same survey. In comparison with those who took part in both waves, the respondents who did not participate in the second wave declared a lower number of working hours in the first wave.

On the other hand, a study by Pääkkönen (1998) produced quite different findings. She compared the working time of those participants of the Finnish time use survey who after a short initial interview agreed to complete a time diary with the working time of those who only agreed to the short interview, but refused to complete a time diary. The latter declared a somewhat higher number of working hours in the initial interview in comparison with those who effectively completed the diary, even though only self-employed participants were included (i.e. working overtime was not relevant).

Lynn et al. (2002) analysed nonresponse bias in six surveys, comparing hard-to-contact and reluctant respondents with easy-to-get ones. The questions within

those surveys concerned family resources, health and social attitudes. In all of the six surveys the hard-to-get respondents were much more likely to be employed, and in one of the surveys they worked more hours per week than easy-to-get ones.

The analysis also showed that difficult-to-contact persons were most different from easy-to-get ones. Therefore, in order to reduce nonresponse bias, it is more important to make renewed contact attempts than to attempt 'refusal conversion.' A similar conclusion was also drawn by Abraham, Maitland and Bianchi (2006).

DATA, RESEARCH PROBLEMS AND METHOD OF ANALYSIS

This paper analyses the risk of nonresponse bias associated with paid work based on the data collected in connection with the European Social Survey Round 5 in Poland. The ESS is held once every two years, and the first round was conducted in 2002. The survey is based on face-to-face interviews with a random sample of individuals aged 15 or more. In Poland, the sample size is approx. 2,500. Thanks to a rigorous research design (two advance letters, incentives for the respondents, long fieldwork period of approx. 3.5 months, the requirement of min. four contact attempts with hard-to-reach respondents, highly motivated interviewers etc.), the response rate has been close to the ESS target rate, i.e. 70%, in all rounds completed to date.

The ESS 5, which will be analysed below, was conducted from 1 October 2010 to 6 February 2011. The sample size was 2,661. The share of refusals (by respondent or by proxy) in the total sample was 16.9%, and the share of noncontacts (after at least four visits) was 6.1%. A total of 1,751 interviews were conducted, which gives a response rate of 70.3% after deducting ineligible (people who passed away, emigrated or left for another country for a longer period, people who were living in an extended care home, in a monastery, in prison etc.). The average duration during this round was 77.5 minutes per interview.

In the Polish ESS questionnaire, working people were asked three additional questions concerning the aforementioned workload dimensions: a question about working hours, about the nature of their job (regular hours/irregular working time), and the place of work (same or different than their place of residence).

Below, the analyses of the relationship between performance of work and the workload versus respondents' contactability will be conducted in two steps, corresponding with the two approaches adopted in nonresponse research (see, for instance, Lin and Schaeffer 1995, Stoop 2005). The first approach, a quantitative one, adopts the 'continuum of resistance' model. It is based on the assumption that hard-to-reach respondents (i.e. those who were successfully interviewed only after many contact attempts) are similar to the nonrespondents. One rationale to employ such model is that if a smaller number of contacts had been attempted in a survey,

those particular hard-to-reach respondents would have become nonrespondents. Of course, the definition of hard-to-reach respondents is a relative one since it is relatively easy to become a final nonrespondent in surveys with a short fieldwork period, allowing only two to three contact attempts. This approach is characterised more precisely by Smith (1983): if we observe a linear or another regular relationship between the number of contact attempts needed to conduct an interview and the values of a questionnaire variable, then this association is used to impute the value of that variable among the nonrespondents.

In the second approach, a qualitative one, a ‘classes model’ is adopted. It identifies groups, or categories, of respondents which might be similar to nonrespondents. For instance, in the case of final refusers those might be the respondents who ultimately took part in the survey despite an earlier refusal (‘converted refusers’). On the other hand, similarity to noncontacted persons is found among those respondents who were successfully contacted and interviewed only after several failed previous attempts.

Worth noting is that, in fact, both approaches are congruent in some respects. They assume that hard-to-get respondents are similar to nonrespondents. The difference is that in the quantitative approach it is assumed that the respondents identified in terms of their availability can be aligned in a hierarchical fashion. In the qualitative approach, however, the categories of respondents which might be similar to nonrespondents are not hierarchical.

Later on in this paper I will adopt the quantitative approach and perform analyses which require an interval variable (Step 1). This assumption is fulfilled with regard to accessibility measured with the number of contacts needed to complete an interview. Linear regression will be applied in that part. In the following step (Step 2), the respondents will be subdivided into three qualitative categories based on their accessibility. Worth remembering is that the results obtained by Abraham, Maitland and Bianchi (2006) suggest that nonrespondents do not necessarily have to be similar to hard-to-get respondents in terms of all characteristics. In some respects, they may be similar to moderately hard-to-get respondents. Analyses conducted in this step will be based on multinomial regression.

The analysis of the relationship between accessibility, paid work and workload will be confined only to those respondents where the success of contact attempts is related to how easy or difficult they are to access. For instance, they may be absent during subsequent contact attempts or may have no time to take part in the survey when the interviewer calls, yet they schedule an appointment in the future. On the other hand, I will not consider reluctant respondents, who were successfully interviewed as a result of refusal conversion, which also required repeated contact attempts. There are two underlying reasons behind this approach. Firstly, as mentioned earlier, there were relatively few cases of refusal conversion

in the ESS 5 in Poland, which makes it impossible to run a comparison against cooperative respondents. Secondly, the research results presented earlier suggest that hard-to-reach respondents are most different from easy-to-get ones whereas converted refusers are similar to them, at least in terms of workload (Lynn et al. 2002, Abraham et al. 2006). Therefore, in the case of those estimates, the risk of nonresponse bias is connected mostly with difficulties in accessing the respondents.

The data about accessibility, measured with the number of contact attempts needed to conduct a survey interview, are taken from Contact Forms (CF) routinely used in the ESS since its first round. In the CF, the interviewer must enter detailed information about each contact attempt involving a specific sampled person.

The data on the number of contact attempts may be generally considered reliable, at least in Poland. Since the interviewers' remuneration depends exclusively on the number of successfully completed interviews, there is no reason for them to overstate the number of contact attempts in the CF. Interviewers who put particular effort into their work during the ESS fieldwork are rewarded with a special thank-you letter and a small bonus, yet this sign of distinction is awarded upon a request from the regional coordinator of the network of interviewers, and has no direct connection with the number of contact attempts.

RESULTS

Paid work and accessibility: Linear regression

This part will present the first step of the analysis, based on the 'continuum of resistance' model. The table below (Table 2) presents coefficients of linear regression predicting the number of attempts by performing paid work. The controlling variables adopted here include: respondent's gender, age and education (as standard demographics) as well as presence of children in the household and the total hours a week spent by the respondent on housework (excluding childcare) as variables which characterise the burden of housework.

The values of the coefficient of regression indicate that respondents who perform paid work are harder to reach than those who do not perform such work, even though this correlation is weak. In order to complete an interview with them, a greater number of contacts is required than in the case of non-working individuals. However, as indicated by Beta values, performance of paid work and the respondents' education are the most strongly differentiating factors when it comes to accessibility. This indicates the risk of nonresponse bias consisting of underrepresentation of working people in the effective sample.

Table 2 Coefficients of linear regression predicting the number of attempts by performing paid work (controlled for demographics and housework burden)

| | Unstandardized coefficient B and standard error (in brackets) | Standardized Beta coefficient |
|------------------------------------|--|----------------------------------|
| Constant | 1.138*** (0.147) | |
| Sex (1=F) | 0.020 (0.043) | 0.018 |
| Age | -0.002 (0.002) | -0.062 |
| Education (no. of years at school) | 0.021*** (0.006) | 0.125*** |
| Children in household (1=Yes) | -0.061 (0.043) | -0.050 |
| Hours spent on housework | -0.002 (0.001) | -0.058 |
| Paid work (1=Yes) | 0.137** (0.048) | 0.116** |

**p ≤ .01

***p ≤ .001

A considerable standard error in the case of paid work may be related to the zero-one nature of that variable. The category of ‘working people’ is comprised of individuals who had performed any paid work within the last seven days, no matter if it was their main activity or not. As a result, nearly 4.5% of the respondents declared their weekly work time at the level of 20 or fewer hours (20 hours is the equivalent of a half-working time in Poland). Moreover, ‘working people’ also included those who were temporarily away, i.e. also those on maternity leave, long-term sick leave etc.

Respondents’ accessibility is associated, albeit weakly, with education: more educated respondents are harder to reach, presumably due to the nature of their work. On the other hand, it is surprising to find no relationship between accessibility and time spent doing the housework. The occurrence of such a relationship would seem obvious since people who devote more time to the housework also spend more time at home and, as a result, they should be easier to contact.

Below, I analyse the relationship between the three aforementioned dimensions of workload and respondents’ accessibility. The set of controlling variables adopted in the preceding analysis was extended by adding ‘satisfaction with the balance between the time spent on paid work and the time spent on other aspects of life’, since this variable characterises subjective time pressure. The results of this analysis are presented in Table 3.

Table 3 Coefficients of linear regression predicting the number of contact attempts by workload: work hours, irregular/regular working hours and home/work location (controlled for demographics, housework burden, and subjective time pressure)

| | Unstandardized coefficient B and standard error (in brackets) | Standardized Beta coefficient |
|--|---|-------------------------------|
| Constant | 1.546*** (0.278) | |
| Sex (1=F) | 0.091 (0.071) | 0.071 |
| Age | -0.002 (0.003) | -0.037 |
| Education (no. of years at school) | 0.024** (0.009) | 0.122** |
| Children in household (1=Yes) | -0.015 (0.067) | -0.011 |
| Hours spent on housework | -0.007* (0.003) | -0.132* |
| Work hours | -0.003 (0.002) | -0.059 |
| Regular/Irregular working hours (1=Irregular) | 0.047 (0.068) | 0.031 |
| Home/Work location (1=Different) | 0.007 (0.060) | 0.005 |
| Satisfaction with the balance between job and other aspects of life (0=Extremely dissatisfied) | -0.032* (0.013) | -0.107* |

*p≤ .05 **p≤ .01 ***p≤ .001

The values of the coefficient of regression in the table indicate that none of the three characteristics of paid work (total work hours, including overtime and extra work; regular/irregular working hours; working in the same/another location) are associated with accessibility. This finding suggests that there is no risk of nonresponse bias in ESS findings in terms of the workload dimensions covered in this analysis.

Alongside education, two other variables are associated with availability, even though those relationships are weak. They are the time devoted to the housework and satisfaction with the balance between time spent on paid work, and the time spent on other aspects of life. As regards the former of the two, those who are more easily available spend more time doing the housework (except childcare). Since this correlation did not occur in the analysis of all the respondents (i.e. working and non-working ones, cf. Table 2), the result obtained currently suggests that the burden of housework affects availability only for working people (who were covered by the analysis presented in Table 3). This is understandable since non-working people, who represented 49.3% of the effective sample in ESS 5, presumably spend generally more time at home than working people do. Whether or not they do the housework during that time plays a secondary role for their availability.

On the other hand, as regards satisfaction with the balance between time spent on paid work and time spent on other aspects of life, this finding is not surprising. While the question is not entirely clear (one might be dissatisfied with the overall balance when work takes up too much time, but also when other matters leave insufficient time for work), yet low values on the scale indicate a sense of time-related tension in both cases, as these individuals feel that they do not have enough time either for work or for other things in life. The respondents who experience such tensions are harder to reach: more contact attempts are needed to complete an interview with them.

Let us return to the issue of commuting to a workplace far from home. The Polish ESS 5 questionnaire contained an extra question about the time spent commuting to/from a distant workplace. The results of the regression analysis for the number of contacts needed to complete an interview by that variable are presented in the table below (Table 4).

Table 4 Coefficients of linear regression predicting the number of attempts by time spent commuting to/from work in another location (controlled for demographics, housework burden, and subjective time pressure)

| | Unstandardized coefficient B and standard error (in brackets) | Standardized Beta coefficient |
|--|--|----------------------------------|
| Constant | 1.187** (0.456) | |
| Sex (1=F) | -0.048 (0.116) | -0.036 |
| Age | -0.003 (0.005) | -0.039 |
| Education (no. of years at school) | 0.026 (0.015) | 0.132 |
| Children in household (1=Yes) | -0.012 (0.117) | -0.007 |
| Hours spent on housework | -0.001 (0.005) | -0.021 |
| Work hours | 0.001 (0.004) | 0.018 |
| Time spent commuting to/from work in another location | 0.003** (0.001) | 0.213** |
| Satisfaction with the balance between job and other aspects of life (0=Extremely dissatisfied) | -0.044* (0.022) | -0.148* |

* $p \leq .05$

** $p \leq .01$

The value of the regression coefficient for the time of commute shows that the more time the respondents spend commuting to/from another location, the harder to reach they become. The time of commute is highly diversified. In the case of two thirds (66.8%) of the respondents the commute takes up to one hour (there

and back), yet 20.0% need two or more hours in total, sometimes up to four hours. Therefore, it is not surprising that such individuals require several contact attempts in order to respond.

Paid work and accessibility: multinomial regression

As mentioned earlier, the differences in respondents' accessibility may, but do not have to, boil down to simple gradeability of their characteristics. Harder-to-reach respondents are not necessarily 'more like' or 'less like' easy-to-reach ones whereas, much in the same way, the inaccessible ones are not necessarily similar to the hardest-to-reach respondents. One must not preclude that varied accessibility delineates essentially different categories of respondents which, however, are not necessarily gradable. In this section the previously conducted analyses will be repeated, this time using the aforementioned qualitative approach, drawing on the 'classes model.'

The respondents will be subdivided into three groups based on their accessibility: easy-to-reach, moderately hard-to-reach, and hard-to-reach ones. The first group (easy-to-reach respondents) comprises those respondents who were successfully interviewed during the first or the second contact attempt. The second group is comprised of those that required three or four contact attempts for interview completion, whereas the third group (hard-to-reach respondents) includes those respondents who were interviewed only after five or more contact attempts. As mentioned earlier, the standard procedure in the ESS is to make at least four contact attempts with hard-to-contact respondents. Therefore, the respondents who required a higher-than-standard number of contact attempts are being described here as 'hard-to-reach'. On the other hand, even people who stay at home most of the time will necessarily run errands from time to time and the interviewer might not find them at home during the first call. For this reason, 'easy-to-reach' is a category which includes those respondents who were successfully interviewed during either the first or the second contact attempt.

The table below shows the results of multinomial regression applied to those groups by doing paid work. The easy-to-reach group was adopted as the reference category. The set of controlling variables is identical to the one used in the similar analysis based on linear regression (cf. Table 2).

Table 5 Coefficients of multinomial regression predicting the odds of being in the group of moderately-hard-to-reach vs. easy-to-reach respondents and hard-to-reach vs. easy-to-reach respondents by doing paid work (controlled for demographics and housework burden). The reference category: easy-to-reach respondents (1 or 2 contacts)

| | Moderately hard-to-reach 3 or 4 contacts) | | Hard-to-reach (5 or more contacts) | | Exp (B) |
|---------------------------------------|--|---------|---------------------------------------|---------|---------|
| | B and standard error (in brackets) | Exp (B) | B and standard error (in brackets) | Exp (B) | |
| Intercept | -1.771** (0.662) | | -4.252*** (1.147) | | |
| Sex (1=F) | 0.118 (0.201) | 1.126 | 0.121 (0.341) | | 1.128 |
| Age | -0.016 (0.007) | 0.984 | -0.003 (0.012) | | 0.997 |
| Education (no. of years at school) | 0.072** (0.028) | 1.075 | 0.115** (0.045) | | 1.122 |
| Children in household (1=Yes) | -0.003 (0.202) | 0.987 | -0.536 (0.312) | | 0.585 |
| Hours spent on house- work | -0.007 (0.007) | 0.993 | -0.023 (0.015) | | 0.977 |
| Paid work (1=Yes) | 0.375 (0.228) | 1.455 | 1.254** (0.469) | | 3.506 |

**p≤ .01

***p≤ .001

The predicted odds of being moderately hard-to-reach rather than easy-to-reach are 1.4 times higher for a working person than for a non-working one (other characteristics being controlled). However, this relationship is not statistically significant. The respective odds concerning hard-to-reach vs. easy-to-reach categories are much higher, i.e. 3.5. The results of this analysis indicate, therefore, that paid work does not differentiate the respondents significantly in terms of them turning out to be easy-to-reach or moderately hard-to-reach, yet it significantly increases the odds of being hard to reach.

Moreover, if we compare moderately hard-to-reach and hard-to-reach respondents, the Exp (B) parameter can be reconstructed on the basis of the aforementioned values (3.506/1.455). This is a statistically significant relationship at 0.05 significance level ($p = 0.024$). This indicates that the group of hard-to-reach respondents is clearly different from easy-to-reach and from moderately hard-to-reach respondents in terms of doing paid work.

The results presented in Table 5 also suggest that neither moderately hard-to-reach nor hard-to-reach respondents are generally much different from easy-to-reach ones in terms of the other variables included in the analysis. Education is the only variable where statistically significant differences are found between them. Better educated respondents are relatively more likely to be moderately hard to

reach and hard to reach than easy to reach (with other variables being controlled). On the other hand, the values of Exp (B) for the hard-to-reach and moderately hard-to-reach respondents are very similar, which indicates that the likelihood of falling into each of this group is similar for education, and equals approximately 1 (1.122/1.075).

Let us now compare the respondent groups identified by three aspects of workload: i) amount of total working hours; ii) (ir-)regularity of working hours and iii) distance to the workplace. The results of multinomial regression are presented in Table 6. The set of controlling variables is the same as in the similar analysis based on linear regression (cf. Table 3).

Table 6 Coefficients of multinomial regression predicting the odds of being in the group of moderately-hard-to-reach vs. easy-to-reach respondents and hard-to-reach vs. easy-to-reach respondents by workload: work hours, regular/irregular working hours and home/work location (controlled for demographics, housework burden and subjective time pressure). The reference category: easy-to-reach (1 or 2 contacts)

| | Moderately hard-to-reach (3 or 4 contacts) | | Hard-to-reach (5 or more contacts) | |
|--|---|---------|---------------------------------------|---------|
| | B and standard error (in brackets) | Exp (B) | B and standard error (in brackets) | Exp (B) |
| Intercept | -0.789 (1.092) | | -1.240 (1.657) | |
| Sex (1=F) | 0.502 (0.283) | 1.652 | 0.238 (0.429) | 1.268 |
| Age | -0.010 (0.011) | 0.991 | -0.007 (0.016) | 0.993 |
| Education (no. of years at school) | 0.093** (0.036) | 1.097 | 0.087 (0.054) | 1.091 |
| Children in household (1=Yes) | 0.153 (0.271) | 1.166 | -0.210 (0.382) | 0.811 |
| Hours spent on housework | -0.033* (0.013) | 0.968 | -0.030 (0.020) | 0.970 |
| Work hours | -0.006 (0.010) | 0.994 | -0.018 (0.016) | 0.982 |
| Regular/irregular working hours (1=Irregular) | 0.246 (0.265) | 1.278 | 0.109 (0.410) | 1.115 |
| Home/Work location (1=Different) | 0.119 (0.239) | 1.126 | -0.063 (0.370) | 0.939 |
| Satisfaction with balance between job and other aspects of life (0=Extremely dissatisfied) | -0.153** (0.053) | 0.858 | -0.091 (0.081) | 0.913 |

*p≤ .05 **p≤ .01

Neither moderately hard-to-reach nor hard-to-reach respondents are different from easy-to-reach respondents in terms of the three aspects of workload i.e. total working hours, (ir-) regularity of working time, and distance of the workplace.

When these analyses are repeated in a way where the dependent variable compares the odds for moderately hard-to-reach and hard-to-reach categories, those variables do not differentiate such odds. This indicates that none of the three aspects of workload is associated with respondent accessibility.

While this result confirms the findings obtained with linear regression, it is nevertheless fairly surprising, especially with regard to the length of working hours. One would expect that people who spend more time doing paid work are harder to reach. For this reason, the analysis presented in Table 6 was repeated and instead of work hours expressed in a number of hours, a classification of the respondents into three categories was adopted: i) respondents working less than 40 hours a week, ii) working about 40 hours a week, and iii) working over 40 hours a week. This classification corresponds with i) work below one full time equivalent (FTE), ii) work equivalent to one FTE, and iii) work exceeding one FTE. In the case of moderately hard-to-reach respondents the value of B reached -0.174 , and $\text{Exp}(B)$ was 0.840 . In the case of hard-to-reach respondents the values were: $B = -0.249$ and $\text{Exp}(B) = 0.780$. Both values of B are statistically insignificant at the level of 0.05 , and the values of $\text{Exp}(B)$ are close to each other. Therefore, our data does not confirm that the odds of being classified as easy-to-reach, moderately hard-to-reach and hard-to-reach is related to the amount of time spent on paid work.

Let us go back to other variables included in Table 6. Three of those variables, i.e. education, time spent on housework and satisfaction with the balance between job and other aspects of life reveal a statistically significant relationship. According to the multinomial regression model, better educated people are relatively more likely to be moderately hard to reach rather than easy to reach. The same trend is found in the case of individuals who spend less time on housework and who are dissatisfied with their work-life balance. The interpretation of the latter of those differences is obvious and has been presented earlier: in the case of in-home surveys where the first contact must be made face-to-face, it is easier to contact individuals who spend more time on housework (easy-to-reach) rather than those who spend less time doing it (moderately hard-to-reach respondents). However, this correlation, much as in the case of linear regression, occurs only among working people. It did not occur when the analysis included both categories of working and non-working respondents (cf. Table 5).

It is also important to stress that all three of the aforementioned variables reveal a stronger contrast between moderately hard-to-reach and easy-to-reach respondents than between hard-to-reach and easy-to-reach ones. As a consequence, better educated people, those who spend less time on housework, and those who are dissatisfied with the balance between their job and other aspects of life turn out to be (as predicted by this model) relatively more likely to be moderately hard-to-

reach rather than hard-to-reach. This non-monotonicity of findings is fairly difficult to interpret. One cannot exclude that it stems, to some extent, from random errors such as the small number of hard-to-reach respondents (the parameters are not statistically significant). For instance, it is worth noting that the relationship with the variable ‘satisfaction with balance between job and other aspects of life’ has a somewhat different effect if other variables are controlled (cf. findings in Table 7 below, where this correlation is not statistically significant).

While working in a far away location does not differentiate moderately hard-to-reach and hard-to-reach respondents from easy-to-reach ones, the results of linear regression indicate that they might differ in terms of time spent commuting to/from work. A comparison of those groups of respondents in terms of time of commuting to/from work in another location is presented in Table 7. The set of controlling variables is the same as in the similar analysis based on linear regression (cf. Table 4).

Table 7 Coefficients of multinomial regression predicting the odds of being in the group of moderately-hard-to-reach easy-to-reach respondents and hard-to-reach vs. easy-to-reach respondents by time spent commuting to/from work in another location (controlled for demographics and housework burden, and subjective time pressure). The reference category: easy-to-reach respondents (1 or 2 contacts)

| | Moderately-hard-to-reach (3 or 4 contacts) | | Hard-to-reach (5 or more contacts) | |
|---|---|---------|---------------------------------------|---------|
| | B and standard error (in brackets) | Exp (B) | B and standard error (in brackets) | Exp (B) |
| Intercept | -1.520 (1.837) | | -3.286 (3.097) | |
| Sex (1=F) | 0.192 (0.468) | 1.211 | -0.632 (0.844) | 0.531 |
| Age | -0.029 (0.021) | 0.971 | 0.010 (0.033) | 1.010 |
| Education (no. of years at school) | 0.074 (0.063) | 1.076 | 0.142 (0.101) | 1.152 |
| Children in household (1=Yes) | 0.150 (0.496) | 1.162 | -0.155 (0.747) | 0.856 |
| Hours spent on housework | -0.009 (0.019) | 0.992 | -0.005 (0.034) | 0.995 |
| Work hours | 0.017 (0.016) | 1.017 | -0.017 (0.030) | 0.983 |
| Time spent commuting to/from work in another location | 0.010* (0.004) | 1.010 | 0.014* (0.006) | 1.014 |
| Satisfaction with balance be- tween job and other aspects of life (0= Extremely dissatisfied) | -0.159 (0.089) | 0.853 | -0.216 (0.150) | 0.806 |

*p≤ .05

The results of this regression analysis show that when other variables are controlled in accordance with the model, individuals who spend more time commuting to/from work are relatively more likely to be moderately hard to reach than easy to reach ($\exp(B)=1.010$), and even more likely to be hard to get [$\exp(B) = 1.014$]. However, a direct comparison of those two figures shows that the odds for hard-to-reach vs moderately hard-to-reach categories are virtually identical, equalling approximately 1 ($1.014/1.010$).

This finding is additionally confirmed in the results of univariate analysis of variance, where the average time of commute is 56.0 minutes in the easy-to-reach group, 77.4 minutes in the moderately-hard-to-reach group and 82.2 minutes in the hard-to-reach group. The difference between the mean values for the first and the second group exceeds 22 minutes, whereas the comparison between the second and the third group shows less than 5 minutes of difference.

SUMMARY AND DISCUSSION

When analysing the problem of nonresponse, Peter Lynn (2008: 36) observes that *'...nonresponse rarely happens completely at random. There are reasons why some units do not respond and those reasons are typically associated with at least some of the survey variables'*. The data concerning interviewers' work in subsequent rounds of the European Social Survey in Poland and in other countries, as well as data collected in follow-up surveys with nonrespondents indicate that respondents are increasingly hard to get, i.e. completion of interviews requires an increasing number of contacts and the share of refusals caused by lack of time, and especially noncontacts, has been systematically rising. As shown by the data from follow-up surveys, one reason for such unavailability might lie in the burden of paid work: this applies to the two aforementioned reasons of nonresponse, but to noncontacts to a greater extent. Therefore, one will naturally ask whether the burden of paid work poses a risk of nonresponse bias in ESS results, especially considering that paid work is one of the basic sociological characteristics, correlated with other variables in most surveys.

The analysis presented in this article focuses on the relationship between paid work, workload and the number of contacts attempted by interviewers in order to complete an interview in the European Social Survey, Round 5. The analysis is confined to those respondents where the success of contact attempts is related to how easy or difficult they were to access. Therefore, the analysis does not cover cases of repeated attempts aiming at refusal conversion.

The analyses were conducted in two steps, corresponding with two models adopted in nonresponse research: the quantitative 'continuum of resistance model' and the qualitative 'classes model'. Linear regression was employed in the first step and multinomial regression in the second step.

In general, the results of the analysis done using linear regression and the results of the one multinomial regression are congruent. The only variables that turned out to be associated with the number of attempted contacts were paid work and time spent commuting to/from work in another location. The number of contacts needed to complete an interview is not related to the other dimensions of workload i.e. neither to the total number of work hours (including overtime and extra work) nor with the (ir-)regularity of working hours (changing on different days), nor with the relative distance and the potential commute to a distant workplace.

However, the use of multinomial regression showed that the established correlations between paid work and time spent commuting to/from another location, compared to the number of contact attempts needed to complete an interview are not straight linear. They show that at least 5 or more contact attempts are needed to achieve a significant increase in the likelihood of working people's survey participation. These findings indirectly suggest that there is a risk of nonresponse bias associated with underrepresentation of working people in the case of this variable.

The likelihood of nonresponse bias is clearly lower in the case of time spent commuting to/from work in another location. The relationship between the time of commute and the number of contact attempts is not straight linear, either. However, in order to minimise the risk of nonresponse bias, it is sufficient to undertake three or four contact attempts.

Therefore, a question arises: is the group of commuters sizeable enough to pose the risk of nonresponse bias in surveys? If we look at the ESS 5 results, commuters in Poland represent more than 1/3 of all working people (36.3%), which is quite a considerable proportion. Given the persistent economic crisis and the pertaining problems with finding a job near oneself, one should bear in mind that people will be looking for jobs in more remote locations.

Summing up, one should say that the analyses presented here indicate that in order to reduce the risk of nonresponse bias associated with paid work, it is essential to undertake multiple contact attempts with hard-to-reach respondents. This requires an extended fieldwork period since interviewers must have sufficient time to make multiple contact attempts (the fieldwork period in the ESS in Poland is approx. 3.5 months). Secondly, this entails additional, considerable costs associated with repeated visits to hard-to-reach respondents. Obviously, researchers in standard surveys can very rarely afford to do so. However, they should then also account for the risk of systematic error associated with underrepresentation of the working population.

The aforementioned conclusions concerning the risk of nonresponse bias are based on the analysis of the number of contacts needed to conduct an interview with hard to reach respondents. This method relies on the assumption that hard-

to-reach respondents are similar to unavailables. The assumption that final nonrespondents are similar to hard-to-get respondents (i.e. that hard-to-reach respondents are similar to unavailables, and temporary refusers are similar to final refusers) has a rationale and, as such, it is very often adopted by nonresponse researchers. As pointed out by Stoop (2005), those researchers assume that since one can achieve a significant increase in the response rate thanks to various methods, further intensification of researchers' efforts in this regard paves the way to further increase in the response rate and, therefore, to inclusion of subsequent groups in the survey: ones that would not have been available with less effort. Therefore, since respondents' availability is related to the effort put into achieving a higher response rate, one may assume that hard-to-get survey participants are similar to nonparticipants. The latter would participate in surveys if even more efforts were put to achieving a higher response rate.

However, since the method of analysis adopted in this paper and the assumption on the similarity between nonrespondents and hard-to-get respondents gives rise to concerns (see, for instance, Smith 1983, Groves and Couper 1998), it is a good idea to analyse other data as well, in order to check the validity of the general conclusion regarding repeated contact attempts as a way to reduce the risk of nonresponse bias. With regard to the performance of paid work, this can be done by comparing the ESS 5 data with the Labour Force Survey data (LFS) for Poland. In fact, the LFS data originate from the same period as the ESS 5 fieldwork (Q4 of 2010), the two samples are comparable (respondents aged 15+), and the definition of paid work in the LFS resembles that adopted in the ESS. The LFS has been conducted in Poland on a sample of 54.7 thousand dwellings. According to its results, the percentage of working population during that period totalled 50.6%, which was nearly identical with that established the ESS 5, i.e. 50.8%³. If the LFS data on this subject are deemed reliable, the congruency of results might indicate that the data from the ESS 5, where numerous attempts were made to contact hard-to-get respondents, are not burdened with nonresponse bias related to performance of paid work.

However, on the other hand, one cannot exclude that the data collected in both those surveys carry the same nonresponse bias associated with doing paid work. After all, it is possible that much of the hard-to-reach respondents differ from moderately-hard-to-reach and easy-to-reach respondents with respect to this variable also individuals who are hardest to reach (cases where the survey interview was not conducted despite numerous contact attempts) do differ from hard-to-reach respondents, i.e. the ones who finally took part in the survey as a result of repeated contact attempts.

NOTES

- 1 In surveys where advance letters are mailed before the start of fieldwork (as is usually the case in academic surveys), the topics are known to all of the sampled persons even before the interviewer visit. As a result, the sampled persons may decide on participation in advance, provided that they read the advance letter.
- 2 The hypothesis about the risk of nonresponse bias in time use surveys, resulting from less common participation of busy people in such surveys, is put forward by most scholars who study this problem (see, for instance, Abraham et al. 2006, Stoop 2007, Van Ingen et al. 2009, Vercruyssen, Roose and van de Putte 2011, Vercruyssen et al. 2013). However, they also propose an alternative hypothesis, known as ‘the Newtonian hypothesis’ (‘bodies in motion stay in motion while those at rest stay at rest’: Robinson and Godbey 1997). According to this hypothesis people who are active in one set of activities are also active in others. This hypothesis assumes that the respondents in time use surveys tend to be busier than nonrespondents, which, of course, may also lead to bias but this time associated with overrepresentation of busy people. Van Ingen et al. (2009) add that the participation of busy people in time use survey gives them an opportunity to show their high status whereas people who have a lot of time may be reluctant to report few or low-status activities. This might lead to bias in the same direction.
- 3 The percentage of working respondents in ESS 5, as specified here, refers only to the category of the respondents which was analysed in this paper, i.e. those who are less or more easily accessible, but excluding converted refusers. This approach was essential to maintain comparability since, to my knowledge, refusal conversion in Poland is applied only by the Centre of Sociological Research at the Institute of Philosophy and Sociology, Polish Academy of Sciences, which performed the fieldwork in ESS 5. Therefore, this approach is not applied in the LFS. If temporary refusers were also included, the share of working people in ESS 5 would be 50.7%.

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