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**Trust in Surveys and the Respondents' Susceptibility to Item Nonresponse**

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### **Abstract**

We test the hypothesis that respondents with a strong attitude that surveys in general cannot be trusted are more susceptible to item nonresponse. This is done separately for the don't know and refusal rate observed for subjective and factual questions. In a comparative perspective, using data from the ten new member states of the European Union, we firstly find substantial between-country and sociodemographic differences in all four types of nonresponse. A series of negative-binomial regressions shows secondly that lacking trust in surveys significantly increases the rate of unanswered questions, but this negative effect is restricted on the subsample of respondents who consistently reported this attitude in multiple questions. This is equally the case for don't knows as well as refusals on subjective as well as factual questions. Thirdly, the between-country differences in nonresponse rates are only partly due to the national samples, having differently strong faith in surveys.

*Keywords:* Attitudes Toward Surveys; Cross-National Survey Research; Don't Knows; Item Nonresponse; Question Refusal; Respondents' Cooperation.

## 1. Introduction

How strong respondents are prone to item nonresponse determines the completeness and thus an important aspect of survey data quality. This is particularly the case when certain characteristics of respondents are associated with their susceptibility to nonresponse, and thus answers are not missing completely at random. When researchers under this condition delete cases with missing values listwise, as it is common practice in research using survey data, it is inevitable that groups of respondents with high nonresponse rates will be underrepresented in the subsample included into the analysis (King et al. 2001). It is thus an important question which attributes of the respondents systematically affect their susceptibility to leave some survey questions unanswered. Although an extensive number of studies analyzed determinants of the decision to take part in survey interviews (for an overview, cf. Groves et al. 2002), much less is known about why respondents fail more or less often to answer single questions. In available studies, some sociodemographic characteristics were found to be correlated with item nonresponse (Pickery and Loosveldt 1998; Schräpler 2004; Singer et al. 2000). Other studies have shown different features of the questionnaire and those of the interview situation to influence nonresponse rates (Davern et al. 2003; Dickinson and Kirzner 1985; Essig and Winter 2005). A shortcoming of most of these analyses is *firstly* the failure to differentiate between the determinants of don't knows on the one hand and those affecting refusals to answer questions on the other. *Secondly*, barely any study analyzed the determinants of nonresponse separately for different types of questions, as for example those about factual topics and subjective phenomena (for an exception cf. Pickery and Loosveldt 2001, 2004). This assumes, without being empirically tested, that don't knows and refusals as well as not answering different kinds of questions are due to the same antecedence conditions.

Theoretical approaches for explaining item nonresponse have assumed don't knows to be the consequence when the *difficulty* of questions exceeds a certain threshold (Shoemaker et al. 2002). In contrast, respondents are assumed to refuse to answer questions when its *sensitivity* is perceived to be overly high. Although don't knows and refusals thus result from different kinds of respondents' burdens, it can be argued that more cooperative and motivated respondents will be more willing to accept each of them. Different aspects of the respondents' attitudes toward surveys in general have been found to influence various forms of cooperative behavior in survey contexts (Erbslöh and Koch 1988; Loosveldt and Storms 2004; Rogelberg et al. 2001; Stinchcombe et al. 1981; Stocké 2004). A few studies found also evidence for the rate of unanswered survey questions to decrease with a more positive attitude

toward surveys (Rogelberg et al. 2001; Sharp 1981; Singer et al. 1998). However, as in most other research about item nonresponse, here, the outcome variable was an aggregated indicator for don't knows and question refusals (as an exception cf. Stocké 2006). Furthermore, in none of the available studies has it been analyzed whether respondents' attitudes toward surveys equally affect nonresponse in the case of different types of questions.

Thus, available evidence suggests that positive attitudes toward surveys lead respondents to support surveys with more complete answers. However, it has been found in many studies with other topics that attitudes by no means always predict the behavior toward the respective attitude object. Instead, attitude-behavior consistency has been found to be contingent on a whole set of conceptually distinct aspects of attitude strength (cf. Petty and Krosnick 1995 for an overview). Accordingly, one can expect that only strong attitudes toward surveys predict the respondents' motivation to answer difficult as well as sensitive questions. Whether this is the case, yet, has only been addressed in one study with a small, locally restricted sample (Stocké 2006).

In inter-cultural research, attitudes of various contents have been proven to vary between countries (e.g. Franzen 2003). It is thus not unlikely that this is true for attitudes toward surveys as well. In this case, survey respondents from different countries are expected to be on average differently motivated to answer questions, and thus to be differently prone to item nonresponse. Then between-country differences in nonresponse rates and the herewith associated differences in data quality bear the risk of negatively affecting the comparability of data in cross-national comparative studies.

The *first* and main aim of the present study is to replicate and extend available evidence for attitudes toward surveys to affect respondents' susceptibility to item nonresponse. This is done by utilizing nationwide representative data from the ten new member states of the European Union. We tested with this broad database whether trusting surveys, as a special aspect of respondents' survey attitude, in combination with the cognitive strength of this evaluation predicts the prevalence of nonresponse. This is furthermore not only done for differentiated indicators for don't knows and refusals, but separately for nonresponse on questions with subjective and factual content as well. The *second* aim is to analyze whether and to what degree country-level differences in the attitudes toward surveys account for different nonresponse rates and thus for variations in data quality between the analyzed nations.

## 2. Theoretical Framework

Research in cognitive psychology has shown that attitudes are often activated automatically, prevent more deliberative evaluations and guide behavior in accordance with the attitude content (Bargh 1997). However, under which conditions precisely subjects follow their attitudes without any reflection about the consequences of their behavior, has been subject of a controversial debate (cf. Six and Eckes 1996). The Model of Frame Selection (MFS) offers an answer to this question and provides a hypothesis about when attitudes toward surveys determine how much effort respondents are willing to spend in order to answer sensitive or difficult questions (Esser 2001: 259 ff.; Kroneberg 2006). In this theory, which is a formalization and generalization of Fazio's MODE-Model (Fazio 1990), the content *and* strength of attitudes toward surveys are assumed to determine in interaction the level of respondents' cooperation. When attitudes are strong, their content is expected to have a substantial effect on the probability of nonresponse: In these cases, the respective evaluation is spontaneously activated when a certain situation is identified as a survey context. As a consequence, subjects with a *strong* and *positive* evaluation of surveys feel a strong self-commitment to support the actual survey in order to help to accomplish its central aim, i.e. to collect complete and valid survey data. If respondents frame a particular survey interview in such a way, even high costs associated with answering difficult or sensitive questions will not prevent them from providing the best possible answer. In contrast, subjects with *strong* and *negative* attitudes toward surveys do not feel any obligation to spend more than the minimum effort necessary to complete the interview. These respondents are thus expected to following the predictions from satisficing theory (Krosnick 1991). Accordingly, subjects with strong negative attitudes are expected to answer 'don't know' and refuse to provide information, even in the case of only moderately difficult or sensitive questions. In summary, the MFS predicts both the rates of don't knows and question refusals to be substantially lower for respondents with positive rather than negative attitudes toward surveys.

It is unlikely that surveys are a salient and involving attitude object for more than a minority of respondents. Therefore, the evaluation of surveys in general must be expected to be in many cases of cognitively low strength, thus representing a non-attitude. Under this condition, the MFS predicts that the attitude content does not determine how much effort respondents are willing to spend in answering survey questions: Attitudes toward surveys do not predict the respondents' susceptibility to either kind of item nonresponse. Instead, other factors, as for example the respondents' cognitive capacities, the presence of time pressure or the

differentiation of the response options, are expected to determine the don't know and refusal rates.

### **3. Previous Research**

#### **3.1 Determinants of Item Nonresponse**

Researchers have tested for whether different characteristics of the respondents, features of the questionnaire instrument and aspects of the interview situation affect the decision to answer survey questions (for a comprehensive overview cf. de Leeuw et al. 2003). In a study with telephone interviews from the Survey of Consumer Attitudes, females, less wealthy and older respondents as well as subjects with less formal education were found to be more susceptible to item nonresponse compared with their respective complementary groups (Singer et al. 2000). One could argue that these results are due to the fact that answering questions requires more cognitive effort with increasing age and less education.

Research about the effects of varying features of survey questionnaires and the survey design has shown that the prevalence of nonresponse increases for items located later in a mail questionnaire (Dickinson and Kirzner 1985; for inconsistent results cf. Ferber 1966). This may be the result of respondents being already fatigued and thus answering questions at the end of the questionnaire having been more burdensome. Data from a telephone survey provided evidence for attitude questions to receive higher nonresponse rates when cognitively more demanding 11-point rather than less differentiated 5-point response scales were used (Leigh and Martin 1987). Research with U.S. presidential election studies found that the respondents' political involvement and their political efficiency predict the probability of insubstantial answers on questions about political issues (Francis and Busch 1975). Both factors can be assumed to have increased the cognitive availability of the requested information and thus reduced the cognitive costs for answering the questions.

In a study by Copas and Farewell (1998) the failure to answer questions about sexual behavior and socioeconomic characteristics was found to be a function of how embarrassing and thus emotionally burdensome the respondents perceived the questions. In the case of questions about wealth and income, another sensitive survey topic, the probability of nonresponse about the possession of six kinds of assets has been found to be substantially lower in the case of private drop-off pick-up questionnaires, compared with interviewer-administered face-to-face interviews (Essig and Winter 2005). A random half of respondents from the Detroit Area Study received a prepaid incentive in form of a gift-boxed ballpoint pen for their

interview participation. Respondents who received the incentive had a higher motivation to answer questions, and thus provided significantly more complete answers to open-ended questions (Willimack et al. 1995). The same effect was found with cash incentives (Singer et al. 2000; for inconsistent results cf. Davern et al. 2003). In all of these studies, compound indexes representing the prevalence of don't knows and refusals have been utilized, and thus it remains unclear for which of the two forms of nonresponse the results are valid.

In studies where the different kinds of item nonresponse were analyzed separately, it was found that explicitly offering a 'don't know' option increased the proportion of such answers (Schuman and Presser 1980). Here, 90 percent of the respondents answered 'don't know' when asked whether they favor or oppose the largely unknown 'Agricultural Trade Act of 1978' when this response option was offered, compared with 69.2 percent when this was not the case. Similar results were found in a more recent study (Krosnick et al. 2002). In another study, the prevalence of 'no opinion' answers was found to increase with the complexity of the wording of the questions, as measured with the Flesch 'ease of reading' formula (Converse 1976): The use of long preambles, the request for projections into the future and the provision of more than dichotomous response options increased the 'don't know' answers. 'No opinion' answers on 15 ethnocentrism items were found to be more prevalent for female, older and less educated subjects (Pickery and Loosveldt 1998). In a recent study with data from the 'Cultural Shifts in Flanders: Survey 2000', the determinants of income item nonresponse, don't knows on knowledge questions, 'no opinion' responses to attitude questions and 'don't know' answers to questions about subjective phenomena have been analyzed (Pickery and Loosveldt 2004). The probability of income nonresponse was found to decrease with the age and education of respondents, but was higher for women than for men. This was the case for 'no opinion' answers and both types of don't knows as well, but age had a reverse effect. Separate analyses of the determinants of don't knows and refusals to answer questions with data from the ten new member states of the E.U. has shown that both kinds of nonresponse increased with the respondents' age and decreased with a higher occupational status and formal education (Stocké and Stark 2005). However, being male only reduced the don't know rate, but did not affect the prevalence of refusals. Shoemaker et al. (2002) showed that the expert-evaluated difficulty and sensitivity of items from the U.S. General Social Survey and the South American Latinobarometer Study explained nonresponse: The judged difficulty and prevalence of don't knows on the one hand as well as the sensitivity and the probability of refusals on the other were substantially correlated.

In a study with data from the German Socioeconomic Panel (GSOEP), the determinants for don't knows and refusals in the case of the income question have been assessed (Schräpler 2004). Here, the respondents' age and the interviewers being male had a consistently negative effect on the probability of refusals to provide income information. Furthermore, this probability was found to increase significantly under the condition of self- rather than interviewer-administration. The respondents' sex and occupational status as well as the interviewers' age had no or inconsistent effects in the different panel waves. The respondents' susceptibility to don't knows was only found to be consistently stronger in self-administered interviews.

### **3.2 Attitudes toward Surveys and Respondents' Cooperation**

Some research has found evidence that attitudes toward surveys predict different kinds of cooperative behavior in survey contexts. Accordingly, respondents with a positive attitude toward surveys followed the questionnaire instructions in a mail survey more closely than other subjects: They marked less often more than one response option and gave more open-ended reasons for why they selected an answer. A positive evaluation of surveys was furthermore associated with a faster return of completed questionnaires (Rogelberg et al. 2001). Stocké (2004) found subjects to be less susceptible to incentives from social desirability when they had positive rather than negative survey attitudes. Incentives were operationalized using an index consisting of the subjects' need for social approval, their desirability beliefs about the response options and privacy differences in the interview situation. Results have shown that respondents' racial attitude answers were less sensitive to incentives for socially desirable responding when they judged surveys increasingly positive. This effect of the respondents' survey attitude was furthermore significantly stronger when faster answers on the attitude questions and more direct experience with surveys indicated stronger attitudes toward surveys.

Empirical evidence suggests as well that positive survey attitudes are associated with a greater willingness to participate in surveys (Goyder 1986; Jones 1979). Furthermore, respondents who spontaneously refused to participate in a survey but were convinced later on to take part were found to be less positive about surveys, compared with those who spontaneously agreed to participate: They believed less that surveys provide useful information in general and for public-sector planning, but agreed more frequently that surveys often contain issues which are not anybody else's business (Erbslöh and Koch 1988). Others have found that converted non-responders had stronger doubts about the trustworthiness of survey results and were more likely to agree that they had been asked too often in the past to participate in



surveys (Stinchcombe et al. 1981). It has been shown that potential respondents who expressed mistrust toward surveys during the introductory request for participating in an interview had a lower probability to take part in the survey: Subjects with a lack of trust in surveys were substantially more likely to refuse participation (Couper 1997). Subjects who judged surveys to be valuable and survey participation to be an enjoyable experience were found to be more willing to participate in surveys in the future (Rogelberg et al. 2001).

Only a few studies tested the role of attitudes toward surveys for the respondents' susceptibility to item nonresponse. Singer et al. (1998) showed that 2 out of 3 items, which were used to measure attitudes towards surveys, affected significantly the number of questions the respondents left unanswered in the interview: Respondents failed to answer fewer questions when they regarded surveys to be useful and perceived survey participation not to be a waste of time. In a replication study, however, only the first attitude item had a significant effect. In a recent investigation, 60 customers of a financial institution were asked 3 open-ended and 78 close-ended questions in a mail survey (Rogelberg et al. 2001). The respondents' attitudes toward surveys were measured with two attitude scales, each consisting of three items: the perceived value of surveys and the enjoyment which was attributed to survey participation. The results proved that more positive attitudes on both dimensions reduced nonresponse in the case of open-ended questions, but only the estimated worth of surveys had an effect on the nonresponse to the closed type of questions.

### **3.3 Attitude Strength, Attitude Stability and Attitude-Behavior Consistency**

The strength of attitudes has proven to determine whether attitude answers predicts behavior in the case of many topics. In this research, a variety of different and partly uncorrelated indicators for attitude strength have been utilized (cf. Petty and Krosnick 1995 for an overview). For example, the respondents' self-reported response certainty is one prominent strength related measure. It has been found that subjects who rated their attitudes toward the liberalization of abortion to be more certain showed stronger associations between these attitudes and behavioral intentions in this area (Renata 1999). The concept of attitude accessibility, operationalized as the time respondents needed to answer attitude questions, has also been frequently utilized in order to predict attitude-behavior consistency. Response latencies were found to predict how strongly respondents' attitudes toward political candidates determined their voting behavior (Fletcher 2000), and to what extent product evaluations were associated with intentions to consume the products (Kokkinaki and Lunt 1997).

In one study with a small locally restricted sample of respondents, it has been tested whether response latencies predict to what degree attitudes toward surveys determine different indicators for the respondents' disposition to item nonresponse (Stocké 2006). These indicators were (a) the probability of refusing to provide income information, (b) the number of refusals in the case of all other questions in the interview, (c) how frequent the respondents answered 'don't know' and (d) the interviewers' judgment of how willing the respondents were to answer the questions in the whole interview. The results have shown that respondents having a positive rather than negative survey attitude led to a dramatically reduced disposition to item nonresponse. In the case of all but one of the outcome dimensions this was however only the case when the response latencies were short and thus indicated a high degree of attitude strength. In contrast, the attitudes toward surveys did not predict the susceptibility to nonresponse when it took the respondents relatively long to evaluate surveys. In this research, it remained untested whether the results are equally valid for different types of questions.

Indicators for attitude strength do not only predict attitude-behavior consistency, but also their stability. It has been found on the one hand that strong attitudes are resistant against persuasion attempts (Bassili 1996). On the other hand, strong attitudes proved to be more invariant against minor variations in the questionnaire and interview context (Lavine et al. 1998; Stocké 2004; for inconsistent results cf. Bassili and Krosnick 2000). Thus, it can be expected that respondents with inconsistent answers in the case of repeated attitude measurement have weak attitudes, which are unlikely to guide their behavior toward the respective attitude object.

#### **4. Empirical Study**

We utilized the data from the 'Candidate Countries Eurobarometer 2003.4' (CCE) in order to analyze whether the respondents' trust in surveys, as an important aspect of their attitudes toward surveys, explains their susceptibility to four different kinds of item nonresponse.<sup>1</sup> We also tested for the importance of the strength of these attitudes for how much the trust attitudes explain item nonresponse. The CCE is a representative face-to-face survey in all ten

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<sup>1</sup> The data is available from the Central Archive for Empirical Social Research, University of Cologne (study number: ZA 3896). For detailed information on this survey cf.: [http://europa.eu.int/comm/public\\_opinion/cceb\\_en.htm](http://europa.eu.int/comm/public_opinion/cceb_en.htm).

nations which became members of the European Union in May, 2004.<sup>2</sup> In each country, the survey was conducted with a multi-stage random probability sample of all citizens aged 15 years or older. The field work took place in October and November, 2003. This data is especially appropriate for our research aims, because (1) don't knows and refusals to answer questions were recorded in a differentiated manner, (2) multiple questions about the respondents' trust in surveys have been asked, and (3) the comparative nature of the study enables us to test for whether country-differences in item nonresponse are due to differences in the trust in surveys.

#### 4.1 Operationalization

In the following, we present the different outcome variables as well as the operationalization of those factors which are assumed to explain item nonresponse.

- *Item Nonresponse*: In most of the previous studies, it has been tested in an undifferentiated way what explains the number of unanswered questions in the whole questionnaire, without taking possible differences in the different question types and different kinds of nonresponse into account. Thus, we *firstly* distinguished between factual questions, as for instance about the respondents' sociodemographic characteristics and about their political knowledge, and questions about subjective phenomena, referring for instance to political attitudes and subjective beliefs. We included all unfiltered questions in the questionnaire in our analysis, which were thus asked to all respondents. These are altogether 434 questions, from which 346 refer to subjective and 88 to factual topics. Secondly, in the case of both question types, we differentiated between the respondents' susceptibility to don't knows on the one hand and their disposition to refuse to answer on the other. For each respondent, we then counted the number of don't knows and refusals on subjective and factual questions. For the descriptive analysis, we calculated the percentage of questions each respondent left unanswered separately for all four outcomes.

In table 1, the prevalence of the different kinds of nonresponse is presented separately for the ten new EU-member states. The results have shown *firstly* that on average across all countries and nonresponse types, altogether 10.8 percent of all questions remained unanswered. This proportion of missing values however differs between 9.6 (Slovakia) and 13.3 (Lithuania) percent. *Secondly*, the four kinds of nonresponse contribute to a very different

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<sup>2</sup> The countries included in our study are: Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia.

degree to the total prevalence of missing values in the data. For both question types, the proportion of don't knows is much higher than that of refusals (10.7 vs. 0.9 percent of the subjective questions and 6.5 vs. 1.1 percent of the factual questions). *Thirdly*, with respect to all four kinds of item nonresponse, substantial between-country differences have been found. Whereas the average respondent in Lithuania did not know 13.1 percent of the answers on the subjective questions, this proportion was 8.2% percent in Slovakia. All other countries are significantly different ( $p \leq .05$ ) from these two extreme cases. For factual questions, the picture is similar. In Lithuania, the respondents answered on average in 9.7 percent of the 88 factual questions that they do not know the answer, but this was only the case for 4.8 percent in Slovenia. The average proportion of don't knows differs in the case of subjective questions for 26 out of 45 comparisons significantly between the countries, whereas this were even 35 out of 45 for the factual questions.

The prevalence of refusals to answer questions is also substantially different between the analyzed nations (cf. table 1). While in Slovenia respondents refused to answer on average 2.2 percent of all subjective questions, these were only 0.2 percent in Cyprus. The pattern of refusals on factual questions is similar to that of the subjective ones. Here as well, Slovenian respondents refused to answer the highest number (2.2 percent) and subjects in Cyprus the smallest number of questions (0.1 percent). In the case of refusals to answer subjective questions, we found 32 out of 45 and for refusals of factual questions 34 out of 45 differences between the countries to be statistically significant.

-- Table 1 here --

- *Attitudes toward surveys*: In other research, the trust in surveys has been found to be an important aspect of attitudes toward surveys and a relevant determinant for the cooperation in survey contexts (Couper 1997; Stinchcombe et al. 1981). In order to measure the trust in surveys in general, we used the question whether the respondents trust in opinion polls.<sup>3</sup> We coded the binary answers as '0' if the respondents answered that they 'tend not to trust' and as '1' if they 'tend to trust' opinion polls. Table 2 shows the distribution of this measure as the percentage of subjects who trust in surveys. Across all countries, 70.3 percent of all respondents answered that they trust in surveys. This proportion is in the Czech Republic with 62.3 percent and in Malta with even 55.1 percent significantly lower than in all other countries. In the other countries, the level of trust in surveys is relatively similar and only varies

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<sup>3</sup> The question wording was: 'Generally speaking, do you tend to trust in opinion polls, or not?'

between 69.1 (Hungary) and 76.9 percent (Lithuania). Here, we only found for 27 of the 45 possible pairwise comparisons significant between-country differences.

- *Strength of trust attitudes:* Previous research has shown that attitudes which are stable over time are cognitively strong and thus capable in guiding behavior (Bassili 1996; Krosnick and Abelson 1992). We utilized the consistency of the respondents' answers about their trust in surveys on two additional questions on this topic as an indicator for their attitude strength. After the question about the trust in surveys in general, the respondents were asked two unfiltered questions about the surveys of which sponsor they tend to trust most. In the first item an exhaustive list of possible sponsor organizations was presented and the respondents were asked to indicate which survey paid by this organizations they trust most. The second question asked which survey, published by the same list of institutions, the respondents trust most.<sup>4</sup> In both cases, the respondents could either choose one of the sponsor institutions or answer that they trust none of them. The newly created attitude-stability variable was coded '1' if a respondent firstly answered to trust surveys in general and afterwards answered on both following questions to trust surveys of one of the listed institutions. The variable was also coded '1' when a respondent first answered not to trust surveys in general and then consistently denied trusting surveys of any of the list of sponsors. For all other cases, the variable was coded '0', indicating an inconsistent response pattern. This was the case when a respondent first answered to trust in opinion polls but did not mention to trust any from the complete list of survey sponsors (including 'other') and instead indicated to trust none. A respondent was categorized as having a weak trust attitude as well when first answering not to trust surveys in general, but then indicating to trust surveys of one of the particular sponsor organizations. In table 2, the proportion of respondents with a strong trust attitude is presented for each country included in our study. On average across the countries, 78.1 percent of the interviewees answered consistently about their trust in surveys. For altogether 23 out of the possible 45 comparisons between the countries, we found significant differences in the strength of the trust attitudes. The last two columns in table 2 show the two kinds of inconsis-

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<sup>4</sup> Wording for question 1: 'And in which of the following do you tend to trust most? Opinion polls *paid* for by (1) (NATIONALITY) businesses, (2) multinational businesses, (3) TV stations, (4) radio stations, (5) daily press, (6) other written press (magazines etc.), (7) NGOs, (8) trade unions, (9) political parties, (10) the (NATIONALITY) government, (11) the European Union, (12) other, (13) none.' Wording for question 2: 'And in which of the following do you tend to trust most? Opinion polls *published/publicised* by [same response options as for question 1].'

tency which we found among the respondents. The majority of 20.7 percent of all respondents changed from first answering not to trust surveys in general to indicating trust in the case of special surveys, whereas only 1.4 percent changed their response behavior into the opposite direction.

-- Table 2 here --

## 4.2 Results

In the following analyses, we *firstly* tested for the sociodemographic covariates of item nonresponse in order to see whether previous results can be replicated for the different kinds of nonresponse and question types. *Secondly*, we showed whether the trust in surveys, as a special aspect of the respondents' attitudes toward surveys, consistently predicts the susceptibility to different kinds of nonresponse. We *thirdly* analyzed whether the strength of this effect differs according to the cognitive strength of the trust attitude. On the level of statistical hypothesis testing, this implies to test for a significant interaction effect between trust in surveys (the attitude) and the stability of this attitude (its strength). In the *fourth* part of the analysis, we tested to what extent the between-country differences in the trust attitude explain country differences in the analyzed types of item nonresponse.

### 4.2.1 Country and sociodemographic differences in nonresponse

We analyzed the determinants of item nonresponse with separate regression analyses for the number of don't knows and refusals on subjective as well as factual questions which were observed for each respondent. Since these numbers were extremely skewed count variables, it is appropriate to conduct Poisson regressions in principle. However, all four dependent variables showed a significant amount of overdispersion in our initial models (c.f. table 1: model 1:  $\alpha=1.0$ ; model 2:  $\alpha=.9$ ; model 3:  $\alpha=7.1$ ; model 4:  $\alpha=5.6$ ; all:  $p \leq .05$ ). This would lead Poisson regressions to underestimate the standard errors of the coefficients (Long and Freese 2003: 266). Therefore, we used negative binomial regression models to correct for this problem. In order to prevent a sample-selection bias due to the listwise deletion of cases with missing values on the independent variables, we included missing dummies for all categorical variables in the analysis. The regression coefficients for these variables are not reported due to space limitations.

In the first series of regression models, we tested for country and sociodemographic differences in the prevalence of item nonresponse (cf. table 3). The results indicate *firstly* that, after

controlling for potential differences in the sociodemographic sample composition between the countries, the item nonresponse rates still remain significantly different between the countries (don't knows/subjective:  $\chi^2=165.1$ ; don't knows/factual:  $\chi^2=549.6$ ; refusals/subjective:  $\chi^2=502.9$ ; refusals/factual:  $\chi^2=379.6$ ; all:  $p \leq .05$ ). As it already has been found in the descriptive analysis, Slovenia must be regarded as an extreme case with respect to all nonresponse types. Whereas subjects from this country have, except for Polish respondents in the case of don't knows on factual questions, the lowest rate of both kinds of don't knows, Slovenian respondents are without any exception most susceptible to refuse to answer subjective as well as factual questions. *Secondly*, we find significant differences in the disposition to nonresponse according to the respondents' sex, age, education and socio-economic status.<sup>5</sup> Accordingly, don't knows on subjective as well as factual questions are significantly less common for respondents with more education, a lower age and a higher socio-economic status, as well as for those who are males, compared with the respective complementary groups. These effects are completely consistent for don't knows on the two different types of questions and replicate the results from previous studies with undifferentiated nonresponse indicators (cf. chapter 3.1). However, the sociodemographic correlates of refusals to answer questions are partly substantially different. The respondents' education is only relevant for the refusal rate in the case of subjective questions and here, only subjects with a secondary school, compared with those with only primary school degrees, refused less to answer questions. The willingness to provide factual information does not differ according to the respondents' education at all. In contrast to the results found for don't know, the respondents' gender proves to be irrelevant for the susceptibility to refuse to answer both types of questions. The effect of the socioeconomic status is different from that in the case of don't knows as well: The prevalence of refusing to answer factual questions is significantly lower for workers, compared with subjects which have never been in workforce. Furthermore, the refusal rate of white-collar workers does not differ from that of subjects who have never been in workforce. Only the respon-

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<sup>5</sup> Education is coded: (1) primary education (24.9% ): no education, primary, up to primary, vocational without sec. education; (2) secondary education (58.4% ): secondary, three or less years of secondary, up to five years of secondary; (3) tertiary education (16.0%): college diploma, university, higher than secondary; difference to 100% is due to missing values. Average age = 45.0 years. Gender: (1) female = 55.2%. Socio-economic status: (1) never working (13.8%); (2) manual working = 43.9%; (3) other white-collar (16.7%); (4) manager (15.8%); (5) self-employed (9.2%).

dents' age has similar associations with the subjects' refusal rates as with their don't knows. Since the sociodemographic correlates differ between the types of item nonresponse and partly between the question types, an undifferentiated examination of item nonresponse cannot be regarded as appropriate.

-- Table 3 here --

#### **4.2.2 Effects of the content and strength of the respondents' trust attitudes**

In the next step, we analyzed whether the respondents' trust in surveys and the cognitive strength of this aspect of attitudes toward surveys explain their susceptibility to item nonresponse. It was expected that the trust attitude is a significantly stronger determinant of nonresponse when it is strong rather than weak. Thus, an interaction effect between both factors was expected to explain all four kinds of nonresponse. In the first step, we included the measures of trust toward surveys and the consistency indicator for attitude strength as main effects into the regression analyses (cf. table 4). We find consistently for all four outcome variables a negative and statistically significant regression parameter for the trust variable: Persons who trust in surveys are less susceptible to item nonresponse than those who do not trust. The positive and significant effect of attitude strength on all four kinds of nonresponse indicates that respondents who consistently answered to all questions either to trust or not to trust surveys are more prone to item nonresponse than those who provided inconsistent answers.

-- Table 4 here --

In the regression models presented in table 5, we included additionally a multiplicative term between the respondents' trust in surveys and the strength of these attitudes in the regression equation in order to test for the predicted interaction effect between these two factors. The results *firstly* show that, consistent for all four kinds of nonresponse, the interaction parameter is negative and statistically significant. This indicates that the average negative effect of trust on nonresponse is strengthened when this attitude is strong rather than weak. *Secondly*, the conditional main effect of trust is in all cases insignificant. Accordingly, differences in the trust in surveys do not have any effect on the probability of nonresponse when the variable indicating attitude strength has a value of zero: Weak trust attitudes do not affect either kind of item nonresponse. Moreover, the conditional main effect of attitude strength is positive and significant: Stronger attitudes in the case of mistrusting respondents lead to a substantial increase of all kinds of nonresponse.

-- Table 5 here--



In order to allow for a more precise interpretation of the significant interaction parameters, we calculated for each type of nonresponse the predicted number of unanswered questions, based on the four regression models presented in table 5. These predicted values represent the numbers of missing answers for subjects having or not having trust in surveys and this attitude being either strong or weak. The control variables have been fixed in the case of categorical variables on the reference category and for metric variables on the sample mean. In order to allow for comparisons between the outcome variables, we present the predicted count as percentage of the respective number of questions which were included into the analyses (cf. table 6).

Consistent with the insignificant conditional main effects of the trust attitude in the regression analyses, the results show that trusting or not trusting surveys does not matter for the completeness of answers from respondents with low attitude strength: The differences in the predicted percentage of missing answers between respondents having reported to trust or not to trust fluctuate around zero (don't knows: subjective = -0.2, factual = +0.2; refusals: subjective = +0.3, factual = -0.4). However, whether respondents trust in surveys or not makes a big difference for those respondents who provided consistent answers on their trust attitude. For each of the four nonresponse types, there is a strong increase of the percentage of questions left unanswered when trust converts into mistrust. In the case of don't knows, this increase is 5.1 percent points for subjective and 1.9 percent points for factual questions. The predicted percentage of questions which the respondents refused to answer differs according to the trust attitude by 5.3 percent points in the case of subjective questions and 3.6 points for factual questions. Thus, the subjects' trust in surveys affects the subjects' susceptibility to don't knows and to refusals when the questions are about subjective phenomena rather than about facts.

-- Table 6 here--

#### 4.2.3 Explanation of between-country differences

The remaining question is whether the between-country differences in the respondents' trust in surveys explain the observed differences in the prevalence of item nonresponse. As a criterion for answering this question, we utilized how much less the country dummies explain the different types of nonresponse when the trust in surveys, the strength of this attitude and the interaction of both factors are statistically controlled. Thus, we *firstly* calculated the decrease in pseudo- $R^2$  when removing the country dummies from the regression analyses presented in

table 3 above. The resulting difference scores (delta 1, cf. table 7) represent the net effect of between-country differences, after adjusting only for the sociodemographic sample composition between the countries. *Secondly*, the explanatory value of between-country differences was determined in the same way for the full regression models presented in table 5 and thus when trust in surveys has been controlled additionally: The differences in pseudo- $R^2$  of models with and without country dummies represent the net effect of this factor (delta 2). *Thirdly*, we calculated the percentage decrease in the net explanatory power of country differences before and after controlling for the prevalence of trust in surveys (delta 1 – delta 2).

The results of these analyses are presented in table 7 and show *firstly* that the variance in nonresponse, accounted by country differences, differs between the types of nonresponse: The net effect of this factor is for refusals 1.75 (subjective questions) and 1.81 (factual questions), but for don't knows these values are only 0.20 (subjective questions) and 1.06 (factual questions) (metric of all values: pseudo- $R^2$  multiplied by 100). This result without controlling for trust in surveys remains unchanged after this factor is introduced. *Secondly*, controlling for differences in the trust in surveys explains a small part in the country differences of the prevalence don't knows: The explanatory power of the country dummies is slightly reduced by 17.6 percent (subjective questions) and 5.0 percent (factual questions). However, in the case of the prevalence of refusals to answer questions, controlling for the effect of trust in surveys has the opposite effect: The net effect of the country dummies increases by 11.2 percent (subjective questions) and 7.2 percent (factual questions) when trust in surveys is controlled. Although these mixed results confirm our assumption that don't knows and refusals to answer questions have to be analyzed separately, we do not find consistent support for between-country differences in trust in surveys to explain differences in the prevalence of nonresponse between the nations.

## 5. Summary and Conclusion

The main aim of this investigation was to analyze the consequences of respondents' lacking trust in surveys for their susceptibility to item nonresponse, and to test whether this effect is restricted to the subsample of respondents with a strong attitude in this respect. A second aim was to show whether results from previous studies, where the determinants of item nonresponse had been analyzed with compound indices, are valid for different kinds of the failure to answer questions. Thus, we differentiated between four types of nonresponse: the prevalence of don't knows and refusals to answer subjective as well as factual questions. A third

aim was to compare the prevalence of item nonresponse between the ten new member countries of the European Union. Furthermore, we tried to find out whether between-country differences in the trust in surveys lead to differences in the nonresponse rates between the nations.

The results showed *firstly* that in the case of subjective as well as factual questions, respondents who do not trust in surveys were significantly more prone to answer ‘don’t know’ and to refuse to answer questions. As predicted from the Model of Frame Selection, these effects were only found for the subsample of respondents who gave consistent answers on multiple questions about their trust in surveys and who could thus be assumed to hold strong attitudes toward surveys. The evaluation of surveys from subjects with unstable attitude answers proved to be completely irrelevant for their susceptibility to nonresponse. This interaction effect was found for all four analyzed kinds of nonresponse. Accordingly, the quality of data representing respondents with a negative *and* at the same time cognitively strong attitude toward surveys was considerably more negatively affected by item nonresponse. Furthermore, other research has shown that respondents with a critical evaluation of surveys are substantially underrepresented in surveys samples (Couper 1997). Our results indicate that the disproportionally high item nonresponse rate of this subsample additionally leads them to be underrepresented in analyses with survey data. This is in particular the case if subjects with missing observations are simply excluded from the analysis. Previous studies have found attitudes toward surveys to be associated with different other characteristics of the respondents, as for instance their sex and religious denomination (Stocké and Langfeldt 2004). The differential dropout rate of subjects with different attitudes toward surveys must therefore be expected to cause sample-selection bias with respect to these associated characteristics as well.

*Secondly*, although we found the respondents’ trust in surveys and the strength of this attitude consistently affecting the rate of don’t knows as well as refusals observed for subjective as well as for factual questions, there is still reason to analyze the different types of nonresponse separately. First, the effect of not trusting surveys proved to be much stronger in the case of subjective than factual questions. This seems to indicate that a stronger commitment to support surveys and the hereon-based higher motivation to abandon satisficing strategies is more effective for questions about the respondents’ inner states. Second, we found substantial differences in the sociodemographic correlates of nonresponse between don’t knows and question refusals. Whereas our results for don’t knows on subjective and factual questions

were completely in line with those found in previous studies without differentiation among the nonresponse types, the determinants of refusals differed substantially from what is documented in the literature. This is likely to be the case since don't knows were the most common kind of nonresponse by far, and thus dominated the results obtained on the basis of compound indexes. Third, the prevalence of all analyzed types of nonresponse differed significantly between the countries included in our study. However, these differences were substantially stronger for the rate of don't knows than for refusals. Furthermore, the ordinal order of the countries on the dimension of differently strong nonresponse rates varied according to the type of missingness. Particularly, Slovenia proved to be an extreme case: Respondents from this country had the weakest disposition to answer 'don't know', but were most susceptible to refuse to answer questions. We therefore have to conclude that it is appropriate to analyze the determinants of item nonresponse separately for don't knows and refusals as well as for the different types of questions.

*Thirdly*, our results showed substantial between-country differences in all analyzed kinds of item nonresponse. The resulting variations in data quality complicate the interpretation of results in cross-national comparative research. Between-country differences on a dimension of interest may either be a substantial result, or simply an artifact of different nonresponse rates. We tested whether the various levels of item nonresponse were caused by differences in trust in surveys. This could not be consistently confirmed: Whereas controlling for trust in surveys slightly reduced the country differences in don't knows, it was not possible to explain why respondents from some countries refused to answer questions more often. The main reasons for the different nonresponse rates may thus be other cultural differences between the countries, or differences in the fieldwork or organizational conditions under which the surveys were conducted within the nations (de Heer 1999).

Our results are based on data from the ten new member states of the European Union, where nothing is known about the survey-taking climate or nonresponse rates at present. This specific sample of countries thus offers new insights, but our findings cannot be generalized without caution to the situation in other countries. Although no empirical evidence is available in this respect, many of the new EU-member states do not have a long tradition of survey research, and so, their citizens can be assumed to have collected less direct experience with surveys in the past. Accordingly, respondents may have on average less crystallized and thus weak attitudes toward surveys. If this holds true, we have to expect trust in surveys to exert even stronger effects on the susceptibility to nonresponse in the old member states of the EU.

Since no data about the prevalence of trust in surveys is available for the latter countries, we are unfortunately not able to test this hypothesis.

In our study, we analyzed the consequences of respondents not trusting surveys for item nonresponse, and thus the effects of an important but specific aspect of the interviewees' total attitude toward surveys. However, the evaluation of other aspects of surveys, as their burden (Stinchcombe et al. 1981) or their value for society (Rogelberg et al. 2001), have been shown to be relevant for the respondents' cooperation as well. Despite the non-existent data, it would be of great interest to compare the relative significance of different aspects of the respondents' survey attitude for their disposition to different kinds of item nonresponse.

The interpretation of our results about between-country differences in don't knows and refusals to answer questions relies on the assumption of standardized fieldwork procedures and well trained interviewers in the analyzed countries. In particular, we implicitly assume that in all countries the interviewer coded don't knows and refusals to answer questions equally correctly. However, the fieldwork in all nations was conducted by different field organizations and house effects on survey data are well documented (Robinson 1989; Smith 1993). Hence, we have to keep in mind the possibility that our results about country differences in the distribution of nonresponse between don't knows and refusals may be an artifact of differential interviewer behavior.

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**Table 1:** Between-Country Differences in the Rates of Don't Know Responses and Question Refusals on Different Question Types

Country	(N)	Don't Knows		Refusals		All Kinds of Nonresponse
		Subjective Questions % (Absolute)	Factual Questions % (Absolute)	Subjective Questions % (Absolute)	Factual Questions % (Absolute)	
Cyprus	(500)	10.7 (37.0) <sup>ABCD</sup>	5.7 (5.0) <sup>AB</sup>	0.2 (0.8) <sup>C</sup>	0.1 (0.1) <sup>C</sup>	9.9 (43.0) <sup>ABC</sup>
Czech R.	(1000)	11.6 (40.1) <sup>A D</sup>	7.5 (6.6) <sup>C</sup>	1.6 (5.4)	1.5 (1.3) <sup>B</sup>	12.3 (53.4) <sup>D</sup>
Estonia	(1014)	11.4 (39.4) <sup>A E</sup>	7.3 (6.4) <sup>C</sup>	0.6 (1.9) <sup>AB D</sup>	0.8 (0.7) <sup>A</sup>	11.2 (48.5) <sup>A</sup>
Hungary	(1017)	11.5 (39.9) <sup>A DE</sup>	5.4 (4.8) <sup>A D</sup>	0.3 (1.2) <sup>BC</sup>	1.0 (0.8) <sup>A D</sup>	10.8 (46.7) <sup>AB</sup>
Latvia	(1001)	9.7 (33.7) <sup>BC</sup>	7.4 (6.5) <sup>C</sup>	0.6 (1.9) <sup>A D</sup>	1.1 (1.0) <sup>DE</sup>	9.9 (43.1) <sup>BC</sup>
Lithuania	(1015)	13.1 (45.2)	9.7 (8.5)	0.9 (3.1) <sup>E</sup>	0.9 (0.8) <sup>A D</sup>	13.3 (57.6) <sup>D</sup>
Malta	(500)	10.2 (35.4) <sup>BC E</sup>	6.1 (5.3) <sup>B</sup>	0.7 (2.6) <sup>A E</sup>	0.2 (0.2) <sup>C</sup>	10.0 (43.5) <sup>ABC</sup>
Poland	(1000)	10.8 (37.2) <sup>B D</sup>	4.9 (4.4) <sup>DE</sup>	0.5 (1.6) <sup>D</sup>	1.4 (1.2) <sup>B E</sup>	10.2 (44.4) <sup>ABC</sup>
Slovakia	(1078)	9.5 (33.0) <sup>C</sup>	5.8 (5.1) <sup>AB</sup>	0.8 (2.9) <sup>A E</sup>	0.8 (0.7) <sup>A</sup>	9.6 (41.7) <sup>C</sup>
Slovenia	(1000)	8.2 (28.5)	4.8 (4.3) <sup>E</sup>	2.2 (7.7)	2.2 (1.9)	9.8 (42.3) <sup>BC</sup>
Total	(9125)	10.7 (37.0)	6.5 (5.7)	0.8 (3.1)	1.1 (1.0)	10.8 (46.8)
Number of Questions		346	88	346	88	434

<sup>A, B, C, D, E</sup> Countries sharing indices are not significantly different with respect to the particular type of nonresponse (*t*-test:  $p \leq 0.05$ ).

Datasource: Candidate Countries Eurobarometer 2003.4.

**Table 2:** *Between-Country Differences in Trust in Surveys and Consistency of Answers on this Topic*

Country	Trust in Surveys		Consistency of Answers					
			Consistent	Changed from Trust to No Trust		Changed from No Trust to Trust		
	%		%	%		%		
Cyprus	74.6	<sup>AB</sup>	82.0	<sup>AB</sup>	0.8	<sup>A</sup>	17.2	<sup>AB</sup>
Czech Republic	62.3		73.9	<sup>CD</sup>	0.4	<sup>A</sup>	25.7	<sup>C</sup>
Estonia	70.6	<sup>A C</sup>	74.3	<sup>CD</sup>	0.9	<sup>A</sup>	24.8	<sup>CD</sup>
Hungary	69.1	<sup>C</sup>	79.5	<sup>AB</sup>	3.0	<sup>B</sup>	17.5	<sup>AB</sup>
Latvia	72.6	<sup>A CD</sup>	77.8	<sup>A C</sup>	1.0	<sup>A</sup>	21.2	<sup>A D</sup>
Lithuania	76.9	<sup>B</sup>	83.3	<sup>B</sup>	1.1	<sup>A</sup>	15.6	<sup>B</sup>
Malta	55.1		71.3	<sup>D</sup>	1.3	<sup>AB</sup>	27.4	<sup>C</sup>
Poland	75.5	<sup>B D</sup>	83.3	<sup>B</sup>	1.0	<sup>A</sup>	15.7	<sup>B</sup>
Slovakia	71.0	<sup>A C</sup>	80.7	<sup>AB</sup>	1.2	<sup>A</sup>	18.1	<sup>AB</sup>
Slovenia	69.8	<sup>A C</sup>	74.9	<sup>CD</sup>	2.6	<sup>B</sup>	22.5	<sup>CD</sup>
Total	70.3		78.1		1.4		20.5	

<sup>A, B, C, D</sup> Countries sharing indices are not significantly different with respect to trust in surveys and the consistency of the answers (*t*-test:  $p \leq 0.05$ ).

**Table 3:** Between-Country and Sociodemographic Differences in Item Nonresponse (Negative Binomial Regression Analyses)

	Don't Knows		Refusals	
	Subjective Questions (Model 1)	Factual Questions (Model 2)	Subjective Questions (Model 3)	Factual Questions (Model 4)
	B (Std.)	B (Std.)	B (Std.)	B (Std.)
<b>Country<sup>a)</sup></b>				
- Cyprus	.08 (.06)	.02 (.06)	-2.54 (.16)**	-2.67 (.18)**
- Czech Republic	.39 (.05)**	.49 (.05)**	-.39 (.13)**	-.29 (.11)**
- Estonia	.29 (.05)**	.41 (.05)**	-1.48 (.13)**	-.88 (.12)**
- Hungary	.19 (.05)**	.01 (.05)	-2.05 (.13)**	-.78 (.12)**
- Latvia	.18 (.05)**	.44 (.05)**	-1.54 (.13)**	-.58 (.11)**
- Lithuania	.46 (.05)**	.72 (.05)**	-1.02 (.12)**	-.87 (.12)**
- Malta	.12 (.06)**	.16 (.06)**	-1.15 (.15)**	-2.29 (.17)**
- Poland	.21 (.05)**	-.03 (.05)	-1.61 (.15)**	-.46 (.11)**
- Slovakia	.08 (.05)	.12 (.05)**	-1.12 (.13)**	-.93 (.12)**
<b>Sociodemographic Characteristics</b>				
<b>Education<sup>b)</sup></b>				
- Secondary	-.39 (.03)**	-.27 (.03)**	-.38 (.08)**	-.10 (.07)
- Tertiary	-.59 (.04)**	-.62 (.04)**	-.22 (.12)	.02 (.11)
Age	.01 (.00)**	.01 (.00)**	.01 (.00)**	.01 (.00)**
Gender (Female) <sup>c)</sup>	.25 (.02)**	.33 (.02)**	.02 (.06)	.01 (.06)
<b>Socio-Economic Status<sup>d)</sup></b>				
- Never Working	-.03 (.04)	-.01 (.04)	--	--
- Manual Working	--	--	-.10 (.10)	-.35 (.10)**
- Self-employed	-.09 (.04)**	-.13 (.04)**	-.38 (.14)**	-.43 (.13)**
- White-collar	-.14 (.03)**	-.17 (.03)**	-.02 (.12)	-.22 (.12)
- Managers	-.24 (.04)**	-.24 (.04)**	-.36 (.14)**	-.52 (.13)**
Constant	3.29 (.06)**	1.33 (.06)**	1.86 (.13)**	.68 (.12)**
N	9125	9125	9125	9125
Likelihood-Ratio Chi <sup>2</sup>	1042.47**	1254.59**	594.27**	457.11**
Pseudo-R <sup>2</sup>	.0124	.0243	.0209	.0228

Significance: \*:  $p \leq 0.05$ ; \*\*:  $p \leq 0.01$ ; omitted categories: <sup>a)</sup> Slovenia; <sup>b)</sup> primary, <sup>c)</sup> male, <sup>d)</sup> manual working in model 1 and 2, never working in model 3 and 4.

**Table 4:** Effect of Trust in Surveys and the Consistency of this Attitude on the Susceptibility to Item Nonresponse (Negative Binomial Regression Analyses)

	Don't Knows		Refusals	
	Subjective Questions (Model 1)	Factual Questions (Model 2)	Subjective Questions (Model 3)	Factual Questions (Model 4)
	B (Std)	B (Std)	B (Std)	B (Std)
<b>Country <sup>a)</sup></b>				
- Cyprus	.08 (.05)	.02 (.06)	-2.71 (.16)**	-2.70 (.18)**
- Czech Republic	.32 (.04)**	.41 (.05)**	-.64 (.12)**	-.48 (.11)**
- Estonia	.20 (.04)**	.36 (.05)**	-1.64 (.12)**	-.91 (.11)**
- Hungary	.16 (.04)**	-.03 (.05)	-2.07 (.13)**	-.78 (.11)**
- Latvia	.14 (.04)**	.39 (.05)**	-1.67 (.12)**	-.60 (.11)**
- Lithuania	.36 (.04)**	.64 (.05)**	-1.13 (.12)**	-.97 (.11)**
- Malta	.10 (.05)	.13 (.06)*	-1.22 (.15)**	-2.34 (.17)**
- Poland	.12 (.04)**	-.09 (.05)	-1.77 (.12)**	-.55 (.11)**
- Slovakia	.01 (.04)	.05 (.05)	-1.36 (.12)**	-1.06 (.11)**
<b>Sociodemographic Characteristics</b>				
<b>Education <sup>b)</sup></b>				
- Secondary	-.31 (.03)**	-.21 (.03)**	-.31 (.08)**	-.09 (.07)
- Tertiary	-.50 (.04)**	-.56 (.04)**	-.16 (.11)	.00 (.11)
Age	.01 (.00)**	.00 (.00)**	.01 (.00)**	.00 (.00)**
Gender (female) <sup>c)</sup>	.23 (.02)**	.32 (.02)**	.01 (.06)	-.01 (.06)
<b>Socio-Economic Status <sup>d)</sup></b>				
- Never Working	-.01 (.04)	-.01 (.04)	--	--
- Manual Working	--	--	-.13 (.10)	-.39 (.10)**
- Self-Employed	-.07 (.04)	-.14 (.04)**	-.39 (.14)**	-.47 (.13)**
- White-Collar	-.09 (.03)**	-.15 (.03)**	-.01 (.12)	-.22 (.12)
- Managers	-.19 (.04)**	-.20 (.04)**	-.36 (.13)**	-.48 (.13)**
Trust in surveys (yes) <sup>e)</sup>	-.29 (.03)**	-.22 (.03)**	-.79 (.09)**	-.55 (.08)**
Consistency (consistent) <sup>f)</sup>	.30 (.04)**	.18 (.04)**	.23 (.10)*	.25 (.10)*
Constant	3.06 (.06)**	1.23 (.06)**	2.14 (.14)**	.81 (.13)**
N	9125	9125	9125	9125
Likelihood-Ratio Chi <sup>2</sup>	2139.89**	1800.39**	875.02**	617.13**
Pseudo-R <sup>2</sup>	.0254	.0349	.0308	.0308

Significance: \*:  $p \leq 0.05$ ; \*\*:  $p \leq 0.01$ ; omitted categories: <sup>a)</sup> Slovenia; <sup>b)</sup> primary, <sup>c)</sup> male, <sup>d)</sup> manual working in model 1 and 2, never working in model 3 and 4, <sup>e)</sup> no trust, <sup>f)</sup> inconsistent.

**Table 5:** Differences in the Effect of Trust in Surveys According to the Consistency of this Attitude on the Susceptibility to Item Nonresponse (Negative Binomial Regression Analyses)

	Don't Knows		Refusals	
	Subjective Questions (Model 1)	Factual Questions (Model 2)	Subjective Questions (Model 3)	Factual Questions (Model 4)
	B (Std)	B (Std)	B (Std)	B (Std)
<i>Country</i> <sup>a)</sup>				
- Cyprus	.08 (.05)	.02 (.06)	-2.73 (.16)**	-2.73 (.18)**
- Czech Republic	.33 (.04)**	.41 (.05)**	-.62 (.12)**	-.46 (.11)**
- Estonia	.21 (.04)**	.36 (.05)**	-1.64 (.12)**	-.93 (.11)**
- Hungary	.14 (.04)**	-.04 (.05)	-2.14 (.13)**	-.80 (.11)**
- Latvia	.14 (.04)**	.40 (.05)**	-1.70 (.12)**	-.61 (.11)**
- Lithuania	.36 (.04)**	.64 (.05)**	-1.15 (.12)**	-1.01 (.11)**
- Malta	.09 (.05)	.11 (.06)*	-1.24 (.15)**	-2.40 (.17)**
- Poland	.11 (.04)**	-.09 (.05)	-1.83 (.12)**	-.57 (.11)**
- Slovakia	-.00 (.04)	.05 (.05)	-1.39 (.12)**	-1.10 (.11)**
<i>Sociodemographic Characteristics</i>				
<i>Education</i> <sup>b)</sup>				
- Secondary	-.30 (.03)**	-.21 (.03)**	-.26 (.08)**	-.07 (.07)
- Tertiary	-.49 (.04)**	-.55 (.04)**	-.13 (.11)	-.00 (.11)
Age	.01 (.00)**	.00 (.00)**	.01 (.00)**	.00 (.00)*
Gender ( <i>female</i> ) <sup>c)</sup>	.23 (.02)**	.32 (.02)**	.01 (.06)	-.02 (.06)
<i>Socio-Economic Status</i> <sup>d)</sup>				
- Never Working	-.01 (.04)	-.00 (.04)	--	--
- Manual Working	--	--	-.16 (.10)	-.39 (.10)**
- Self-Employed	-.07 (.04)	-.14 (.04)**	-.39 (.14)**	-.45 (.13)**
- White-Collar	-.08 (.03)**	-.15 (.03)**	-.05 (.12)	-.22 (.12)
- Managers	-.19 (.04)**	-.20 (.04)**	-.38 (.14)**	-.46 (.13)**
Trust in surveys ( <i>yes</i> ) <sup>e)</sup>	.02 (.03)	-.04 (.05)	-.09 (.14)	.11 (.14)
Consistency ( <i>consistent</i> ) <sup>f)</sup>	.53 (.04)**	.31 (.05)**	.67 (.13)**	.66 (.13)**
Trust • Consistency	-.54 (.07)**	-.32 (.07)**	-1.14 (.19)**	-1.08 (.18)**
Constant	3.03 (.06)**	1.21 (.06)**	2.09 (.14)**	.78 (.13)*
N	9125	9125	9125	9125
Likelihood-Ratio Chi <sup>2</sup>	2206.43**	1822.91**	913.95**	654.45**
Pseudo-R <sup>2</sup>	.0262	.0353	.0322	.0327

*Significance:* \*:  $p \leq 0.05$ ; \*\*:  $p \leq 0.01$ ; omitted categories: <sup>a)</sup> Slovenia; <sup>b)</sup> primary, <sup>c)</sup> male, <sup>d)</sup> manual working in model 1 and 2, never working in model 3 and 4, <sup>e)</sup> no trust, <sup>f)</sup> inconsistent.

**Table 6:** *Predicted Percentage of Unanswered Subjective or Factual Questions for Different Types of Nonresponse According to the Respondents' Trust in Surveys and the Consistency of this Attitude*

Consistency	Trust in Surveys		Effect of No Trust
	Yes	No	
Don't Knows – Subjective Questions			
- Inconsistent	7.65	7.48	-0.17
- Consistent	7.59	12.71	5.12
Don't Knows – Factual Questions			
- Inconsistent	4.47	4.66	0.18
- Consistent	4.46	6.37	1.92
Refusals – Subjective Questions			
- Inconsistent	3.49	3.81	0.32
- Consistent	2.19	7.47	5.28
Refusals – Factual Questions			
- Inconsistent	3.32	2.96	-0.35
- Consistent	2.19	5.74	3.55

The predicted values are computed for the respective combinations of trust in surveys (yes=1, no=0) and the consistency of the answers about this attitude (inconsistent=0, consistent=1). The values are standardized for the number of subjective (346) and factual (88) questions. The continuous control variable 'age' is fixed at the sample mean (age=45.0), whereas for 'education', 'gender' and 'socioeconomic status', the reference categories were inserted into the regression equation. The country dummies are also fixed on the reference category (Slovenia).



**Table 7: Explanation of Between-Country Differences in Item Nonresponse through Differences in Trust in Surveys (McFadden's Pseudo  $R^2 * 100$ )<sup>a)</sup>**

	Don't Knows		Refusals	
	Subjective Questions	Factual Questions	Subjective Questions	Factual Questions
Models without 'Trust in Surveys'				
- with Country Dummies <sup>b)</sup>	1.24	2.43	2.09	2.28
- without Country Dummies <sup>c)</sup>	1.04	1.37	0.34	0.47
Delta 1: Decrease in Pseudo- $R^2$	-0.20	-1.06	-1.75	-1.81
Models with 'Trust in Surveys'				
- with Country Dummies <sup>d)</sup>	2.62	3.53	3.22	3.27
- without Country Dummies <sup>c)</sup>	2.45	2.52	1.25	1.32
Delta 2: Decrease in Pseudo- $R^2$	-0.17	-1.01	-1.97	-1.95
Delta 1 – Delta 2 : Decrease in net explanatory power	-0.03 (-17.6%)	-0.05 (-5.0%)	+0.22 (+11.2%)	+0.14 (+7.2%)

<sup>a)</sup> Sociodemographic composition controlled in all models; <sup>b)</sup> regression results reported in table 3; <sup>c)</sup> regression results not reported; <sup>d)</sup> regression results reported in table 5.

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