Setting Priorities: Spurious Differences in Response Rates

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Abstract

Response rates are a key quality indicator of a survey. Thus, their comparability across surveys and countries is pivotal. The first round of the European Social Survey contains a natural experiment in the estimation of response rates. While all countries implemented the same standardized contact protocol to record the outcome of each contact attempt, no instructions were given as to how to code a final case disposition from these individual contact attempts and each country chose its own strategy. We demonstrate that the coding strategy chosen has a substantial impact on the response rates reported. In particular, contact and cooperation rates derived by means of different coding strategies are incomparable across countries when intensive refusal conversion efforts are in place.

Keywords: response rate, contact rate, cooperation rate, final disposition codes, priority coding, most-recent coding

Setting Priorities: Spurious Differences in Response Rates

Despite increasing concern about response rates being insufficient as sole indicators of nonresponse bias and data quality (Groves & Peytcheva, 2008; Keeter, Miller, Kohut, Groves & Presser, 2000), they are still the most prevalent measure for many journals, funding agencies, and survey programs (for alternative indicators see Wagner 2012). In addition to overall response rates, research has shown that contact and cooperation need to be considered as separate processes associated with different sample unit characteristics and thus different biases (e.g. Lynn & Clarke 2002). While non-contacted persons are more likely to be employed and living an active life style, those who are contacted but do not participate in a survey are more likely to be socially disengaged (Groves & Couper 1998, ch. 4-5). Guidelines such as those of the American Association for Public Opinion Research (AAPOR) thus standardize the calculation of contact and cooperation rates in addition to overall response rates.

The standardized calculation and reporting of response rates has been a major survey methodological achievement for comparing across surveys and countries various types of response rates (i.e. overall response rates, contact rates, and cooperation rates). Nevertheless, there is one important step that almost all surveys fail to make explicit when reporting response rates: the coding of the sequence of call outcomes (i.e. contact attempts) at a sample unit into a final disposition code for this sample unit.

The European Social Survey (ESS) has from its inception emphasized the importance of high response rates across countries. In addition to aiming for an overall minimum response rate of 60%, all countries also need to keep their non-contact rate at a maximum of 3%. Both are to be achieved through intensive fieldwork efforts. Such standards demonstrate the importance of the comparability of response rates, especially in cross-national surveys.

In 2002 a natural experiment occurred in the first round of the ESS. While all countries implemented the same standardized contact protocol, which recorded each contact attempt, no instructions were given as to how to determine a final disposition code from these individual contact attempts. In this article we showcase the complexity of coding final disposition codes and the impact that differential coding has on reported outcome rates (see also McCarty (2003) for differences in overall response rates). In addition, the first round of the ESS demonstrates that differential coding can lead to differential conclusions about comparisons of response rates across surveys thereby jeopardizing cross-national quality comparisons.

Standardization of Response Rates

The standardization of response rate calculations has been a methodological focus from the 1970s onwards. In 1977 Kviz noted that "[t]he absence of a standard definition [of response rates] has caused a great deal of confusion regarding the interpretation of reported response rates and has frustrated methodological investigations because of a lack of comparative data" (Kviz, 1977, p. 265). In the late 1990s, a committee of the AAPOR "developed standard definitions for the final disposition of case codes and of various outcome rates (e.g. response rates and cooperation rates) based on these codes" (Smith, 2002, p.30). Since, AAPOR has regularly updated their case outcome and outcome rate definitions for scholars and survey managers to adopt in their surveys (most recently in AAPOR, 2011).

In survey practice we typically distinguish three types of response outcomes (Figure 1): First, *in-office case outcomes* are response outcomes that do not originate from the field process, but instead are assigned to a sample unit in the office. In-office case outcomes might be either assigned to cases that were never fielded or to cases that were fielded, but where the final field outcome was superseded by an in-office case outcome (for example when a respondent calls the survey agency to request their data to be deleted, i.e. an office

refusal). Second, *final call outcomes* are call outcomes from the field, which by their very nature will equal the final disposition code. By definition there can only be one call outcome of this type for a case. The two most obvious examples of final call outcomes are when a full interview is achieved and when a sample unit is found to be ineligible. Third, *non-final call outcomes* do not automatically lead to a final disposition code. For sample units where the only outcomes are a sequence of only non-final call outcomes, a final disposition code needs to be derived, i.e. a *derived final case outcome* needs to be assigned. An example of this is the increasingly common situation in which a sample unit is approached several times, yet is either repeatedly busy (refusal) or not reached (non-contact). The disposition code will then need to be derived from the sequence of these non-final call outcomes.

Figure 1: Deriving final disposition codes from contact data

Method

There are three main methods by which a final disposition code may be derived from a sequence of non-final call outcomes: most-recent, priority, and subjective coding (Blom, Jäckle, & Lynn, 2010). With *most-recent coding*, the outcome of the last call to a sample unit is defined as the final disposition code (e.g. AAPOR, 2000). *Priority coding*, on the other hand, involves arranging call outcomes according to a priority ranking, in which some outcome codes take priority over others. For instance, one would define that achieving an interview takes priority over a refusal, which in turn takes priority over a non-contact (Lynn, Beerten, Laiho, & Martin, 2001). A situation in which an interviewer tries to convert an initial refusal, yet never manages to make contact again, would be coded differently according the two coding strategies. If the last call outcome defined the final disposition, this would be a non-contact: with priority coding the final disposition would be a refusal. Finally, *subjective coding* refers to situations where the rules for deriving a case outcome from a sequence of call outcomes are not defined. Typically in such situations only descriptions of

each final disposition code (which can vary in their precision) are provided. It is left to the coder to decide how to allocate cases to outcomes. This kind of coding is perhaps most common when interviewers are asked to return final disposition codes to the survey organization, though it may also be used by survey organizations carrying out in-office coding. Since subjective coding is not a standardized procedure even within a single survey, it is unsuitable for comparative purposes.

Blom (2008) compares coding schemes with respect to ease of implementation in the field and accuracy in reflecting the *de facto* response outcomes. She shows that most-recent coding has clear advantages over priority coding in terms of ease of implementation (see also McCarty, 2003). However, she further demonstrates that to reflect *de facto* response outcomes as accurately as possible, priority coding is the method of choice. For most surveys, response rates are used as quality indicators and should thus accurately reflect the fieldwork processes. Thus it seems that response rates based on a priority coding, where the priority ranking is standardized and published, should be preferred (p.32-36). In its *Standard Definitions* AAPOR (2011) recommends a complex interplay of most recent and priority coding (p.10-11). Unfortunately, the procedure is not described in much detail and, in contrast to the calculation of response rates, only a recommendation rather than a standardized process.

In our analyses we use the contact data of round 1 of the ESS, a cross-national face-to-face survey conducted in 2002 (see www.europeansocialsurvey.org). We compare the differential impact of a strict priority-ranked coding and most-recent coding for deriving final disposition codes across 16 national ESS data collections[1]. For deriving case outcomes by means of priority coding the call outcomes recorded on the standardized contact forms were arranged according to the hierarchy in Table 1.

Table 1: Priority ranking of response outcomes

Our analyses are composed of two parts. First, we use the ESS contact data to derive final dispositions by means of most-recent coding and priority coding. We examine differences across coding strategies in the occurrence of the aggregate final disposition codes interview, ineligible, refusal, other contact, and non-contact. Second, we compare the final dispositions that each country reported in round 1 (ESS 2003) with our derived final dispositions. For each country we calculate overall response rates, contact rates, and cooperation rates based on the respective coding strategy (country coding, most-recent coding, and priority coding) and analyze the effect of the coding on reported response rates.

Results

In the following, we present the results of our analyses into the effect of different coding strategies for coding sequences of non-final call outcomes on the distribution of final dispositions and response rates.

Differences in Aggregate Final Disposition Codes

The rows in Table 2 display the frequency of case outcomes derived by means of the last call outcome (i.e. most-recent coding); the columns contain the outcomes derived via the priority ranking of call outcomes. The diagonal of Table 2 shows the number of cases where most-recent and priority coding lead to the same aggregate final disposition code.

Table 2: Aggregate final disposition codes: most-recent versus priority coding

The most significant differences between the two coding strategies are found in the refusal, non-contact, and other contact outcomes. Regarding refusals, priority coding yielded 10% more refusals than most-recent coding (13,613 cases priority coded compared with 12,367 cases most-recent coded). This is due to the fact that with priority coding any unsuccessful attempt at converting refusals will be recorded as a refusal, while if the last call outcome is taken, the final disposition might be another code (mostly non-contact or other contact). Looking at the detailed outcome codes (not displayed) one further finds that most of

these cases that were coded a refusal with priority coding were coded 'non-contact, nobody at home' with most-recent coding (670 cases, 52%). Interesting are also cases that were coded refusals with priority coding, but 'other contact' with most-recent coding. For 158 (12%) of these the 'other contact' outcome was 'unavailable temporarily' or 'unavailable during fieldwork period'. These are possibly cases, where a household member claimed that the target person was unavailable to avoid an interview. If this were true, the outcome of these calls would be disguised refusals. Another 119 cases (9%) that were coded refusals with priority coding were mentally or physically unable to do the interview at the last contact attempt. Again, the question is, whether these cases were actually unable to do the interview at the time of the call or whether this was just an easy way out.

With respect to non-contacts, on the other hand, most-recent coding derived 38% more non-contact case outcomes than priority coding (4,678 most-recent coded compared with 3,386 priority coded). Again, this can be attributed to repeated, yet unsuccessful call-backs. In the priority ranking a non-contact takes very low priority. If in a sequence of calls any contact is established with the household at any point and if this is then followed by non-contacts in subsequent calls, priority coding assigns a contact outcome to the case, while most-recent coding assigns a non-contact. In fact, most of these cases are refusal conversion attempts; of the cases that were coded non-contact with most-recent coding 378 (29%) were a refusal by the sample person when derived by means of priority coding, 298 (23%) were hard or soft broken appointments, and another 188 (15%) were refusals by someone other than the target person.

With priority coding there are also considerably fewer missing case outcomes than with most-recent coding (106 compared to 128). The reason for this is that priority ranking only codes a case as 'missing' if all call outcomes are missing.

Finally, the proportion of cases coded 'other contact no interview' is approximately the same in both coding strategies, although the specific cases assigned to this code differ across the two coding strategies.

Differences in Contact, Cooperation and Overall Response Rates

In round 1 of the ESS a natural experiment occurred: While all country teams used the same standardized contact forms, they were not given any instructions as to how they should code call outcomes into final dispositions. As a consequence, with the contact form data we can compare how different coding strategies (most-recent and priority coding) affect the response rates in the ESS and which response rates the national teams arrived at with their own coding strategy (using the officially reported final dispositions in ESS, 2003).

We calculated the response rates using the following AAPOR rates: RR1 for the overall response rates, CON1 for the contact rates and COOP1 for the cooperation rates (AAPOR 2011). Missing case outcomes were assumed to be eligible. The same response rate formula was used, whether the final disposition codes were derived from the cross-national contact forms by means of priority or most-recent coding or the final dispositions were provided by the country teams (country coding).

Figure 2: Response rates across countries by coding strategy

Figure 2 shows differences in response rates across coding strategies in ESS countries. The x-axis indicates the response rates calculated with the final dispositions provided by the country teams. It is the baseline to which we compare the rates that we calculated by means of the cross-national contact forms data. + denotes the difference in response rates between the countries' disposition codes and those we derived by means of priority coding, while X denotes the difference in response rates between the countries' disposition codes and those derived by means of most-recent coding. Priority coded rates (+) and most-recent coded rates

(X) are thus displayed as deviations from baseline of the rates based on the national final disposition codes.

The differences in overall response rates between priority and most-recent coding are marginal. Yet, this was to be expected, since response rates can only differ if the number of ineligibles or interviews differs across coding strategies. Nevertheless, some agencies reported final disposition codes for their cases that lead to higher overall response rates. The largest difference is found in Germany, where the response rate is approximately 4 percentage points higher when Germany's own distributions are used. This can be explained by the German survey agency employing a different definition of eligibility in round 1. Other countries that derived case outcomes leading to slightly higher response rates were Greece, Italy, Luxembourg, Poland, and Spain. Conversely, the outcome codes provided by Slovenia yield a 1 percentage point lower response rate.

While only small differences in rates are found for overall response, most-recent coding yields a consistently lower contact rate, while priority coding reveals a consistently lower cooperation rate across all countries examined. Interesting is the comparison of these rates with those calculated by means of the case outcomes provided by the national survey agencies. The agencies' contact and cooperation rates tend to not correspond with the rates calculated by means of either priority or most-recent coding. For example, the country contact rates lie somewhere in between the priority and the most-recent coded contact rates in seven countries, they are higher in four countries and lower than either most-recent or priority coded rates in two countries. Only in Poland and the UK is the country contact rate almost the same as the priority coded contact rate, and only in Greece is the country contact rate almost the same as the contact rate calculated by means of the most-recent case outcomes. Similarly, the cooperation rates vary across countries.

In countries where considerable numbers of cases are re-issued the coding strategy chosen has a sizeable impact on the rates reported. In an analysis of nonresponse bias in round 1 of the ESS, Billiet, Philippens, Fitzgerald, and Stoop (2007) find large numbers of refusal conversions in Austria, Germany, the UK, and the Netherlands. In all of these countries but Austria, we also find sizeable differences in contact and cooperation rates depending on the coding strategy chosen. This supports our finding that re-issued cases are especially vulnerable to the strategy chosen to code non-final call outcomes into final dispositions.

Discussion and Conclusion

Response rates play an important role in assessing the representativeness of a survey sample. In addition to overall response rates, we typically report contact and cooperation rates (or refusal rates) to document some of the traits of the achieved sample.

In this article we showed that contact and cooperation rates may to some extent be artifacts of the strategy chosen to code the outcomes of sequences of contact attempts into final dispositions. Especially, where considerable refusal conversion efforts are undertaken – as is the case in many large-scale data collections – the coding has an impact on the outcome rates.

Deriving of final case outcomes thus plays an important role when comparing contact and cooperation rates, and to a lesser extent also overall response rates, across surveys. We looked into the final dispositions reported on the first round of the ESS and found sizable differences across coding strategies for several countries. For example, in Germany the agency's own coding strategy led to 4 percentage points higher overall response rate. In the UK, a most-recent coding strategy would have yielded a 6 percentage points higher cooperation rate than priority coded final dispositions. And while Greece and Norway had quite comparable contact rates according to their own coding strategies (97%) the priority

coded contact rates in the two countries differed by two percentage points (98% in Greece and 96% in Norway). In surveys like the ESS, where maximum non-contact rates are set at 3%, differences in calculated contact rates of a few percentage points are important to the survey organizations.

The reported natural experiment occurred in the first round of the ESS. The survey methodologists working on the ESS quickly acknowledged the problem presented in this paper. As a consequence, from round 2 onwards the ESS gave additional instructions to its country teams on how to code the sequences of contact attempts into final dispositions (e.g. Billiet & Pleysier, 2007; Matsuo, Billiet, Loosveldt & Malnar, 2010). Moreover, the ESS makes available the full contact protocol data for all countries, thus enabling researchers to derive final dispositions and conduct comparative nonresponse analyses (e.g. Kreuter & Kohler, 2009; Stoop, Billiet, Koch, & Fitzgerald, 2010; Blom, de Leeuw, & Hox, 2011; Lipps & Pollien, 2011; Blom, 2012). However, outside the ESS standards for deriving final dispositions are far to be sought. The results presented exemplify how, in dearth of official standards, in-house practices by survey organization affect the comparability of response rates.

This article aims to draw attention to the importance of standardizing the coding of call outcomes in order to achieve comparative response, contact and cooperation rates. Currently, the AAPOR (2011) *Standard Definitions* provide little assistance regarding standards for coding call outcomes and documentation. However, in times when outcome rates play such an important role for journals and funding agencies we need to ensure that differences in response rates are not simply artifacts of an undocumented coding strategy.

We recommend the adoption of priority coded final dispositions as a standard across surveys and countries. In addition, it should be standard practice to document the adopted coding strategy when reporting response rates. We vote in favor of priority coding instead of

most-recent coding, because priority coded outcomes most accurately reflect the *de facto* outcome of fieldwork and associated data quality aspects. The priority ranking depicted in Table 1 is suitable for most face-to-face surveys of individuals. Other data collection modes and surveys on other units of analysis (e.g. households), however, might need to adapt the ranking for their purposes. Such standardization and documentation should ensure that differences across surveys in contact and cooperation rates reflect actual differences in fieldwork and sample composition.

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Table 1

Priority ranking of response outcomes

Call outcomes		Final disposition codes	
interview	completed	interview	completed
interview	broken off / incomplete tbc at later date	refusal	interview broken off / never completed
interview	broken off / incomplete not tbc	refusal	interview broken off / never completed
interview	undefined	refusal	interview undefined, no record in main data
ineligible	not residential / institution	ineligible	not residential / institution
ineligible	not residential / business	ineligible	not residential / business
ineligible	not yet built	ineligible	not yet built
ineligible	derelict	ineligible	derelict
ineligible	not occupied	ineligible	not occupied
ineligible	not traceable	ineligible	not traceable
ineligible	other	ineligible	other
ineligible	undefined	ineligible	undefined
contact	respondent deceased	ineligible	respondent deceased
contact	respondent moved abroad	ineligible	respondent moved abroad
contact	refusal by respondent	refusal	refusal by respondent
contact	refusal by someone else	refusal	refusal by someone else
contact	appointment made with respondent	refusal	appointment with respondent, never realized
contact	appointment made with someone else	contact	appointment with someone else, never realized
non-contact	broken appointment	refusal	broken appointment
contact	mentally / physically unable	contact	mentally / physically unable
contact	language barrier	contact	language barrier
contact	unavailable throughout fieldwork period	contact	unavailable throughout fieldwork period
contact	temporarily unavailable	contact	temporarily unavailable
contact	other eligible contact no interview	contact	other eligible contact no interview
contact	undefined	contact	undefined
contact	respondent moved, still in country	non-contact	respondent moved, still in country
non-contact	respondent / household moved, new address	non-contact	respondent / household moved new address
non-contact	at home but no answer	non-contact	at home but no answer
non-contact	nobody at home	non-contact	nobody at home
non-contact	no access to housing unit	non-contact	no access to housing unit
non-contact	other	non-contact	other
non-contact	undefined	non-contact	undefined
missing	call outcome missing	missing	case outcome / all call outcomes missing

Notes.
- For each sample unit the call outcome with the highest ranking on the hierarchy determines the final disposition code.
- The first column ranks the priority of call outcomes, with the top category displaying the outcome with the highest priority and the bottom category that with the lowest priority. Column two lists the respective final disposition codes.
- In the process of deriving final disposition codes from call outcomes, the label of an outcome code might need to be changed. For example a call-level outcome 'appointment' that is not followed up by an 'interview', becomes a 'broken appointment' (i.e. an implicit refusal) in the final disposition code. The same change in labeling takes place when deriving case outcomes by means of most-recent coding.
- Ineligibles and interviews, which both have final call outcomes that can directly determine the case outcome, are nevertheless included in the hierarchy and derived from the call-level outcomes. The reason for this is that the ESS contact forms do not explicitly distinguish between final and non-final call outcomes and in-office case outcomes. As a consequence, interviewers were able to register another contact attempt after a final call outcome (e.g. interview or ineligible).

Table 2

Aggregate final disposition codes: most-recent versus priority coding

Final disposition (most-recent coding)	Final disposition (priority coding)						Total
	Interview	Ineligible	Refusal	Other contact	Non-contact	Missing	
Interview	31,447	0	0	0	0	0	31,447
Ineligible	0	2,083	0	0	0	0	2,083
Refusal	0	35	12,332	0	0	0	12,367
Other contact	0	11	407	2,353	0	0	2,771
Non-contact	0	27	866	403	3,382	0	4,678
Missing	0	0	8	10	4	106	128
Total	31,447	2,156	13,613	2,766	3,386	106	53,474

Notes. Aggregate numbers for the disposition categories interview, ineligible, refusal, other contact, non-contact and missing outcome across 16 countries. The counts were adjusted for cases where the interviewer failed to record an interview outcome in the call-record data but interview data were available.
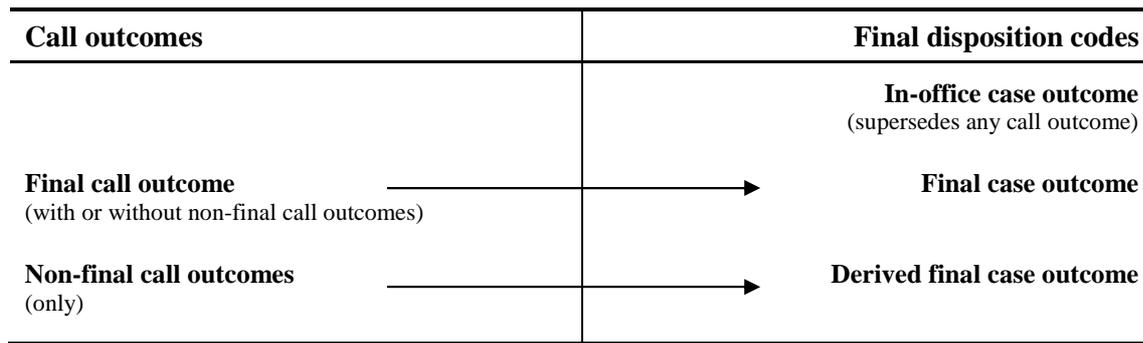
Call outcomes	Final disposition codes
	In-office case outcome (supersedes any call outcome)
Final call outcome (with or without non-final call outcomes) ————————→	**Final case outcome**
Non-final call outcomes (only) ————————→	**Derived final case outcome**

FIGURE 1.   Deriving final disposition codes from contact data
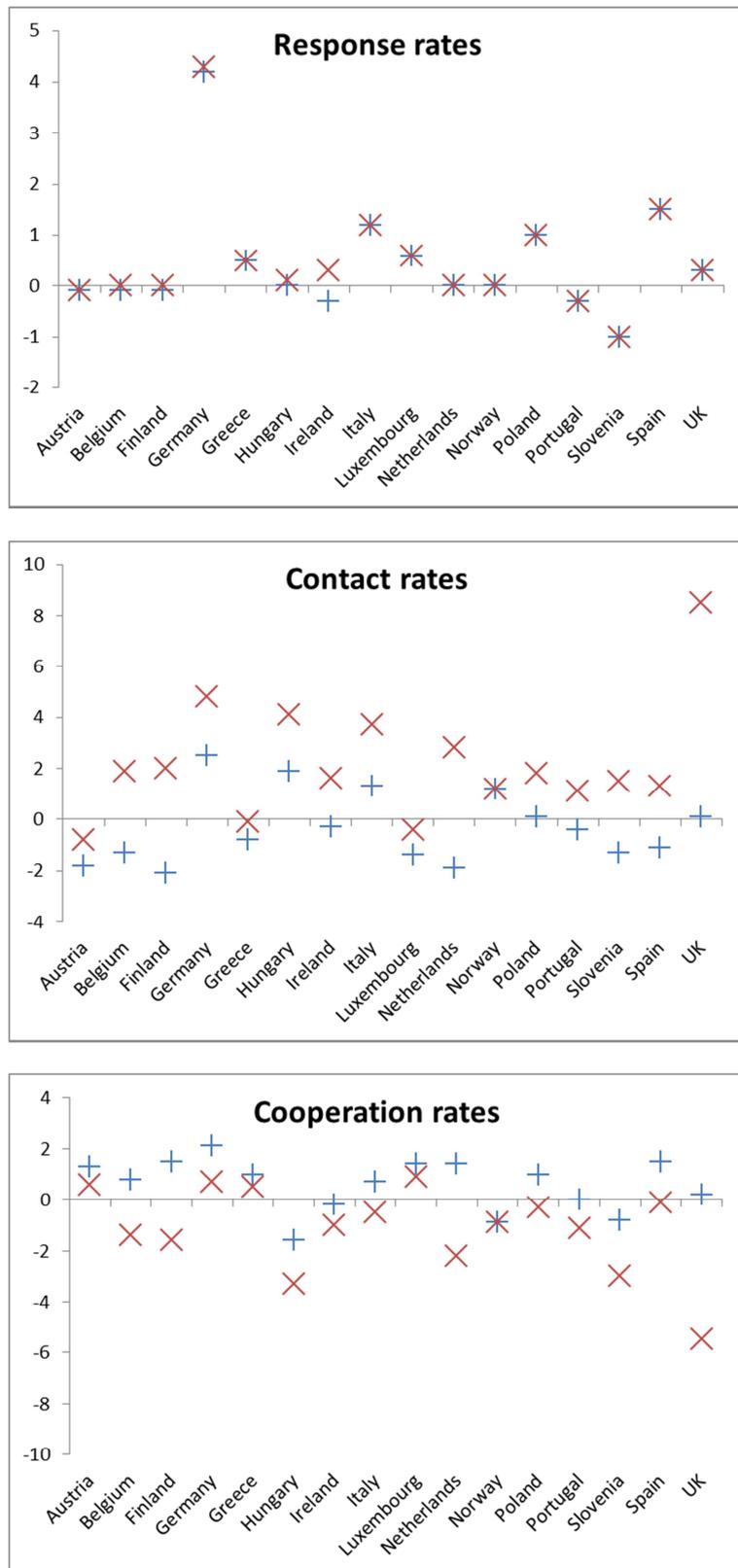
FIGURE 2.   Differences in response rates across countries by coding strategy. Notes. The x-

axis denotes the outcome rates derived from the final dispositions provided by the countries.

+ Δ country coding – priority coding, X Δ country coding – most-recent coding.

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[1] The 16 countries assessed are Belgium, Germany, Finland, Hungary, Norway, Poland, Slovenia, Austria, Spain, UK, Greece, Ireland, Italy, Luxembourg, Netherlands, and Portugal. Norway did not provide detailed outcomes of the interview, non-contact and ineligible codes; the smaller differences between the priority and most-recent coding might be due to this.