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Public opinion without opinions? Item nonresponse and (the absence of) substantive opinions in public opinion surveys

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CHAPTER 5

The Don't Know Option

5.1 Introduction

This chapter describes the first in a series of three survey-experiments as part of a research project which looks at the effects of question design regarding non-substantive response options on survey outcomes, in particular in internet or web surveys. “As far as *web surveys* are concerned, a deeper investigation is needed on the relationships between the questionnaire characteristics and the response patterns” (Ganassali, 2008, p. 22; see also Couper et al., 2001; Dillman, 2007;). In this chapter the focus is on the effects of different ways of offering the DK option. The research question is: *How does the ‘Don’t Know’ option affect the outcome of specific questions and a survey or poll as a whole?* This question will be answered with data from the LISS panel, collected in 2012 by conducting a survey experiment. All other variables are held constant except for the variable of interest, the DK option¹⁶.

5.2 Theoretical Reflection

The DK option is a generic category for respondents who are not able or willing to give an answer, i.e. a substantive answer, to a closed-ended survey question. In this experiment the aim is to explore and analyze what the level of (item) nonresponse is for four different versions of a questionnaire and whether significant differences can be found both with respect to the way this DK option is offered and as regards the topics that are being addressed in the survey questions. All survey questions included in the experiment concern attitudes.

The debate on non-substantive answers and how to handle this problem is old but not yet concluded. There is still disagreement in the literature about how best to handle non-substantive answers, i.e. item nonresponse, for opinion and attitude questions (see e.g. Gilljam & Granberg, 1993; Heerwegh & Loosveldt, 2008; Krosnick et al., 2002; Leigh & Martin, 1987). In practice, respondents are usually encouraged to give their opinion: “The typical practice - what we shall call the *standard question form* - is not to include a DK alternative as part of a question” (Schuman & Presser, 1996, p. 113). Schuman and Presser (1996) state that only spontaneous DK answers are registered in this standard practice; an explicit DK is not part of the response categories. The reason is that researchers want to increase their item response rate and collect as many substantive responses as possible.

Some scholars differentiate between reasons for using a non-substantive response option, e.g. lack of information, or a polite refusal to a difficult or sensitive

16 A pilot experiment was conducted among high school students (see Van de Maat, 2009).

question (Bradburn et al., 2004, p. 353), but such a distinction is not made here. The question why respondents use a DK option is relevant but empirically very difficult to analyze. More importantly, the aim in this study is to look at levels of item nonresponse and the resulting picture of public opinion regardless of the reasons for these non-substantive answers. The quantity and not the quality of item nonresponse is examined here. In this experiment the aim is to analyze what the level of item nonresponse is for each version of questionnaire and whether significant differences can be observed. People may give a DK answer for various reasons, but here the aim is first and foremost to establish general *levels* of item nonresponse and not to differentiate. The additional analysis of response time in this chapter may, however, give some indication why respondents use a DK option.

5.3 Hypotheses

In chapter 3 several hypotheses were developed. These hypotheses are summarized in Table 5.1.

Table 5.1: Hypotheses

Question design	H1a	H1a: The more explicit a non-substantive response option is presented, the more item nonresponse will be measured
	H1b	A filter question results in more item nonresponse than an explicit DK option
Missing data	H2a	(Based on MAR) An increase of the level of missing data does not affect the distribution of opinions
	H2b	(Based on NMAR) An increase of the level of missing data results in a different distribution of opinions
Question content	H3a	If the topic of a survey question is related to a major political dimension, then the item nonresponse is lower compared to a survey question that is not related to such a dimension
	H3b	The item nonresponse for questions about foreign policy issues is higher than for questions about issues related to the core dimensions
Response categories	H4a	The more substantive response categories are offered, the lower the item nonresponse rate
	H4b	A midpoint in the absence of a non-substantive response option results in more use of this midpoint option than when a non-substantive response option is offered
	H4c	A midpoint combined with a non-substantive response option results in less item nonresponse as compared to offering no midpoint category
Response time	H5	The more explicit the DK option is presented, the less response time will be registered
Break-offs	H6	When respondents are forced to answer survey questions, the number of break-offs is higher than when a non-substantive response option is available

5.4 Data and Methods

For the first experiment, the LISS Panel, Longitudinal Internet Studies for the Social sciences¹⁷, was used. This panel forms the core of the Measurement and Experimentation in the Social Sciences (MESS) project; it was funded between 2007 and 2014 by the Netherlands Foundation for Scientific Research (NWO) to give

17 www.lissdata.nl for a description of the panel and examples of previous experiments which have used this panel. The LISS panel is administered by CentERdata (Tilburg University, the Netherlands). The author would like to thank the LISS panel for their support and assistance in setting up and executing the survey experiment.

researchers the opportunity to collect data via surveys. On average, 73 percent of the panel members complete the questionnaires. See section 4.3 for a more extensive description of the LISS Panel characteristics.

The large N of the LISS panel allows to divide respondents into subgroups which were subjected to one particular question design and stimulus (see Table 5.2 below) and to subsequently compare the data. The full panel was targeted, with random selection of the four distinct groups for the various treatments.

The general instruction of the questionnaire read that the respondents were asked to give their opinion on issues in the poll or survey. Scales for self-placement were placed horizontally while the response categories of the other options were ranked vertically. The experiment was carried out between February 1st and February 29th 2012; respondents were given a month to complete the questionnaire.

Table 5.2 contains descriptive statistics of the sample and subgroups to check the comparability of the subgroups and the representativeness of the sample. Overall the subgroups did not differ from each other. The only exception is a small but statistically significant difference between subgroups in terms of gender – see table C.1. in the appendix. On average 47 percent of the respondents was male, but in subgroup 3 they made up 50 percent of the subsample. The average age of the respondents was 49.9 years with no significant difference between subgroups. In terms of the highest level of education, the subgroups also were similar with no significant difference between groups. The average monthly individual income of the household member filling in the survey was 1,495 euro. There was no significant difference in income found between subgroups.

Table 5.2: Descriptive Statistics Subgroups LISS Panel

		1. Double Explicit DK	2. Single Explicit DK	3. Single Implicit DK	4. Forced choice	Total
Gender*	Male	45%	46%	50%	46%	47%
	Female	55%	54%	50%	54%	53%
Age (years)	Mean	49.7	50	49.7	49.8	49.9
	SD	17.3	17.3	17.3	17.0	17.3
Education	Basisonderwijs	10%	10%	9%	10%	10%
	VMBO	26%	25%	26%	26%	26%
	Havo/VWO	11%	12%	11%	11%	11%
	MBO	22%	23%	24%	22%	23%
	HBO	22%	23%	23%	23%	23%
	WO	9%	8%	8%	8%	8%
Income (Euros/month)	Mean	1426	1494	1609	1456	1495
	SD	1030	2937	5156	2086	3149
N		1468	1464	1375	1421	

* Any pair-wise comparison with variant 3 is significant at the 0.05 level

Gender: percentage of the sample that is male or female.

Age: Average age in years, with respondents being 16 and older.

Education: Highest level of education completed, recoded into CBS categories.

Income: Average individual income of the household member.

The overall similarity of the subgroups is important to make comparisons between the variants. The comparability of the sample as a whole with the population is less important, since it is an experiment with a between-subjects-design and the key conclusions are drawn after comparing the four subgroups. In order to be able to generalize the findings to the general population, however, the sample should not differ too much from this population. Comparing the sample with the population is problematic, however, due to the lack of population data. Statistics Netherlands (CBS)¹⁸ offers information about the population, but these figures are not directly comparable to the sample¹⁹. Nevertheless, based on the random sampling method, it is assumed that the sample is comparable to the population and that generalization to this population is possible.

¹⁸ Statline.cbs.nl with data from 2011.

¹⁹ According to CBS, 49.49 percent of the population is male. The average age of the population is 40.3 years, but this includes people who are younger than 16 and these are not included in the LISS Panel. 6% of the population finished Basisonderwijs, 20% VMBO, 42% HAVO/VWO & MBO, 21% HBO and 11% WO. Finally, the average income for the population as a whole is 22,300 euro a year including social security payments, welfare, wages, holiday pay and bonuses.

Table 5.3: Response Rates

Variant	Number of Respondents	Response Rate – Unit	Number of Items in Questionnaire	Average Item Nonresponse
1. Double explicit DK	1468	78%	14	16%
2. Single explicit DK	1464	78%	14	14%
3. Single implicit DK	1375	73%	14	1%
4. No DK, forced choice	1421	76%	14	X
<i>Total</i>	<i>5728</i>	<i>76%</i>	<i>14</i>	

Table 5.3 presents some characteristics of the experiment, including the unit (non)response rate and the average item nonresponse rate of each variant of the questionnaire. Out of the 7,517 individual members of the LISS panel, 5,728 participated in the experiment, i.e. an average unit response rate of 76 percent, with rates ranging from 73 to 78 percent for the individual variants. All respondents answered 14 items relevant for this experiment in their respective variant of the questionnaire.

The questions covered a range of topics. Five general themes were addressed and each theme included three questions of which at least one question came from existing research – see section 4.4 for more information about issue selection. The aim of this part of the experiment is to compare between themes, but also within themes. For the socio-economic theme, for example, there are differences expected between the general ‘income differences’ question versus the at that time discussed particular issue ‘old-age pension’.

The stimulus in the survey experiment is a ‘Don’t Know’ (DK) response category which was offered (1) explicitly in both the question wording and as a response alternative; (2) not mentioned in the question wording but explicitly offered as a response alternative; (3) not mentioned in the question wording nor as an explicit response alternative, but with the possibility to skip the question without giving a substantive answer; and finally (4) not mentioned in the question wording nor as an explicit response alternative, and with no possibility to skip the question without giving any substantive answer²⁰. This final forced choice variant is often used in

20 The ways the DK option was offered would be labelled as DK encouraging and DK neutral by Luskin and Bullock. In order to examine the effects of several DK designs on the measurement of political knowledge, Luskin and Bullock (2011) applied three ways of offering a DK option: 1) DK discouraging with no explicit DK option and a probe to get more substantive answers; 2) DK encouraging with an instruction to give a DK answer when unsure and an explicit DK option; and 3) DK neutral. In this survey experiment, no variant was used where the respondent was probed for a response, since this is uncommon in standard web surveys.

'interactive self-administered surveys' (Derouvray & Couper, 2002). The number and choice of answer categories was replicated from the original questions and not altered in any way; only the DK option was manipulated. The DK option was the only available non-substantive response option; no comparison was made between the use of either Don't Know or No Opinion as a means to register non-substantive answers.

Table 5.4 shows the four versions of the questions/questionnaire (see Appendix AI for the full questionnaires). And by way of illustration, Figure 5.1 shows the variations of a survey question, depending on the variant offered to the respondent. The parts in italics vary.

Table 5.4: Overview of DK Alternatives ^{a)}

Type of question	DK alternative offered?	
	in question wording	as response alternative
1. Double explicit DK	+	+
2. Single explicit DK	-	+
3. Single implicit DK	-	±
4. No DK	-	-

a) In the single implicit DK alternative there is no explicit DK response category, but it is possible to skip the question without giving any answer; in the No DK alternative there is no DK response possible and it is not possible to continue with the questionnaire without giving an answer to the question.

'Some people think that euthanasia should be forbidden by law. Others feel that a doctor should always be allowed to end a life, if the patient makes that request. Of course, there are also people whose opinions lie somewhere in between. Suppose that the people (and parties) who think that euthanasia should be forbidden are at the beginning of this line (at number 1), and the people (and parties) who feel that a doctor should always be allowed to end a life upon a patient's request are at the end of the line (at number 7).

Where would you place yourself on the line? *If you have no idea at all which position a party has, then please feel free to say so.*

1. Euthanasia should be forbidden.
- 2 - 6
7. A doctor should always be allowed to end a life upon a patient's request.
99. *Don't Know*

Figure 5.1: Survey Question Variations

5.5 Results

In this section, the results are presented of the survey experiment in which a DK option was manipulated. The presentation of results is structured according to the hypotheses, starting with an analysis of item nonresponse. This analysis includes both the number of times the DK option was used and the registered time to answer the question. After that, the relation between missing data and the overall distribution of opinions is examined, followed by an inventory of differences between question content and number of response categories.

5.5.1 Item Nonresponse

Figure 5.2 shows the average item nonresponse for the complete questionnaire for the four question variants.

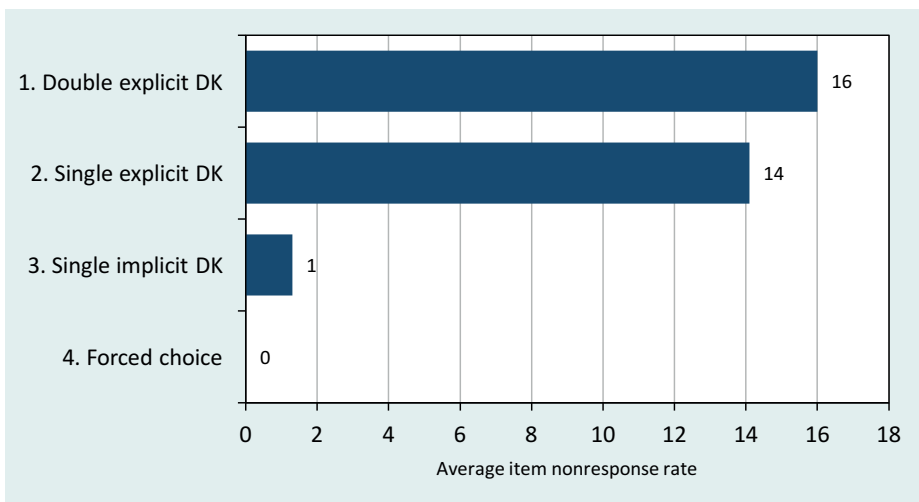


Figure 5.2: Average Item Nonresponse Rate (in Percentages)

Figure 5.2 shows the average item nonresponse rate of the four questionnaire variants; all respondents answered 14 items and the variants only differed with respect to their DK option. There is a substantial difference between variants explicitly offering a DK option, i.e. variant 1 and 2, and variant 3 which made item nonresponse possible by skipping the questions, but did not offer this option explicitly as part of the question. Despite the explicit instruction at the start of variant 3 that skipping questions was possible, this option was not used often. The instruction was given because the respondents of the LISS panel are usually not

given this option and would therefore probably not consider it an option. This could be the reason the respondents did not skip questions often, as they might not have been aware the option existed. The instruction was given in the introduction of the questionnaire.

In variant 1 respondents were twice pointed to the possibility of using a DK option, by explicitly mentioning the DK option in the question and as a response category, as opposed to only a DK response category in variant 2. The difference in average item nonresponse rate is 2 percent between variant 1 (16 percent) and 2 (14 percent). To test whether the difference in item nonresponse rate was statistically different, a t-test was executed; the difference is small but statistically significant at the .001 level²¹. The main difference exists, however, between both these explicit DK variants and the implicit or forced choice variants 3 and 4. When respondents could skip a question but were not reminded of that option (variant 3), the item nonresponse rate dropped to 1 percent. These overall results show that the way a DK option is offered has a significant and substantial influence on item nonresponse, as stated in H1a. Offering a DK option more explicitly results in more item nonresponse; note that offering such an option explicitly once already makes a major difference.

In Table 5.5 the item nonresponse for all individual items in the explicit and implicit DK variants are shown; the forced choice variant is not included, since here respondents by design could not use a non-substantive response option.

All individual items show a large difference between the variants explicitly offering a DK option and the single implicit DK version. The item nonresponse of all items in variant 3 is significantly (at the .001 level) and substantially lower than for the same items offered with an explicit DK option. The highest level of item nonresponse in version 3, which is for the UN item, amounts to 4 percent; this would rank amongst the lowest level of item nonresponse in variant 1 and 2.

The difference in item nonresponse between the implicit and explicit DK variants is highly significant (as indicated by .001 significance levels of all comparisons with implicit DK variant 3) with consistently lower item nonresponse measured for all individual items in the implicit DK variant. This is in line with hypothesis H1a: offering a (non-substantive) DK option more explicitly results in more item nonresponse. At least this is the case when comparing variants which offer DK as an explicit response category with a variant which offer an implicit DK option by giving the respondent the opportunity to skip questions. The

21 In addition to the t-test, a negative binomial regression was performed with the number of non-substantive answers as a dependent variable, to account for the fact that the data are not normally distributed. The results were almost identical to the t-test.

Table 5.5: Item Nonresponse (%) of Individual Items

Question	1. Double Explicit DK	2. Single Explicit DK	3. Single Implicit DK	Significance Paired Comparisons		
				1 / 2	1 / 3	2 / 3
Self-placement Income Differences	7	5	0	.094	.000	.000
The old-age pension age should be preserved at 65	7	6	0	.247	.000	.000
The welfare benefits should be lowered in order to stimulate people to work	13	11	1	.044	.000	.000
Self-placement Euthanasia	3	4	1	.755	.000	.000
Adoption by same-sex couples should be possible	12	11	1	.374	.000	.000
It is right that women can freeze their ova to be able to have children at a later age	18	17	1	.321	.000	.000
Self-placement Foreigners	2	2	0	.627	.000	.000
There are too many people of a non-Dutch nationality living in the Netherlands	16	12	1	.012	.000	.000
All people living in the Netherlands illegally for a long time should be allowed to stay here	14	13	2	.466	.000	.000
Self-placement EU	12	10	1	.202	.000	.000
The Netherlands should spend more money on developmental aid	13	12	1	.379	.000	.000
The United Nations has too little power	39	35	4	.082	.000	.000
The Queen can only communicate governmental policies towards journalists	35	29	2	.001	.000	.000
Are you pro or con surrogate motherhood?	33	29	2	.029	.000	.000
N	1468	1464	1375			

Item Nonresponse is measured as a percentage of the total number of respondents not responding to a certain survey item by using the DK option (in variant 1 and 2) or skipping the question (in variant 3).

Significance Paired Comparisons shows the significance level of the differences in item nonresponse between two questionnaire variants.

inclusion of a DK option as an explicit response category results in significantly more item nonresponse than when an implicit DK option is provided.

The effect of an explicit DK option is, however, less clear-cut when the two explicit DK variants (1 and 2) are compared. Out of a total of fourteen items in Table 5.5, ten do not show a statistically significant difference (at a .05 level) in item nonresponse between the double explicit DK variant 1 and the single explicit DK variant 2. In other words: the number of respondents using a DK option is for most items not affected by mentioning the DK option in the question itself (next to explicitly offering DK as a response category).

One can conclude that only a weak relation exists between mentioning the DK option in the question on top of offering it as a response category and the use of the DK option. The main difference is between offering a DK option explicitly or implicitly. The comparison of explicit DK variants with the single implicit DK variant does show large and significant results, consistent with hypothesis H1a: more item nonresponse is generated when a non-substantive response option is offered more explicitly.

5.5.2 Response Time

The analyses above do not disclose any reasons for using the DK option; an analysis of the response time may give an indication how the DK option is used. If variants with an explicit DK option are answered significantly quicker compared to variants without such an option (forced choice) or with only an implicit option (skip the question), this may suggest that the DK option is also used as an easy way out to complete the questionnaire as quickly as possible. Here it is expected (in hypothesis H5) that shorter response times indicate that respondents in web surveys are using the DK option as a short-cut, by taking less time to formulate a response to the survey question and using the DK option as an easy way out (see e.g. Greszki, Meyer, & Schoen, 2014, 2015; Malhotra, 2008; Yan & Tourangeau, 2008; Zhang & Conrad, 2013).

For each respondent in the internet survey experiment the response time in seconds was registered for each question. This enables a number of analyses. First, the differences in total response time per type of questionnaire can be examined to explore whether in explicit DK variants less response time is registered than in other variants. Secondly, the average response time of individual questions can be compared to find out whether certain types of questions result in more use of the DK option as an easy way out than other questions; the focus is then on differences between individual questions and question content. This second analysis is included in Appendix B.

For all analyses, the maximum response time for an individual question has been

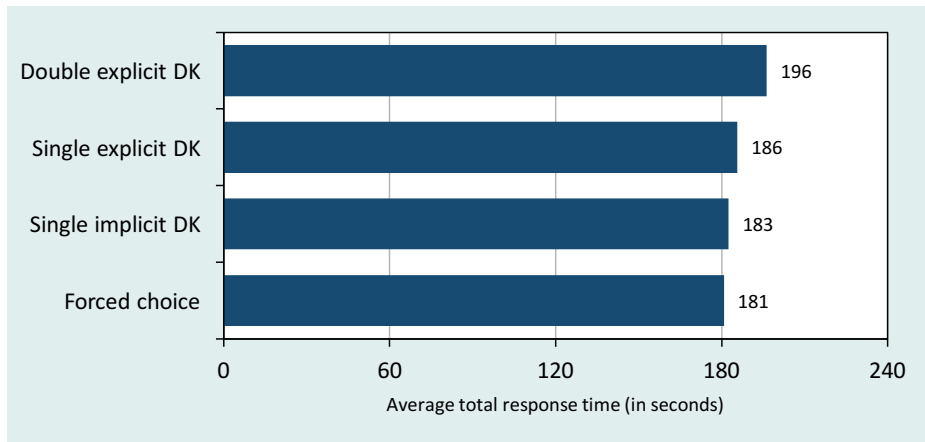


Figure 5.3: Average Response Time per Variant for All Survey Questions

set at 180 seconds and negative values were excluded²². Most respondents, however, spent much less time on answering individual survey questions than the maximum of 180 seconds. Figure 5.3 shows the response time of the average respondent for the *total* number of questions, compared between the four variants of the questionnaire. The introduction is not included in the total response time analysis, since it was held constant for all questionnaires. It took the average respondent between 181 and 196 seconds to complete the questionnaire.

If DK is an easy way out, the average response time should be lower in the explicit DK variants than in the single implicit DK and forced choice variants. Figure 5.3, however, shows the opposite relation between explicitness of the DK option and

22 There were some anomalies in the data, including negative response times and extremely long response times for individual questions up to 32,341 seconds, which would mean that someone took 539 minutes to answer a single survey question. Negative response times result from opening the questionnaire and/or completing some questions, and returning the next day to finish the survey. The individual response times were calculated by comparing the time the previous question was completed to the completion time of the next question, without including the date: therefore negative values arose. These cases are excluded from the analyses (39 cases). Out of these 39 cases, 26 cases occurred for the first survey question; the respondent read the introduction and opened the questionnaire, but started answering at a later point in time.

The extremely long response times are also very likely caused by respondents pausing at some point and finishing the questionnaire later. Here it is more difficult to establish when a response time is too long; the maximum has slightly arbitrarily been set at 180 seconds per question. Out of 5,728 participants in the study, the response time of 282 respondents (4.92 percent) was excluded from the analysis for one or more individual questions.

response time: the less explicit a DK option was offered, the lower the response time. The average total response time was 196 seconds for the double explicit DK variant, 186 seconds for the single explicit DK, 183 seconds for implicit DK and 181 seconds for the forced choice variant. The response time in the double explicit DK variant is significantly higher than the response time of the other variants²³; the other questionnaire variants do not differ significantly from each other. So offering a DK option does not seem to result in quick DK answers as an easy way out. To the contrary: more time is spent and arguably more thought is given to the questionnaire in variants where not giving an answer is an (explicit) option. What the response time analysis strongly suggests is that, contrary to hypothesis H₅, the DK option is not used as an easy way out, since that would result in shorter response times rather than the longer response times that were observed.

5.5.3 The Overall Distribution of Opinions – Towards Public Opinion

There are two elements important in the examination of the link between question design and survey outcomes: 1) the level of item (non)response which reflects whether respondents actually give a substantive answer; and 2) the actual overall outcome in terms of minorities and majorities as part of public opinion. This second aspect is the focus of this section: how are opinions distributed and is this distribution affected by question design regarding non-substantive response options?

Figure 5.4, Figure 5.5, Figure 5.6 and Figure 5.7 present the distributions of opinions of four survey items. In this section, item nonresponse is treated as missing data and excluded from the findings. The distributions of opinions of all survey items and the significance tests (of the differences between questionnaire variants) can be found in Appendix C.

Does the way a DK option is offered change the resulting overall picture of public opinion? The short answer is no. When item nonresponse is excluded (i.e. missing data), the resulting distributions of opinions and overall public opinion show hardly any substantive differences. Despite some statistically significant between-variant-differences, the response option preferred by most respondents barely varies – see Table C.2 and Table C.3 in Appendix C.

The effect of the DK option on the distribution of opinions is weak or even non-existent, for both self-placement items and other survey items. For example,

23 A pairwise comparison with a t-test shows significant differences in average response time between the double explicit DK and single implicit DK and the double explicit DK and forced choice variants (at the .001 level). The double explicit and single explicit DK variants differ significantly at the .005 level. Other comparisons (between single explicit and single implicit DK, single explicit DK and forced choice, single implicit DK and forced choice) do not show significant differences in average response time.

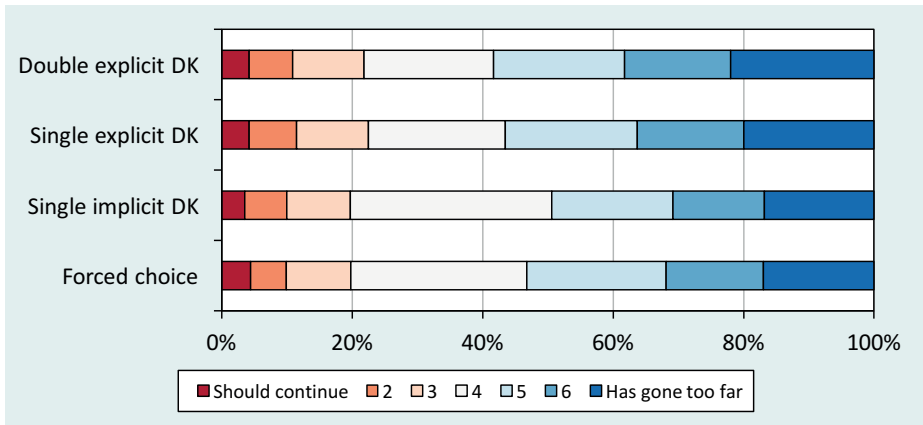


Figure 5.4: Distribution of Opinions Self-Placement European Unification

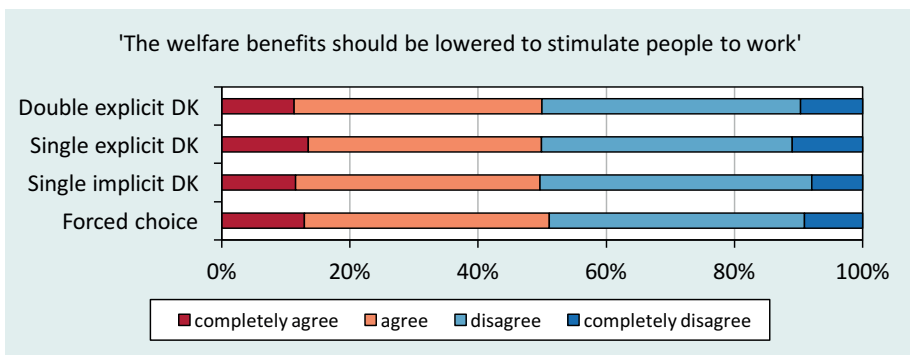


Figure 5.5: Distribution of Opinions Lowering Welfare Benefits

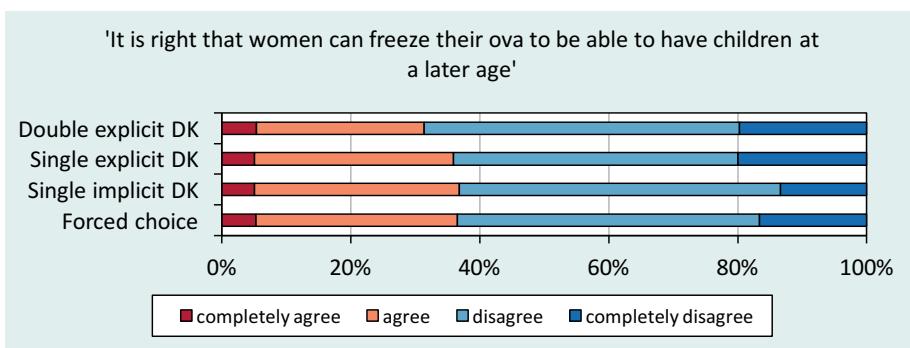


Figure 5.6: Distribution of Opinions Ova Freezing

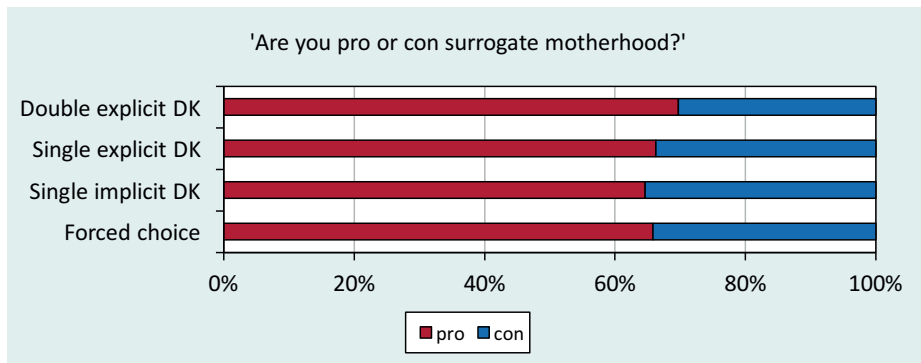


Figure 5.7: Distribution of Opinions Surrogate Motherhood

a majority of respondents disagrees completely or disagrees with the statement 'it is right that women can freeze their ova to be able to have children at a later age', regardless of which questionnaire variant they were assigned to; the outcome was very similar for the four subgroups (see Figure 5.6). This rather surprising finding supports hypothesis H2a: missing data seem to be missing at random. If the data were not missing at random, significant substantive differences would show for the various questionnaire variants. The overall substantive distributions are, however, robust and the question design effect on overall results is (with item nonresponse excluded as missing data) at best a weak effect.

So would it matter which variant was used if a politician wanted to know what the public wants? For most items the answer to this question is no. The numbers may differ a few percentage points, but this does not change the fact that most respondents think for example it is not right for women to be able to freeze their ova to delay having children (see Figure 5.6) or that most respondents (in all variants) are pro surrogate motherhood (see Figure 5.7). The only times that offering a DK option affects the results and majorities change, are when proponents and opponents are tied. The question about lowering welfare benefits (Figure 5.5), for example, results in about 50 percent of the respondents agreeing and 50 percent disagreeing with the statement. In the forced choice variant, the respondents agreeing with the statement add up to 51 percent, i.e. a (very small) majority that does not show in the other variants and may simply not be a majority given the confidence interval. So it could be argued that such a 'majority' is too small for any politician to use as an indication of what the general public wants, except to argue that the public is divided²⁴.

24 Other survey questions with a tied outcome are non-Dutch nationality and the power of the UN in and .

The preliminary conclusion about the impact of a DK option on the outcome of survey questions is that if item nonresponse is excluded as missing data, the effect is small or even nonexistent. If, however, item nonresponse is included in the distribution of opinions, the picture of public opinion changes substantially, at least for some items. Figure 5.8 - Figure 5.11 display two pictures of public opinion, one excluding DK answers (in variant 1 and 2) and skipped questions (in variant 3) as missing data and the other including item nonresponse as part of the overall outcome. The substantive answers were dichotomized for these analyses. See Appendix C for an overview of all distributions of opinions; the self-placement items are excluded.

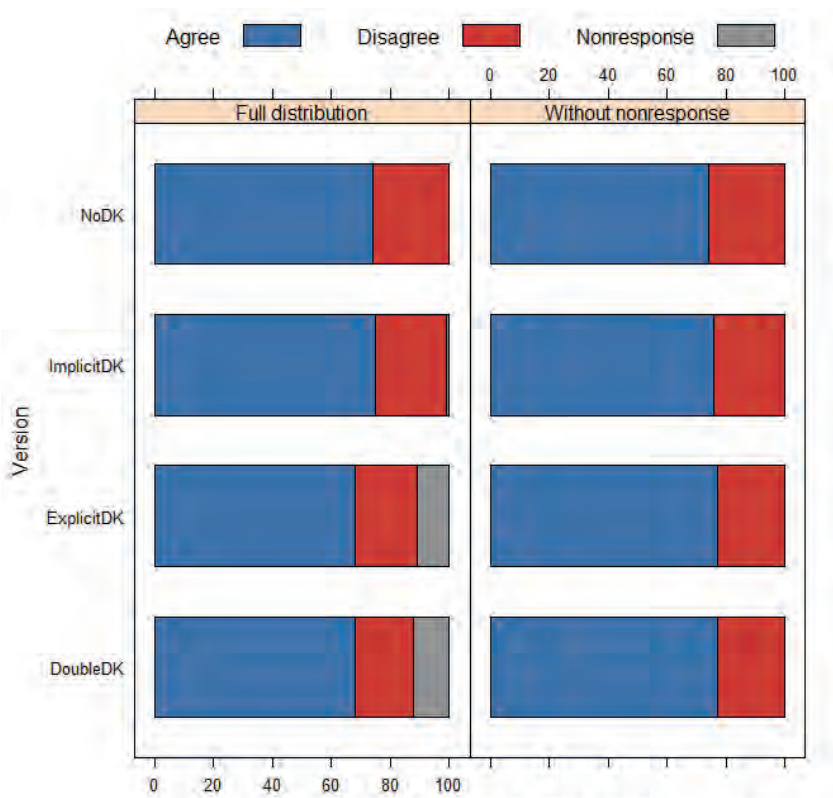


Figure 5.8: Distribution (%) of Opinions *Same-Sex Adoption* With and Without Item Nonresponse

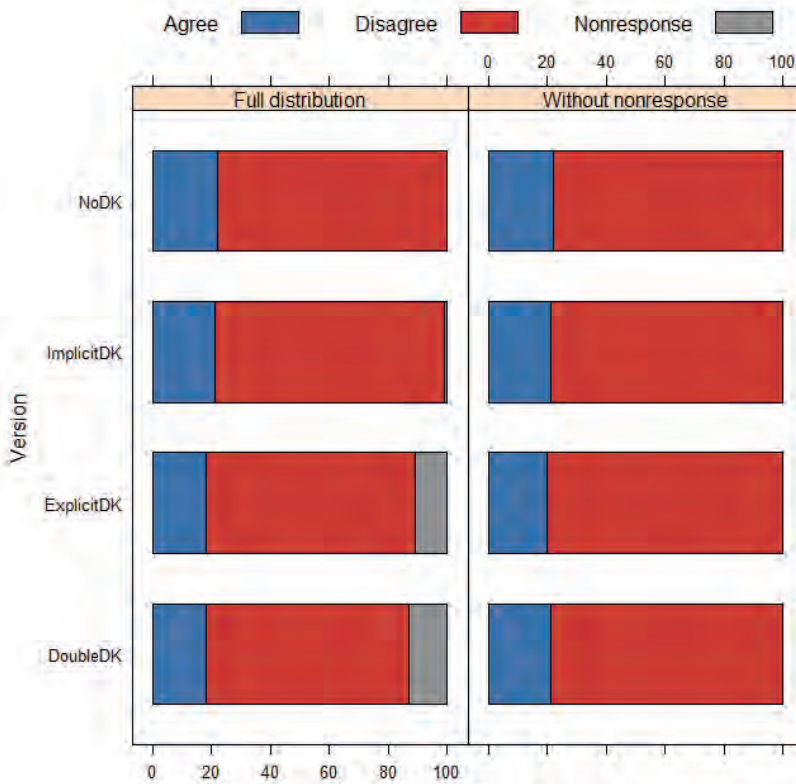


Figure 5.9: Distribution (%) of Opinions *Developmental Aid* With and Without Item Nonresponse

When item nonresponse – i.e. DK answers (in variant 1 and 2) and skipped questions (in variant 3) – is treated as a valid and substantively interesting response category, a number of differences may show between the various variants: 1) the preference of the largest group of respondents, either a plurality or majority, is not the same in all four variants; 2) the preference of the largest group of respondents is the same in all four variants, but it is not supported by a majority in all variants; and 3) in some subgroups the response category used by a plurality of the respondents is the DK option. The first effect is arguably the most interesting but also worrisome, because it means that a different choice of question design regarding non-substantive response options would create a different picture of public opinion. Not only is the extent of the support for a particular policy stance affected, but the actual policy stance itself would appear to be different in at least one of the variants. Such an effect of offering a non-substantive response option is visible in three items. Lowering welfare benefits, too many non-Dutch and too little UN power result in

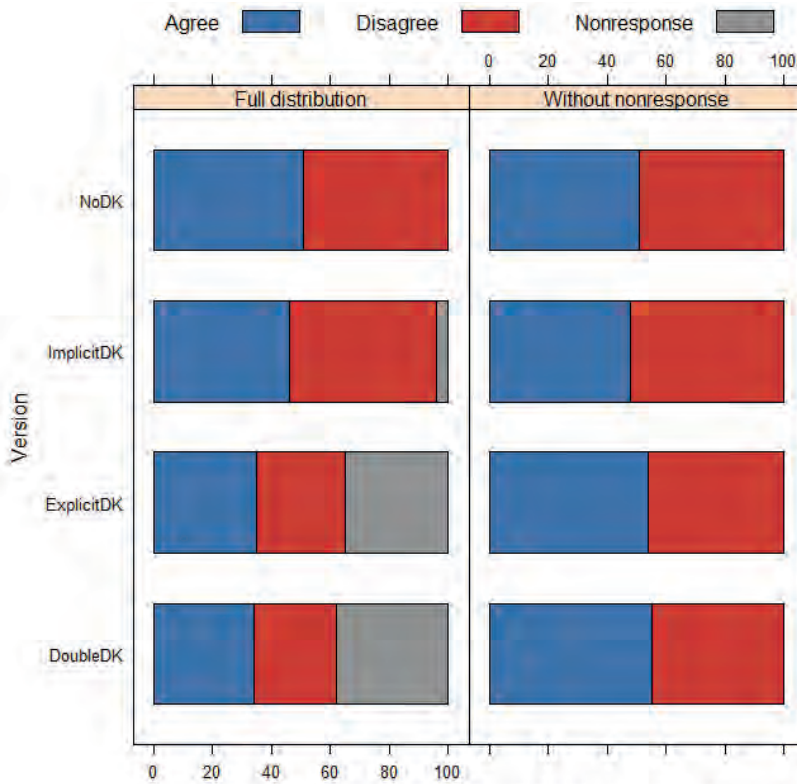


Figure 5.10: Distribution (%) of Opinions *UN Power* With and Without Item Nonresponse

a different preferred policy position, but the preferences are not supported by a majority of the respondents in all variants. For example, most respondents of the single explicit DK and forced choice variants agreed with the statement that the UN has too little power (see Figure 5.10), whereas most respondents of the other two (double explicit DK and single implicit DK) variants disagreed. Only in one (forced choice) variant, however, this most preferred position was supported by a majority of the respondents – with 51 percent. The other pluralities ranged between 34 and 50 percent.

The second effect, i.e. same preferred stance in all variants but with varying degrees of support, is visible in two items: the role of the Queen and surrogate motherhood. Depending on the variant, 47 to 66 percent of the respondents were pro surrogate motherhood (see Figure 5.11). The degree of support corresponded to the registered level of item nonresponse; in (explicit DK) variants with more item nonresponse the level of support for surrogate motherhood is lower.

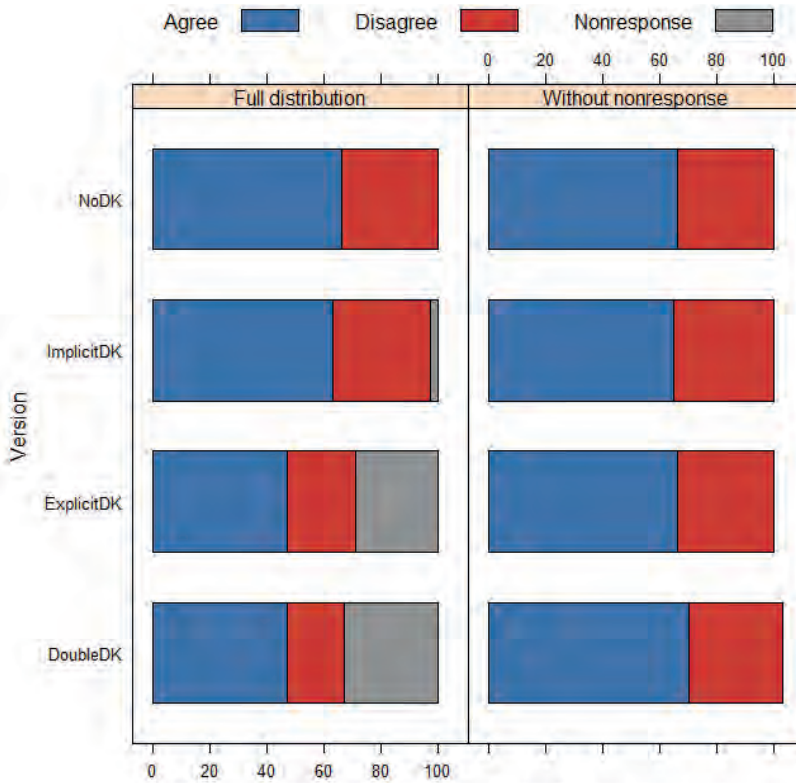


Figure 5.11: Distribution (%) of Opinions *Surrogate Motherhood* With and Without Item Nonresponse

The third effect only appears for the UN power item, where a plurality of respondents of the double explicit DK (38 percent) and single explicit DK (35 percent) variants used the DK option (see Figure 5.10). Together with the fact that the most preferred position is not the same in all variants, the conclusion is that these data make it hard to say what the public thinks about the powers of the UN.

All three categories of differences affect the impression of public opinion and eventually affect the decisions a politician makes based on these pictures of public opinion. It should, however, be noted that for five items no substantial differences are visible between the four questionnaire variants when item nonresponse is included. These items show the same outcome in terms of policy preference, which is supported by a majority of respondents in all four variants. So regardless of whether and how a non-substantive response option was offered, 68 to 75 percent of the various subgroups agreed with the statement that adoption by same-sex couples should be possible (see Figure 5.8). Likewise, 58 to 64 percent of the respondents

of the four variants expressed that the Netherlands should not spend more money on developmental aid (see Figure 5.9). The five items without substantial between-subgroup-differences, which amounts to half of the non-self-placement items included in the questionnaire, indicated the same majority preference for all variants of the questionnaire; the only difference was that the majority was slightly smaller in the explicit DK variants, due to the higher item nonresponse rate.

These subgroup comparisons focused at the differences between the variants when item nonresponse is included as a valid and substantively interesting response category. Another way to look at the effect of non-substantive response options on the distribution of opinions is to compare the distributions with and without item nonresponse. The aim is not to look at the preferred position, but whether a majority remains a majority when item nonresponse is included. If we look at the outcome of the same variant including and excluding item nonresponse, does the picture of public opinion change? Six of the ten non-self-placement items show only a plurality supporting the most preferred position in the explicit DK variants, compared to a majority in the other variants. Depending on questionnaire design, a (clear) majority is visible or just a plurality.

All in all, the conclusions about the effect of offering a DK option (explicitly) on the survey results are twofold: firstly, the substantive effect on the distribution of opinions is rather small or even non-existent when item nonresponse is excluded as missing data; secondly, the statistical and substantive impact on the overall distribution of opinions including a DK response category is more substantial. The main difference is whether DK responses are viewed as substantively valuable information; otherwise, i.e. if item nonresponse is excluded as missing data, the picture of public opinion hardly changes at all. For the resulting distribution of opinions, whether and how a DK option is offered in general does not affect survey results if item nonresponse is excluded. The devil may be in the details, however, which is why the analysis continues with a more detailed comparison of question content.

5.5.4 Question Content

Are some themes more susceptible to question design effects than others? Does question content matter? The hypotheses regarding question content were inspired by two ideas: whether or not an issue ties in with a major political dimension, and whether an issue is related to foreign policy. The analysis of question design effects only looks at item nonresponse; it has been established already that the distribution of opinions (when item nonresponse is excluded as missing data) is not substantially affected by the way a DK option was offered, but there were a few significant differences.

Table 5.6: Item Nonresponse (%) for Themes^{a)}

	Number of Nonresponses	1. Double Explicit DK	2. Single Explicit DK	3. Single Implicit DK
Socio-economic	1	17	14	2
	2	4	3	0
	3	1	1	0
	<i>Total</i>	22	18	2
Ethical	1	20	18	2
	2	5	5	0
	3	1	1	0
	<i>Total</i>	26	24	2
Multicultural	1	19	17	2
	2	5	4	0
	3	1	1	0
	<i>Total</i>	25	22	2
Foreign Affairs	1	30	29	4
	2	12	9	1
	3	3	3	0
	<i>Total</i>	45	42	5
Foreign Affairs without UN outlier	1	17	14	2
	2	4	4	0
	<i>Total</i>	21	18	2
Current Affairs	1	39	37	3
	2	15	11	1
	<i>Total</i>	54	48	4

a) Number of Nonresponses is the number of times an individual respondent used the DK option within a certain theme. The 'Total' rows show the percentage of respondents using the DK option at least once. The significance of the differences between the means of the questionnaire variants can be found in Appendix C; the comparisons of variant 1 with 3 and variant 2 with 3 are significant at the .001 level for all items in a t-test and a negative binomial regression.

Table 5.6 shows how often respondents used the DK option within a theme; it shows that most respondents only occasionally give a non-substantive answer. Also, when respondents do not answer all items they usually only use the DK option once. No more than 3 percent in the double explicit DK variant 1 and 3 percent of the respondents of the single explicit DK variant 2 respond to all questions within one theme with Don't Know – excluding the Current Affairs theme where only two questions were asked. This suggests that the DK option is used selectively. The option to skip questions (in variant 3) is hardly used at all, which is why it is not

discussed further below. Variant 4 is excluded from Table 5.6, since respondents could not give a non-substantive answer.

What is noticeable is that the question design effect is relatively robust. All comparisons of a single implicit DK variant 3 with an explicit DK variant show significant differences at the .001 level (see Appendix C); a comparison of the two explicit DK variants shows statistically significant differences for only some themes. This is consistent with the main effect.

The percentage of respondents giving a DK answer once within one of the core dimensions ranges between 17 and 20 percent for double explicit DK variant 1 and between 14 and 18 percent for single explicit DK variant 2. This range is narrow, especially considering the differences in question content. Furthermore, item nonresponse for the three themes related to the core dimensions is lower than for the other themes, supporting the assumption that the core dimensions may help organize and express attitudes. Item nonresponse is relatively low for questions related to a major political dimension, which supports hypothesis H3a.

There are only small differences in cumulated item nonresponse for the themes related to the core dimensions of Dutch politics; the last two themes (foreign and current affairs) show substantially higher percentages. This suggests a distinction between the questions about the main dimensions in Dutch politics and the other themes, but further analysis does not fully substantiate this interpretation, since there is an outlier within the Foreign Affairs theme about the UN. The item nonresponse for this outlier is about 20-25 percentage points higher in variant 1 and 2 compared to the other two items. By excluding the UN item, the results are more in line with the first three themes both in terms of total (cumulative) item nonresponse per theme and in respondents only using the DK option once (see Table 5.6). Still, even when the outlier is excluded the number of respondents using a DK option once is 17 percent for the double explicit DK variant and 14 percent for the single explicit DK variant. This is similar to the number of respondents using a DK option once within the socio-economic, ethical and multicultural theme, but with only two survey questions included in the foreign affairs theme (compared to three in the other themes). In other words: the results still support the idea (hypothesis H3b) that item nonresponse for foreign policy issues is relatively high.

The final cluster included in Table 5.6 contains current affairs questions, i.e. questions that were decided upon at the last minute and that are replicated from Dutch pollsters. The two questions within the current affairs theme – on the role of the Queen and surrogate motherhood – are very different in content; the latter could even be considered part of the ethical theme. The item nonresponse as regards surrogate motherhood was, however, high with 33 percent in the double explicit DK variant and 29 percent in the single explicit DK variant. These percentages are much

higher than the item nonresponse of the individual items in the ethical theme, but similar to item nonresponse for the other current affairs item: 35 percent in the double explicit DK variant and 29 percent in the single explicit DK variant for the role of the Queen. Taken together, 54 percent of the double explicit DK respondents and 48 percent of the single explicit DK respondents used the DK option at least once for the two current affairs questions, which is high compared to all other themes.

What does it mean that the DK option is used most frequently for current affairs items? It is difficult to draw definitive conclusions, for instance since the order of the questionnaire and the wording of the questions were not manipulated. It might be the case that if the current affairs questions were posed as the first block of questions, item nonresponse would be lower. Furthermore, the questions within the current affairs theme were relatively short, which requires less cognitive effort but also presents fewer cues for respondents to base their opinions on. This is mere speculation, but some empirical evidence will be given in subsequent chapters. For now, the main point is that item nonresponse does vary according to question content and that question design effects are stronger for certain issues; the main question design effect is, however, whether an explicit DK option is offered, regardless of question content.

5.5.5 Number of Response Categories & Neutral Response Category

The fourth and final set of hypotheses concerns response categories, i.e. the number of response alternatives and the presence of a neutral category. The first hypothesis is that the more substantive response categories are offered, the lower the item nonresponse rate. To examine the relation between the number of categories and item nonresponse, Table 5.7 contains item nonresponse for the individual items in the three variants that included a non-substantive response option, ranked by the number of substantive response categories.

Table 5.7: Item Nonresponse (%) of Individual Items – Ranked to Number of Response Categories

Number of Response categories (Excluding DK)	Question	1. Double Explicit DK	2. Single Explicit DK	3. Single Implicit DK	Significance Paired Comparisons		
					1 / 2	1 / 3	2 / 3
7	Self-placement Income Differences	7	5	0	.094	.000	.000
	Self-placement Euthanasia	3	4	1	.755	.000	.000
	Self-placement Foreigners	2	2	0	.627	.000	.000
	Self-placement EU	12	10	1	.202	.000	.000
4	The old-age pension age should be preserved at 65	7	6	0	.247	.000	.000
	The welfare benefits should be lowered in order to stimulate people to work	13	11	1	.044	.000	.000
	Adoption by same-sex couples should be possible	12	11	1	.374	.000	.000
	It is right that women can freeze their ova to be able to have children at a later age	18	17	1	.321	.000	.000
	There are too many people of a non-Dutch nationality living in the Netherlands	16	12	1	.012	.000	.000
	All people living in the Netherlands illegally for a long time should be allowed to stay here	14	13	2	.466	.000	.000
	The Netherlands should spend more money on developmental aid	13	12	1	.379	.000	.000
	The United Nations has too little power	39	35	4	.082	.000	.000
	The Queen can only communicate governmental policies towards journalists	35	29	2	.001	.000	.000
	Are you pro or con surrogate motherhood?	33	29	2	.029	.000	.000

Item Nonresponse is measured as a percentage of the total number of respondents not responding to a certain survey item by using the DK option (in variant 1 and 2) or skipping the question (in variant 3).

The four self-placement items offered 7 response categories, eight items offered 4 categories and in two cases, (both Current Affairs themes,) only two options were available. Moreover, items with a seven-point scale include a 'Neutral' response category which might 'attract' some DK answers.

Table 5.7 clearly shows a lower level of item nonresponse for most self-placement items compared to the other items within the same theme. For the multicultural theme, for example, the self-placement Foreigners item yields a level of item nonresponse of 2 / 2 / 0 percent [for variant 1 / 2 / 3] which is substantially lower than the 16 and 14 percent of the other two multicultural items in variant 1. This pattern of lower item nonresponse for self-placement items is consistent for all items in the three variants applying a DK option, except for pensions and euthanasia and same-sex adoption in variant 3. These findings suggest that a limited number of response categories may not cover all of the respondents' opinions, and results in a more frequent use of the DK option, although it may be that some items render more DK answers than others because of their substance and regardless of the number of response categories. Nevertheless: in general more respondents use the DK option when the number of response categories is limited and a tentative conclusion is that more response categories result in or at least correlate with less item nonresponse. For more firm conclusions, however, a more extensive analysis is needed.

The final analysis here concerns the availability of a neutral or middle response category. It was expected that at least part of the item nonresponse is substituted by a middle answer. More specifically, a distinction was made between questionnaire variants with and without an explicit non-substantive response option: in the absence of a non-substantive response option (i.e. DK) more use of the midpoint option was expected than in variants offering an explicit DK option. The only items that offered a neutral or midpoint category were the self-placement items. Table 5.7 contains the percentage of respondents using the neutral response category in each of the four variants.

Table 5.8: Use of the Neutral Response Category (%)

Question	1. Double Explicit DK	2. Single Explicit DK	3. Single Implicit DK	4. Forced choice
Self-placement Income Differences	20	21	28	30
Self-placement Euthanasia	6	5	8	8
Self-placement Foreigners	18	16	20	19
Self-placement European Unification	18	19	31	27

How often the neutral response category is used varies with question design: for all self-placement items a significant difference is found between some of the subgroups in their use of the neutral option (see Appendix C for the significance tests). The main difference occurs when dichotomizing the subgroups into an Explicit DK category and an Other category with the Single Implicit DK variant and the Forced Choice variant. The midpoint category is used more often in the latter variants. The number of respondents of the Explicit DK variants of the EU item, for instance, using the neutral response category is 20 and 21 percent compared to 27 percent of the Forced Choice and 31 percent of the Single Implicit DK variants. This is consistent with the idea that when a non-substantive response option is not available, the midpoint option is used as a quasi-non-substantive response option. What is also clear is that for some items the midpoint option is used far more often than for others, with the euthanasia self-placement item rendering only between 6 and 8 percent neutral answers as opposed to 21 to 30 percent neutral answers for income differences. This indicates differences in item content, but does not change the fact that all items see a distinct and rather clear midpoint pattern. Whether a DK option is offered explicitly or not is what matters here, which is in line with hypothesis H4b.

5.6 Conclusion

In this chapter the results of a survey experiment on the effects of the way a DK option was offered or not in a questionnaire were presented. The effects were assessed in terms of non-substantive answers, i.e. item nonresponse, and shifts in

the overall distribution of opinions and public opinion. Different types of questions were examined in terms of number of response categories and the subject of the question. The experiment was carried out by the LISS panel.

The DK option effect on item nonresponse is significant and substantive: offering a DK option explicitly as a response category raises the average item nonresponse rate with 13 percent (for the single explicit DK variant as compared to the single implicit DK variant where skipping questions was possible). Secondly, mentioning the DK option in the question itself, in addition to an explicit DK response category, has a small, often insignificant additional effect on item nonresponse. The main difference is between offering a DK option explicitly or implicitly. These findings support hypothesis H1a: offering a non-substantive response option more explicitly results in more item nonresponse.

An analysis of response time reveals more about why respondents use the DK option. Contrary to hypothesis H5, which stated that the DK option would be used as an easy way out and offering the DK option explicitly would result in shorter response times, the response time of explicit DK variants was longer than when a non-substantive response option was offered implicitly or not at all. These results contradict previous findings (see e.g. Greszki et al., 2014, 2015; Malhotra, 2008; Yan & Tourangeau, 2008; Zhang & Conrad, 2013) and suggest that respondents may use the non-substantive response option after careful consideration of the survey question. This is in line with a second strand of thought regarding response time, which argues that 'shorter response times indicate stronger attitudes and measurement of these attitudes are less affected by question order or response order' (Callegaro, Yang, Bhola, Dillman, & Chin, 2009, p. 6). The DK option is used after careful consideration of the survey question.

The second main point is the effect of a DK option on the distribution of opinions, which ultimately reveals the overall picture of public opinion. The question was whether majorities or pluralities would change or disappear when another question design is applied with less or more item nonresponse. Despite some statistically significant effects, the substantive effect of the DK option on the distribution of opinions (with item nonresponse excluded) was small. Furthermore, the majorities only changed when the public was evenly divided on an issue. The story is more nuanced when non-substantive answers are included in the picture of public opinion, with disappearing majorities or even a plurality of respondents giving a non-substantive answer as a result. Overall, the findings support hypothesis H2a: an increase of the level of missing data (as a result of offering a DK option explicitly) does not affect the distribution of opinions.

The finding that offering a DK option explicitly affects item nonresponse is not new (see for example Bishop, 2005; Schuman & Presser, 1979), although it

has been substantiated for the Dutch case for the first time. The finding that the picture of public opinion barely changes when a different question design is applied is, however, surprising. More (item) nonresponse arguably leaves more potential for a nonresponse bias, but the data suggest that the missing data are randomly distributed.

Next to the overall difference between the four variants, major differences were found for individual survey items. It was expected that the foreign affairs items would result in relatively high levels of item nonresponse, due to the assumed difficult and abstract nature of these issues. This expectation is partially confirmed, with the UN item resulting in an item nonresponse of 39 and 35 percent for the explicit DK variants. Furthermore, the EU self-placement item did result in the highest level of item nonresponse for self-placement items. These findings support hypothesis H3b: issues related to foreign policy result in more item nonresponse. Hypothesis H3a was also supported: survey questions related to a major political dimension result in less item nonresponse.

In addition to the DK response category, the 'regular' substantive response categories were also examined. Both hypotheses (H4a and H4b) were supported: more substantive response categories rendered less item nonresponse and respondents of variants without a DK option used the neutral or midpoint category more often.

In sum, the main effect of how a DK option is offered is on the level of item nonresponse and not on the overall distribution of opinions. Furthermore, it matters most whether a DK response category is offered explicitly or not, whereas a reminder in the question itself at best only slightly increases the nonresponse.