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Measuring Once Twice: An Evaluation of Recalling Attitudes in Survey Research

Eva Jaspers, Marcel Lubbers and Nan Dirk De Graaf

We compare retrospective attitudinal accounts that were gathered in 2006 to the contemporaneous attitudes people had in 1995 towards euthanasia, homosexuality, and the presence of migrants. We study the usefulness of recalled attitudes for descriptive purposes on the individual level, as well as on the aggregate level, and the value of statistically modelling change with recalled data. We show (i) how accurate retrospective accounts are, (ii) respondents with which characteristics are more accurate in recollecting their 1995 attitude, and (iii) whether causal inferences with recalled accounts of the 1995 attitudes lead to similar results compared to the use of the contemporaneous accounts of the 1995 attitudes. We found evidence for a strong consistency bias, as well as an aggregate trend bias. Furthermore, almost no categories of respondents turned out to make better recollections, except for those who claimed to be more certain. For making causal inferences, recalled attitudes seem promising, as we found few significant differences between the use of recalled attitudes and contemporaneous attitudes in our causal models. This contribution offers important clues for future survey researchers who wish to make use of recalled attitudes.

Introduction

The use of retrospective measurements has become common practice in many areas within the social sciences. Research that makes use of retrospective accounts of for instance past labour market careers, sports activities, religious participation, and voting behaviour are relatively common (Blossfeld and Mayer, 1988; Need, 1997; Giuliano *et al.*, 2000; Lubbers *et al.*, 2000; Norris, 2005; De Vries, 2006), since it is a time- and cost-effective way of gathering data over a longer period. Numerous studies regarding the accuracy and validity of retrospectively gathered data on hard facts have appeared (e.g. Freedman *et al.*, 1988; Berney and Blane, 1997). However, when it concerns attitudes, there is much more resistance towards the use of retrospective data. Some sociologists dismiss retrospective attitude

questions all together, although others use them. Recent examples are for instance retrospectively addressing motives for divorce (De Graaf and Kalmijn, 2006), parenting styles (Nomaguchi and Milkie, 2006), or past parental gender roles attitudes as socialization forces (Raffaelli and Ontai, 2004). Much earlier, Haggard *et al.* (1960) found that out of five categories, general attitudes were recalled second best, after the 'hard facts', but better than for instance anxieties that are sometimes studied by criminologists that focus on victimization. We will address the retrospective measurement of attitudes with the following three questions: (i) to what extent are people capable of recalling their past attitudes towards homosexuality, euthanasia and ethnic minorities in the Netherlands?, (ii) who is better in recalling past attitudes?, and (iii) can retrospective attitude measurements be used for making valid inferences in the study

of attitude change? The first question was never answered for the three issues in this study. The second question was hardly addressed systematically. The third question we pose is most innovative. With two exceptions dating from the seventies (Yarrow *et al.*, 1970; Powers *et al.*, 1978), we were unable to locate any studies that addressed this question. We make use of a panel in which we gathered contemporary information on attitudes in 1995 and current 2006 attitudes, as well as a retrospective account of attitudes in 1995, as reported in 2006.

An early overview of the literature on retrospective attitude measurement lists an impressive number of studies that deal with informant accuracy and retrospective or autobiographic questioning on topics ranging from hospitalization to signing petitions (Bernard *et al.*, 1984). They report generally inaccurate results, and conclude that more research on the accuracy of retrospective questioning is needed. Beckett *et al.* (2001) measured the similarities between two retrospective accounts 12 years apart, and found a large degree of consistency between the two retrospective reports. There have been attempts to evaluate the validity and reliability of retrospective attitude measurements in surveys. The *Bennington women*, a group of women that attended Bennington College in the 1930s, were traced both in the sixties and eighties in order to be re-interviewed (Alwin *et al.*, 1991). In the eighties, retrospective accounts of their political orientations in the thirties were gathered. Although the authors do find a reasonable degree of accuracy when the women involved report back on their political ideology in the thirties, they discourage the use of retrospective accounts of attitudes as a sole measurement. Powers *et al.* (1978) compared contemporaneous data to recalled data on a variety of attitudes as well as hard facts over 10 years, and found that individual attitudes were poorly reconstructed, but that correlational studies were possible. Yarrow *et al.* (1970) gathered both contemporaneous and retrospective data 3–30 years apart on mother's and child's perceptions of family life. Correlations between recall and contemporaneous data varied strongly.

Few studies moved beyond the reliability question of retrospective attitude measures. With the exception of Yarrow *et al.* (1970) and Powers *et al.* (1978), previous studies tended not to deal with the question whether retrospective attitudinal measures can be used for making causal inferences about the reasons for attitude change within individuals. In the present study, we will attend to this issue. For convenience, we use a consistent terminology throughout the remainder of this article. *Contemporaneous attitudes* were measured in the past and reflect attitudes at that

point in time; *recalled attitudes* are measured in the present and reflect attitudes at a previous point in time; *current attitudes* are measured in the present and reflect attitudes at this point in time.

Some argue that attitudes are stable constructs with an evaluative component that people formed during adolescence. Throughout people's lives, attitudes then remain stable (Glenn, 1980). More recently, the idea has become widely used that attitudes are temporary constructs (Wilson and Hodges, 1992) based on the availability of information that may vary with context, mood, or previous question in a survey. This would indicate that people show random answer patterns on attitude questions in a survey, and imply that people are unable to recall previous attitudes. However, Wilson and Hodges (1992) argue against the idea that individuals can switch randomly between the extremes of an attitude dimension. Rather, people have a certain bandwidth in which they can take position towards a certain issue. Furthermore, some attitudes are stronger, and for that reason more easily remembered, even when a change in attitudes has taken place. Beckett and colleagues (2001) argued that the salience of pre-manipulation attitudes was a factor in reporting the correct attitudes of an earlier point in time. The salience of an attitude object can be described as some feature that makes this object stand out from other objects, on for instance emotional or cognitive grounds. Our strategy is to maximize the average salience of the attitudes we study, by choosing three issues that have been debated intensively over the last decade in the Netherlands: the acceptance of homosexual relationships, the possibility of euthanasia, and the presence of Moslem minority groups in the Netherlands. By choosing three attitudes in these highly visible domains, we expect to minimize the occurrence of respondents inferring their past attitudes from their behaviours due to the existence of non-attitudes towards the topics we study. Due to space constraints, we refer for information in English on the events and discussions that took place in the Netherlands regarding these issues to Jaspers *et al.* (2007) for homosexuality and euthanasia; and Buruma (2007) for the presence of ethnic minorities.

Expectations

When we write about the recollection of previous attitudes, we do not imply that anyone would be able to write down her attitude towards climate change on 11 December 1981 compared to her opinion on 6 February 1983. In this sense, recalling past attitudes

is different from recalling past unemployment spells, for which people have specific dates in mind. Rather, people construct a history of their own attitudinal development towards some more profound issues, and when asked to look back, reconstruct via estimation their attitude at a defined earlier point in time, using some implicit theory of self (Ross, 1989; Karney and Frye, 2002). Two common implicit theories are (i) a false belief of consistency, and (ii) an exaggeration of the difference between past and present. To both biases we will return shortly. Next, we discuss who might be more accurate in recalling. Finally, we will turn to the issue of making causal inferences with retrospective attitudinal measurements.

Biases

Apart from whether or not people are able to recollect previous attitudes, the issue remains whether people show patterns in their deviance from previous attitudes when recalling. Many of the early studies in attitude recall are panel studies of child development (Haggard *et al.*, 1960; Yarrow *et al.*, 1970). Pioneers in the field of the recollection of political attitudes tried to reconstruct past partisanship using retrospective data (Niemi *et al.*, 1980). They conclude that the party identification recall questions are 'woefully inadequate' in reproducing past partisanship at both the individual and the aggregate level, even though partisanship is a relatively 'hard' attitude that is often expressed in voting or memberships. However, those who did not change their partisanship during the period studied, were very capable of recalling their previous partisanship. It was only those that altered preferences, who were less likely to reconstruct their earlier partisanship. The majority of the ones that had changed partisanship did not report any change whatsoever. This finding is in congruence with the psychological literature. One of the most common implicit theories of self-development that people have is that they have stable attitudes over the life course. Schachter (2002) refers to the above mentioned phenomena as the consistency bias. People infer from their current attitude their previous one, under the false belief of personal attitudinal consistency.

The recollection of past attitudes is not only hindered by current attitudes, but by current or previous behaviours as well. Self-perception theory claims that people often infer their (past) attitudes from their behaviours, because of having had non-attitudes prior to the questioning. Bem and McConnell (1970) performed some classic experiments, with which they showed that participants, after writing counter

attitudinal essays for no or a small financial compensation altered their attitudes, and then reported having this attitude all along with no recollection of their previously stated attitudes. Those who wrote the counter attitudinal essays for a large compensation did not alter their attitudes. They concluded that the participants inferred from their behaviour, i.e. writing an essay for no compensation, that they must agree with the stand taken in it, a process referred to as self-perception theory.

Closely related to self-perception is dissonance theory (Festinger, 1957). However, where self-perception theory assumes a lack of a stable initial attitude, dissonance theory argues that initial attitudes are changed due to a perceived cognitive dissonance in one's attitudes and behaviours. The avoidance of dissonance in order to maintain a coherent self-image would lead people to change their initial attitudes into ones that are more consistent with their current behaviour. For the present research, both self-perception and dissonance theory would argue that people would infer from filling out their current attitude their past attitude. We thus expect the *consistency bias hypothesis* to hold: people tend to believe they have always held their current attitudes and underreport actual change rates. As a consequence, those who did not change attitudes will be much better in recalling previous attitudes than those who did experience change. Corresponding is the empirical finding that aggregate attitudes that have not changed much are more easily reconstructed with retrospective data than the aggregates of attitudes that underwent more change (Smith, 1984).

Another recollection bias, identified by Markus (1984), is that people infer their own previous attitudes from how they perceive that the general trend in aggregate attitudes has developed. If public opinion has become more accommodating, people might infer that they have become more accommodating as well. Again, people use an implicit theory of attitude development to reconstruct their previous attitude towards an issue, but this time they use a theory on the development of the aggregate. For instance, attitudes towards homosexuality have become much more tolerant in the Netherlands over the past 35 years (Jaspers *et al.*, 2007), a development which is often addressed in the media and politics. People looking back assume that since everyone has become more tolerant towards homosexuality, they were probably less favourable in the past as well. This bias would lead us to expect that those who changed attitudes in the same direction as the general trend are more likely to correctly recall their previously stated attitudes, than those who changed in the opposite direction. We will call this the *aggregate trend bias hypothesis*.

Group Differences in Accuracy

In the field of attitude stability research, it is sometimes argued that two groups of people exist, referred to as the black-and-white model (Converse, 1970). There are those with and those without an attitude towards any given subject. People with real attitudes are considered highly stable in their attitudes over time; whereas, people with non-attitudes are highly unstable due to random answer patterns on repeated attitude questions. However, the categorization that is used often ignores the possibility of actual attitude change. We propose a different categorization for this study; people with stable attitudes that they can or cannot recall; and people who changed their attitudes over time and are or are not able to recall their previous attitudes. Regardless of the (in)stability of their attitudes, some people might be better able to correctly recall past attitudes than others.

So far, the findings are limited and inconsistent. There is some empirical evidence that women are better in recalling certain events (Beckett *et al.*, 2001). Auriat (1993) argues that women were socialized more to record important events in personal lives. We will test whether women are also more accurate in their attitude recollection than men. Education is sometimes considered to improve retrospective accounts, because of more reasoning involved in the construction of attitudes. When the formation of an attitude requires extensive reasoning and weighting of pros and cons, it is less likely that self-perception or dissonance theory applies. Also, the more knowledge people have, the smaller the bandwidth of their attitudes appears to be (Wilson *et al.*, 1989). Higher educated individuals are also more often correct when providing retrospective accounts of events (Hahn *et al.*, 1997). We test whether higher educated individuals are better able to recall their previous attitude than those with a lower education.

Two of the issues we study, euthanasia and homosexuality, are of special importance in relation to religion, since (almost) all denominations reject the practice of euthanasia and homosexuality. Because religious people in the Netherlands live in a highly secular environment with accommodating legislation on both euthanasia and homosexuality, chances are that more debate was involved in their attitude formation towards these issues and that they thus might be much more aware of their attitudes towards these issues. In addition, for religious individuals euthanasia and homosexuality might be more affect-laden topics. We test whether the religious are better able to recall their previous attitudes than those who consider themselves not religious.

Women who claimed to be certain of the past events they reported, were indeed more often correct (Bowman *et al.*, 1997). Perhaps for individuals that state more certainty in their recall, the events are more salient. We test whether those who claim a higher degree of certainty with respect to their recalled account are better able to recollect their previous attitude. Even though this may seem straightforward, if a certainty claim from respondents about their changes is a good predictor for the actual change, this information is valuable in studying reported changes.

Causal Inferences with Retrospective Data

We want to study the effects of certain, salient, events on attitudinal change. In this study, we compare whether the use of recalled attitudes leads to different results for the effects of these events than the use of the contemporaneous attitudes. Moreover, we study to what extent recalled attitudes and contemporaneous attitudes affect the occurrence of these salient events. After all, the experience of events can also be dependent on the attitudes prior to the events.

A consistent finding in the literature is the so-called interference of events (Baddeley, 1979). People are unable to distinguish between all events, and mix elements of separate events into new ones. Sometimes they remember only the most recent events. Gutek (1978) and Auriat (1993) also emphasized that people forget to mention events or mention only those events that are somehow most salient to them. For this reason, we identified salient events that might trigger attitude change in people's lives. We have tried to identify those events that make relatively large impressions on people and that have an obvious link to the attitudes we study. For instance, the death of a spouse might alter the attitude towards euthanasia, or the coming out of a relative might change the attitude towards homosexuality. Our expectation about the effects of such events is based mainly on the contact hypothesis (Forbes, 1997; Lemm, 2006; Pettigrew and Tropp, 2006; Wagner *et al.*, 2006), that states that interpersonal contacts with groups identified as other than the own group often invokes an attitude change. Here, we broaden the concept of contact to experiences with attitude related personal events. By choosing these salient events, we furthermore believe to maximize the number of reported events.

Previously, Yarrow *et al.* (1970) obtained conflicting results when comparing mothers' reports on—their relationship with—their children. Physical abuse provided similar correlational results with other variables, whether reported contemporaneously or recalled,

whereas for instance childhood trauma led to inconsistent associations. Powers *et al.* (1978) state that the recalled attitudes may be used cautiously in correlational studies, for only small differences between the use of these recalled and the contemporaneous data were obtained. We expect an underreporting of change in recalled data, but we do not expect random answer patterns on the recall questions. Respondents will most likely be either correct in their recall, biased towards the present (and thus underreporting change) or reporting the most common change in attitudes. People that have experienced salient events related to the attitudes we study, are likely more often correct in their recall, since the attitude objects will be more salient to them. We call this the *event effect hypothesis*, which claims that recalled attitude data can be used to make valid inferences about possible causes of individual change and about the occurrence of attitude-related events.

Methods

Data Collection

We make use of two waves of a national survey in the Netherlands, called the SOCON (Social and Cultural Research in the Netherlands) 1995 and 2006 (Eisinga *et al.*, 1996; Jaspers and Lubbers, 2007). The initial wave, in 1995, was never intended to serve as a panel, but was part of a series of repeated cross sections. However, participants were asked whether they would agree with a follow-up interview, to which a vast majority responded positively (96 per cent). The first wave was carried out as a face-to-face survey, between September 1995 and February 1996. After the interview, participants received a mail questionnaire with the request to fill it out and return it to the researchers. Eighty-seven per cent of the respondents complied. The net response rate of the survey was 51.5 per cent, which is not less than usual in face-to-face interviews in the Netherlands.

The second wave took place between February and November of 2006. We located 1,504 respondents out of the 1,929 initial participants who had agreed to a follow-up in 1995—approximately 78 per cent. Of these 1,504, 57 were either hospitalized or deceased. A total of 854 out of the final sample of 1,447 completed a questionnaire, which results in a net response rate of 59 per cent. If we found discrepancies in gender or birth year, which could indicate that the two questionnaires had been filled out by two different individuals, we deleted the respondent prior to the analyses; 45 individuals were deleted for this reason,

which resulted in a final dataset containing 809 respondents. These respondents do not significantly differ from the original 1995 dataset with respect to their religiosity and gender. Both the highest and lowest educated were less likely to cooperate in the 2006 wave. Regarding the central attitudes in this research, cooperation in 2006 was not dependent on the attitudes people had on homosexuality, euthanasia, and ethnic minorities. Only people who had stereotypical attitudes of Moslems in 1995 were slightly underrepresented in the 2006 sample.

We use different numbers of *N* throughout the article. In the 1995 survey, not all respondents were presented with the same questions. Two versions of the questionnaire were used, in one of which the questions regarding ethnic minorities were included, in the other the item on homosexuality. The item on euthanasia was in the part of the questionnaire that was presented to all 1995 respondents. We do have information on—almost—all respondents concerning their recalled attitudes and current attitudes.

Dependent Variables

The three attitudes we study are measured in three different ways. Table 1 gives an overview of the three issues we study. First, we show the contemporaneous attitude, next the recalled account of the same attitude, and finally the current attitude. We recoded all items so that higher scores indicate a higher level of intolerance towards the issue. The aggregate attitude towards euthanasia has not changed between the years of 1995 and 2006.¹ The recalled account of the 1995 attitude shows only a minor increase in recalled change compared to actual change. The aggregate attitude towards homosexuality has become less negative over 11 years, a finding that is reflected in the recalled accounts of the aggregate 1995 attitude. The reconstruction of the aggregate attitudes towards euthanasia and homosexuality using recall data is remarkably accurate. The attitude towards ethnic minorities was measured by three items that form one scale, with reliability coefficients of 0.98 and 0.85 in 1995 and 2006, respectively.² The aggregate contemporaneous attitude in 1995 was much less intolerant than the current or recalled aggregates. Overall, the aggregate attitudes are reasonably well reconstructed using the recalled data.

Explanatory Variables

We included some explanatory variables in our models on recall accuracy and used the same variables as

Table 1 Descriptives for attitudes towards euthanasia, homosexuality, and ethnic minorities in 1995, retrospectively and in 2006

	<i>N</i>	Min.	Max.	Mean	SD
Attitude towards euthanasia 1995	585	0	1	0.15	0.35
Attitude towards euthanasia recalled	585	0	1	0.18	0.38
Attitude towards euthanasia 2006	585	0	1	0.16	0.37
Attitude towards homosexuality 1995	382	1	5	2.52	1.07
Attitude towards homosexuality recalled	382	1	5	2.55	1.07
Attitude towards homosexuality 2006	382	1	5	2.29	0.98
Attitude towards ethnic minorities 1995	345	1	5	2.67	0.79
Moslem women with scarf do not adapt	342	1	5	2.83	1.10
Moslems easily resort to violence	323	1	5	2.80	0.95
Minorities are a threat to our own culture	345	1	5	2.38	0.93
Attitude towards ethnic minorities recalled	345	1	5	3.05	0.86
Moslem women with scarf do not adapt	345	1	5	3.21	0.99
Moslems easily resort to violence	345	1	5	2.99	0.99
Minorities are a threat to our own culture	345	1	5	2.93	0.99
Attitude towards ethnic minorities 2006	345	1	5	3.06	0.89
Moslem women with scarf do not adapt	345	1	5	2.93	0.99
Moslems easily resort to violence	345	1	5	3.11	1.05
Minorities are a threat to our own culture	343	1	5	3.17	1.08

Scales: For the attitude towards euthanasia from 0 (allowed); 1 (not allowed); for the attitude towards homosexuality from 1 (completely not objecting); 5 (totally objecting); for the attitude towards ethnic minorities from 1 (totally disagree); 5 (totally agree).

Source: SOCON 1995, 2006.

controls in our models on attitude change and event occurrence. We included a variable on whether the respondent was *female* or not and the *age* of the respondent in years in 2006. We asked for the level of education completed in 2006, and recoded the answers to the number of years necessary for the reported level. *Education in years* ranges from six (primary education) to twenty (a completed PhD). We asked whether respondents were *religious* or not and how often they attended church. *Church attendance* ranges from zero, which is never, to four, which indicates more than once a week. We also constructed a dummy variable whether or not the respondent has *left the church* between 1995 and 2006. With respect to the attitudes towards euthanasia and homosexuality we asked the respondents, their degree of *certainty* on their recalled attitudes on a 4-point scale ranging from very uncertain to very certain.

We questioned the respondents in 2006 about various important events they might have experienced. This section of the questionnaire was placed a number of pages after the current and recall attitude questions. We asked them whether they had ever experienced a series of events, and if they had, at which age this had happened to them for the first time and how often during the last decade. With respect to euthanasia we asked whether they had ever experienced a death in the

family; a serious illness in the family; euthanasia in the family; and whether they had ever had a serious illness themselves. With respect to homosexuality we asked whether they had ever experienced the coming out of a friend and the coming out of a relative. On ethnic minorities, we asked them whether they had ever attended a marriage between two minority members; attended a mixed marriage; whether they had ever visited an ethnic minority member in her home; and whether they had ever been threatened by a member of an ethnic minority group. For all the events reported, we determined whether they had occurred for the first time between 1995 and 2006; whether they occurred at all—first time or not—between 1995 and 2006 and how often they happened between 1995 and 2006. Events that took place prior to 1995 are expected to have influenced the contemporaneous attitude, not the current one. Table A1 lists the complete range of events and the incidences.

Finally, ethnic minority members were not asked for their attitudes towards ethnic minorities in 1995; therefore, we excluded this group from the analyses ($N=50$). Comparably, we excluded respondents from the analyses with regard to attitudes towards homosexuality, who indicated that they were anything other than (almost) exclusively heterosexual on a question regarding their current sexual preference ($N=37$).

Results

First, we present tables that indicate the degree to which individual respondents are able to correctly recall their 1995 attitudes. There will be some degree of random measurement error in each of the three measurements, which inflates the gross change rate (Bassi *et al.*, 2000). However, we expect the non-random biases to be much larger, which decrease the amount of change reported. Second, we will show who is better in recalling past attitudes. We predict the recalled attitude with the contemporaneous attitude and interact this with respondent characteristics to find factors that facilitate accuracy in recall. Third, we turn to the effects of personal experiences on attitude change towards euthanasia, homosexuality, and ethnic minorities and the effects of previous attitudes on selected personal experiences. Since the three attitudes are measured in three different ways we choose three modelling strategies. We estimate a logistic regression model for the euthanasia attitudes as dependent on events in the sphere of death and illnesses, an OLS regression model for the attitude towards homosexuality as dependent on events concerning coming into contact with lesbians and gay men, and an autoregressive and cross-lagged structural equation model for the attitude towards ethnic minorities, for which we have a multi-item measurement of the attitude. We estimate logistic regression models for all three issues for the occurrence of events as dependent on previously held attitudes. The effects of previous attitudes on the occurrence of events regarding ethnic minorities are estimated within the same—autoregressive and cross lagged—structural equation models as mentioned above.

Biases

In this section, we compare the observed changes in attitudes (i.e. the current level compared to the contemporaneous level) to the perceived changes

in attitudes (i.e. the current level compared to the recalled level).

Table 2 shows the findings on the recollection of euthanasia attitudes. On the diagonal we find that out of the total sample of 585, 512 can recall their previous attitude. However, this is largely due to the people who did not have an observed change between contemporaneous and current attitudes. Nearly all of them claim that they had the same opinion on euthanasia as they actually had. Those who did change can only recall so in just over one in six cases. Aggregate attitudes as well as legislation have become more accommodating in the Netherlands towards the issue of euthanasia (Jaspers *et al.*, 2007). People seem better able to recall a previous attitude if it was in line with the observed aggregate trend. Both the consistency bias and the aggregate trend bias hypothesis are supported for attitude towards euthanasia.

Table 3 gives cross tabulations for the perceived and observed change in attitude towards homosexuality. Three-quarters of those respondents who became more negative about homosexuality are under the impression that their attitude did not change. This impression is in line with the expected consistency bias. Only 7 per cent of those respondents who changed towards more intolerance can correctly assess their previous attitude towards homosexuality. The persons who became more positive over the years are better in recalling their change. One-third of them indicate that they used to be more opposed to homosexuality. The odds ratio for correctly recalling a positive change in attitude towards homosexuality against correctly recalling a negative change is a high 7.1. As the aggregate trend in the Netherlands was towards a more permissive stance on homosexual issues, people are more likely to believe that they themselves have become more less opposed as well. This trend has been much more obvious than the trends in attitudes towards euthanasia and ethnic minorities, which is probably why this odds ratio is so high. Of the people that remained stable between 1995 and 2006, nearly four in five also recalls being stable.

Table 2 Cross tabulations for the perceived change versus observed change in opposition to euthanasia

	Perceived change in opposition			Total
	More	None	Less	
Observed change in opposition				
More	6 (15.4%)	33 (84.6%)	0 (0.0%)	39 (100.0%)
None	2 (0.4%)	499 (97.1%)	13 (2.5%)	514 (100.0%)
Less	0 (0.0%)	25 (78.1%)	7 (21.9%)	32 (100.0%)
Total	8 (1.4%)	557 (95.2%)	20 (3.4%)	585 (100.0%)

Source: SOCON 1995, 2006.

Table 3 Cross tabulations for the perceived change versus observed change in intolerance towards homosexuality

	Perceived change in intolerance			Total
	More	None	Less	
Observed change in intolerance				
More	4 (6.8%)	45 (76.3%)	10 (16.9%)	59 (100.0%)
None	3 (1.5%)	155 (77.5%)	42 (21.0%)	200 (100.0%)
Less	1 (0.8%)	80 (65.0%)	42 (34.1%)	123 (100.0%)
Total	8 (2.1%)	280 (73.3%)	94 (24.6%)	382 (100.0%)

Source: SOCON 1995, 2006.

Table 4 Cross tabulations for the perceived change versus observed change in intolerance towards ethnic minorities

	Perceived change in intolerance			Total
	More	None	Less	
Observed change in intolerance				
More	46 (31.3%)	88 (59.9%)	13 (8.8%)	147 (100.0%)
None	9 (5.7%)	121 (76.1%)	29 (18.2%)	159 (100.0%)
Less	2 (5.1%)	31 (79.5%)	6 (15.4%)	39 (100.0%)
Total	57 (16.5%)	240 (69.6%)	48 (13.9%)	345 (100.0%)

Source: SOCON 1995, 2006.

Still, one in five incorrectly applies the aggregate trend on their own attitudinal history, believing that they have become less opposed to homosexuality.

Table 4 gives the cross tabulations of perceived versus observed change in disapproval of ethnic minorities. Coincidentally, again one-third of those respondents who changed in the direction of the aggregate trend in the Netherlands perceive the observed change; whereas, only 15 per cent of the respondents who became more positive towards ethnic minorities is aware of this change. The odds ratio for correctly recalling a negative change against correctly recalling a positive change is 2.0.

We conclude this section by stating that strong systematic biases occur overall in recollection, both towards a consistency bias and to a lesser extent towards an aggregate trend bias. Individual descriptions seem generally unreliable when based on recalled attitudes.

Group Differences in Recall Accuracy

In Table 5, we present group differences in recall accuracy. We estimated a (logistic) regression model with the contemporaneous attitude as a predictor for the recalled attitude towards euthanasia, homosexuality, and the presence of ethnic minorities. Next, we

added different grouping variables with an interaction term to search for groups that might differ in their recall accuracy. We found hardly any significant differences between groups in the extent to which their contemporaneous accounts are related to the recalled accounts of the same attitudes. Contrary to our expectations and to earlier findings, women are not better than men in recalling attitudes towards all three topics. The interaction terms between age and the three attitudes are all negative, and—if they would have reached significance—imply that the correlations between contemporaneous and recalled attitudes are smaller when one is older. The interaction terms between education and the three attitudes are all positive. The higher educated have a marginally larger effect from their contemporaneous attitude on their recalled attitude. For those who are religious, the effect of the contemporaneous attitude towards ethnic minorities is smaller than for non-religious respondents. The more often respondents visit the church, the smaller the effect of the contemporaneous attitude towards euthanasia on the recalled attitude. The significant religious group differences we find seem arbitrary, and never consistent over the three different attitudes. We cannot refute our hypothesis that respondents that are more certain in recalling their attitude are indeed better in recalling. The effects from

Table 5 Interactions with the contemporaneous attitudes towards euthanasia, homosexuality, and the presence of ethnic minority members as predictors of the recalled attitudes

	Euthanasia logistic regression parameters			Homosexuality regression parameters		Ethnic minorities regression parameters	
	b	SE	exp (b)	b	SE	b	SE
Contemporaneous	2.842***	0.267	17.148	0.606***	0.041	0.611***	0.049
Contemporaneous	2.826***	0.330	16.870	0.613***	0.041	0.600***	0.049
Female	-0.049	0.469	0.952	0.006	0.013	-0.109	0.088
Female × contemporaneous	0.025	0.471	1.026	-0.007	0.006	0.030	0.025
Contemporaneous	5.079***	0.825	160.484	0.691***	0.108	0.665***	0.089
Age	-0.002	0.007	0.998	0.004	0.006	0.002	0.005
Age × contemporaneous	-0.040**	0.014	0.961	-0.002	0.002	-0.001	0.001
Contemporaneous	1.328 [†]	0.825	3.773	0.573***	0.070	0.458**	0.165
Education	-0.119 [†]	0.068	0.888	-0.009	0.011	-0.026	0.042
Education × contemporaneous	0.136*	0.069	1.146	0.003	0.005	0.012	0.013
Contemporaneous	2.377***	0.477	10.769	0.605***	0.041	0.709***	0.069
Religious	-1.575**	0.517	0.207	-0.019	0.027	0.629 [†]	0.334
Religious × contemporaneous	0.328	0.591	1.388	0.007	0.008	-0.199*	0.098
Contemporaneous	4.474***	0.387	87.774	0.604***	0.041	0.665***	0.064
Church attendance	0.003	0.023	1.003	-0.005	0.011	0.101	0.080
Church × contemporaneous	-0.912***	0.135	0.402	0.003	0.003	-0.026	0.021
Contemporaneous	1.017	1.234	2.764	-0.055	0.170		
Certainty	-0.016	0.307	0.984	-0.378*	0.159		
Certainty × contemporaneous	0.537 [†]	0.343	1.710	0.182***	0.047		

[†] $P < 0.10$, * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.

Source: SOCON 1995, 2006.

the contemporaneous attitudes towards euthanasia and homosexuality on the recalled attitudes are larger (and closer to one) when respondents are more certain about their recalling.

We performed some additional OLS regression analyses to find out who claims to be more certain in recalling a previous attitude (not shown in table). Women, the higher educated and those who are religious claim a higher level of certainty in recalling a previous attitude towards homosexuality. Those who did not change attitudes between 1995 and 2006 also claim to be more certain about their recollections towards both euthanasia and homosexuality.

Causal Inferences with Retrospective Data

Our most interesting expectation concerns the employability of retrospective attitude measurements in survey designs for making causal inferences. In Table 6, we present the effects of specific events as predictors for the current attitude controlled for the contemporaneous versus recalled attitude; whereby, we compare the effects of these events each time between the

models with the contemporaneous attitudes and the recalled attitudes. In two consecutive rows, we present the unstandardized b-coefficients and standard errors for the estimated effects of the events using contemporaneous data and recalled data, respectively. In the columns, we present first the results for a first occurrence of the event in the period 1995–2006; second, the effects of any occurrence of the event between 1995 and 2006; and third, the effects of the number of times the event occurred between 1995 and 2006. We tested the hypotheses that the effects of using the recalled data equal the effects of using the contemporaneous data (Paternoster *et al.*, 1998; Meertens, 2004).³ Significant differences are boxed. Out of 30 compared effect sizes, we found five to differ significantly between using the recalled and contemporaneous accounts.

We included four events that might alter the attitude one has towards euthanasia. Only from one of these, the experience of euthanasia in the family, the first occurrence has a negative effect on the disapproval of euthanasia, although it is only marginally significant. There are some mixed results regarding illness in the

Table 6 The effects of events as predictors of current attitude, controlled for previous attitude, age, gender, educational attainment, and religiosity; results from logistic regression models for opposition towards euthanasia, OLS regressions for opposition towards homosexuality, and SEM cross-lagged autoregressive models for opposition towards ethnic minorities

	Event occurred for the first time between 1995 and 2006; effect on attitude		Event occurred at all between 1995 and 2006; effect on attitude		Number of times event occurred between 1995 and 2006; effect on attitude	
	b	SE	b	SE	b	SE
Events related to the attitude towards euthanasia						
Death in the family CD	-0.201	0.34	-0.062	0.34	0.036	0.07
Death in the family RD	-0.512	0.50	0.050	0.47	0.137	0.11
Illness in the family CD	-0.437	0.34	0.662*	0.31	-0.009	0.07
Illness in the family RD	-0.569	0.47	-0.031	0.45	0.209†	0.12
Euthanasia in the family CD	-1.018†	0.62	-0.684†	0.40	-0.126	0.26
Euthanasia in the family RD	-0.635	0.77	-0.173	0.56	0.310	0.39
Own serious illness CD	-0.905	0.64	-0.086	0.41	0.121	0.27
Own serious illness RD	-0.155	0.81	0.629	0.59	0.641	0.41
Events related to the attitude towards homosexuality						
Homosexual friend CD	0.181	0.14	-0.127	0.09	-0.010	0.03
Homosexual friend RD	0.005	0.07	-0.057	0.04	0.008	0.01
Homosexual relative CD	-0.046	0.19	-0.253**	0.09	-0.152**	0.05
Homosexual relative RD	-0.043	0.08	-0.014	0.04	-0.011	0.03
Events related to the attitude towards ethnic minorities						
Present at marriage minorities CD	-0.158*	0.08	0.022	0.05	0.034	0.05
Present at marriage minorities RD	-0.015	0.04	0.011	0.04	0.007	0.04
Present at mixed marriage CD	0.017	0.07	0.014	0.05	0.030	0.04
Present at mixed marriage RD	-0.074*	0.04	-0.017	0.03	-0.012	0.03
Visit to ethnic minority member CD	-0.041	0.07	-0.003	0.04	0.070	0.73
Visit to ethnic minority member RD	-0.038	0.04	0.025	0.03	0.020	0.29
Being threatened by ethnic minority member CD	0.058	0.05	0.064	0.06	0.064	0.06
Being threatened by ethnic minority member RD	0.068†	0.04	0.077*	0.04	0.073*	0.04

† $P < 0.10$, * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.

Source: SOCON 1995, 2006.

A pair of bold values indicates a significant difference.

CD = contemporaneous data; RD = recalled data

family. None of the other relevant events induces an attitude change. The signs of the event effects are mostly in the same direction, irrespective of whether we use the contemporaneous data or the recalled data, for a death in the family, euthanasia in the family, and having experienced a serious illness oneself. Only regarding serious illness in the family do we find a significant difference in using the recalled account or the contemporaneous account in predicting the present attitude towards euthanasia.

The experience of a homosexual friend had no effect on the current attitude towards homosexuality, and we found no difference between the effects whether by

using the recalled or contemporaneous attitudes. The situation is a little different for the experience of the coming out of a homosexual relative. For people experiencing this for the first time between 1995 and 2006, the estimated effect is almost similar for the contemporaneous and recalled attitude ($b = -0.046$ and -0.043 , respectively). For people who filled out to have had a homosexual relative after 1995, whereas they possibly had them already before 1995 as well, we find—remarkably—a different result. Here, only when using the contemporaneous attitude, we find that people became less intolerant towards homosexuality.

We find a negative, significant effect of attending a marriage of two ethnic minority members for the first time between 1995 and 2006 on the negative attitude towards ethnic minorities. The effect size is larger when we use the contemporaneous data, than when we use the recalled data. This is the only significant difference in effect size of the events on the attitude towards ethnic minorities when comparing the contemporaneous attitude and the recalled attitude. For visiting an ethnic minority member between 1995 and 2006 (for the first time), we found no effect, independent of whether we use the contemporaneous attitude to control for or the recalled attitude. Above one's previous attitude contact has no additional contribution in one's attitude towards ethnic minorities—contrary to our formulated expectation from contact theory. We do find however an effect in line with our expectations from a threat experience from an ethnic minority member. Again, the effects from the recalled and the contemporaneous accounts point in the same direction, and do not significantly differ from each other. Here, we find that people are more likely to have an unfavourable attitude towards ethnic minorities when they faced a physical threat from minorities between 1995 and 2006. As with all our analyses regarding ethnic minorities and homosexuality, the analyses dealing with the actual change include fewer respondents, which is partly the reason for different significance levels. We have to conclude that—even though all effects are close to non-significance and hence smaller than expected—the recall and contemporaneous accounts provide similar signs of the event effects. Tests on differences between the sizes of the effects depending on the contemporaneous or recalled attitude show us that they differ significantly in a minority of the analysed events. We cautiously conclude that causal inferences with the recalled data do not lead to different conclusions than when contemporaneous attitudes had been used. We emphasize the word cautious, as the incidences of the events are sometimes low and our dataset is not so large.

Explanations of the Occurrence of Events

Table 7 gives the results for the analyses with previous attitudes as predictors of the occurrence of certain events. These findings have important implications. When the events are not influenced by previous attitudes, controlling for such previous attitudes is not important. In these instances, researchers could include events to explain current attitudes, without the need to assess the previous attitude. With respect to the attitude towards euthanasia, we only estimated the effect

of the 1995 attitude towards euthanasia on the occurrence of euthanasia in the family between 1995 and 2006, as we expect the other events, such as illness of a family member, to be logically independent of the previous attitude towards euthanasia of the respondent.

At first glance one notices that there are many more significant influences from previous attitudes on the occurrence of events than the other way round. However, this is not our primary concern for this contribution. When we have a closer look at our findings, we observe very similar results when using either the contemporaneous or the recalled data.

With respect to euthanasia, we find that a negative contemporaneous attitude towards euthanasia decreases the chance of experiencing euthanasia in the family between 1995 and 2006. The recalled data provide slightly larger effects, but the differences in effects sizes are far from significant.

With respect to homosexuality, we see that a negative attitude in 1995 clearly influences the occurrence of second and more experiences with homosexuals, more pronouncedly so regarding a homosexual friend than homosexual relatives. Here, we find the only significant reversed effect, comparing the use of the contemporaneous account or the recalled account. Experiencing for the first time a relative being gay between 1995 and 2006 is influenced positively by the contemporaneous attitude, but negatively by the recalled attitude. Even though both effects are not significant, they differ significantly from one another.

With respect to contacts with ethnic minority members, we find that previous more negative attitudes decrease the chance of positive contacts with ethnic minority members. Experiencing a threat from an ethnic minority member for the first time after 1995 is independent of the previous attitude towards ethnic minorities, measured either contemporaneously or retrospectively. Respondents that indicated to have been threatened more often turn out to have started out with more unfavourable attitudes in the first place. The only significant difference we find between the use of the contemporaneous data and the recalled data is regarding the first-time visit of ethnic minorities between 1995 and 2006. According to the contemporaneous data, such a visit was less likely when attitudes were more unfavourable in 1995. When we use the recalled data, we find no effect.

Summary and Discussion

With a unique dataset, we were able to show to what extent people err in a recollection of their attitudes, and to

Table 7 Previous attitudes as predictors of event occurrences, controlled for age, gender, educational attainment, and religiosity; logistic regression models for the first time occurrence of events and the occurrence of events; OLS regressions for the incidence of events related to euthanasia and homosexuality, and SEM cross-lagged models for the incidence of events related to ethnic minorities

	Effects from attitude on event occurrence for the first time between 1995 and 2006		Effects from attitude on event occurrence at all between 1995 and 2006		Effects from attitude on number of times event occurred between 1995 and 2006	
	b	SE	b	SE	b	SE
Events related to the attitude towards euthanasia						
Euthanasia in the family CD	-0.786	0.55	-0.708*	0.36	-0.101	0.07
Euthanasia in the family RD	-0.987*	0.47	-0.917**	0.33	-0.155*	0.07
Events related to the attitude towards homosexuality						
Homosexual friend CD	-0.132	0.22	-0.525***	0.14	-0.226***	0.07
Homosexual friend RD	-0.005	0.16	-0.472***	0.10	-0.271***	0.06
Homosexual relative CD	0.305	0.27	-0.340*	0.13	-0.101*	0.04
Homosexual relative RD	-0.157	0.18	-0.448***	0.10	-0.150***	0.03
Events related to the attitude towards ethnic minorities						
Present at marriage minorities CD	-0.095	0.21	-0.170	0.16	-0.173	0.16
Present at marriage minorities RD	-0.370***	0.12	-0.295***	0.09	-0.286**	0.10
Present at mixed marriage CD	-0.428*	0.19	-0.230 [†]	0.18	-0.260 [†]	0.17
Present at mixed marriage RD	-0.265**	0.10	-0.238**	0.09	-0.272***	0.09
Visit to ethnic minority member CD	-0.261*	0.16	-0.327**	0.13	-0.101	1.04
Visit to ethnic minority member RD	0.007	0.11	-0.324***	0.07	-0.188	0.61
Being threatened by ethnic minority member CD	0.106	0.31	0.199	0.21	0.186	0.21
Being threatened by ethnic minority member RD	-0.051	0.13	0.151 [†]	0.10	0.185*	0.10

[†] $P < 0.10$, * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.

Source: SOCON 1995, 2006.

A pair of bold values indicates a significant difference.

what extent working with such recalled attitudes causes one to make different causal inferences about attitude change. Dutch citizens who cooperated in a national survey in 1995 were approached again in 2006 and were asked how they estimated their attitudes around three important social issues—euthanasia, homosexuality, and ethnic minorities—to have been in 1995. We found evidence for the presence of implicit theories of self in the form of the well-known consistency bias and aggregate trend bias. People are likely to adjust their estimation of their previous attitudes to their current attitudes—hence to perceive stability, even though we found quite some objective change—and people are more likely to report a change when it corresponds with the aggregated change in society. These findings do not put much faith in the reliability of retrospectively questioning respondents on their attitudes, when one is interested in the description of individuals. However, the aggregate of the recalled attitudes resembled the contemporaneous aggregate

more closely. With great caution, we conclude that recalled attitudinal data can perhaps be useful for providing descriptions of the aggregate.

Interestingly, we find hardly any group differences in the accuracy of the recall. The differences we do find are irregular and small. There is a tendency that older people are worse in recalling; whereas, the higher educated perform somewhat better. We do find evidence that people who claim to be more certain about their recalling are indeed better in doing so. We have to remark here that most people indicate that they are quite certain about their recalled attitude. And out of the certain people as well, many individual respondents are mistaken.

The final question we aimed to answer is to what extent causal inferences about attitude change differ, when we either use recalled attitudes or contemporaneous attitudes. To answer this question, we studied effects from salient events between 1995 and 2006 on

the current attitude towards euthanasia, homosexuality, and ethnic minorities, controlled for the 1995 attitude. We found only few significant differences whether by using the recalled data or the contemporaneous data. Providing further confidence in the use of the recalled data is that the effects of the events on the current attitude were always in the same direction, irrespective of the use of the recalled or the contemporaneous attitudes. Comparably, we found hardly significant differences in the effect of the recalled attitude or the contemporaneous attitude on the reported events between 1995 and 2006. Although it has not been our primary concern, we found more evidence for effects from one's previous attitude on the experience of an event, than that the events had effects on the attitudes after the events. Overall, the effects from the events were at most very modest. These findings show the importance of controlling for the initial attitude when one wants to assess contact effects. Only few sociological studies dealing with the contact theory have used a panel-design.

Of course, we are aware that the present study is not the final step in the questions concerning retrospective attitudinal accounts. But given the fact that there were hardly any studies that dealt with this question, we think this contribution provides many clues for future research. First, this study should be replicated for a larger sample to overcome power issues. Second, other events could be included, that might have more effect on the attitudes of those that experienced them. Third, we are interested whether the results we obtained would apply to other attitudes as well. Fourth, we should experiment with the construction of the questionnaire and the impact of question wordings, order, introduction, etc. on the results, in order to find the most successful ways to measure attitudes retrospectively. Finally, we believe it would be of interest to identify characteristics of the attitudes and of respondents, to continue our search for understanding who is better at recalling which attitudes.

Though we found strong biases in retrospective accounts, we believe the present study has shown that they can be valuable in social science research. This is important information for further data collections, given the high cost and unavailability of panel data over (very) long periods of time.

Notes

1. In the items towards euthanasia, both in 1995 and in 2006, the option 'that depends' was included as an answer category. Respondents

who checked this answer were not included in the analyses.

2. Two more items on ethnic minorities in the Netherlands were included in the questionnaires, but these are not included in our analyses as they formed a second factor in a exploratory factor analysis performed for both years.
3. Different tests were used to assess effect differences. Application of these resulted in similar findings. Here, we report the test: $(b_1 - b_2) / \sqrt{(se_{b_1}^2 + se_{b_2}^2)}$.

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Appendix

Table A1 Percentage of respondents of total sample reporting having experienced an event ever; having experienced it for the first time after 1995; having experienced it at all after 1995; and for those with an event the average frequency of the event between 1995 and 2006

	Event ever	First time event after 1995	Event after 1995	Average frequency of event (range)
Homosexual friend	35.6	8.9	32.7	2.47 (1–5)
Homosexual relative	30.0	6.5	27.5	1.40 (1–5)
Threat minorities	9.7	5.9	8.0	1.85 (1–5)
Visit minorities	32.0	8.8	25.2	31.82 (1–100)
Mixed marriage	17.4	7.9	14.6	1.52 (1–5)
Minority marriage	8.7	4.7	8.2	1.61 (1–5)
Death in family	79.8	35.3	73.9	2.71 (1–5)
Euthanasia in family	23.9	15.0	21.9	1.28 (1–2)
Own illness	14.8	8.6	14.0	1.20 (1–2)
Illness in family	71.6	36.1	68.8	2.56 (1–5)

Source: SOCON, 2006.