

EFFECTS OF QUESTION CONTEXT AND RESPONSE ORDER ON ATTITUDE QUESTIONS

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INTRODUCTION

The susceptibility of survey responses to variations in questionnaire form, most notably question context and response order effects, has been the focus of considerable research during the past 50 years (Schuman, 1992). Briefly, context effects suggest that answers to survey questions can be affected by prior items, which may provide respondents with cognitive cues that are used to answer subsequent questions. Response order effects suggest that the order in which a response category appears will also affect its selection. Numerous studies have confirmed that question context may influence survey responses (Bickart, 1992; Billiet, Waterplas and Loosveldt, 1992; Bishop, Oldendick and Tuchfarber, 1982; McClendon and O'Brien, 1988; Schuman and Presser, 1981; Tourangeau and Rasinski, 1988). Others have also confirmed the presence of response order effects in attitude surveys (Bishop, Hippler, Schwarz and Strack 1988; Krosnick and Alwin, 1987; Mingay and Greenwell, 1989).

Several potential moderators of these two effects have also been hypothesized. One of these is attitude crystallization, which refers to how well developed the respondent's opinions regarding the target construct are. This concept is often measured by questions that ask respondents how often they may have previously discussed or thought about a specific topic. Presumably, persons who have talked about or otherwise considered a topic will have formed more definite, or crystallized, opinions regarding it. More crystallized attitudes are believed to be more resistant to differences in questionnaire form. The available literature is not consistent regarding the degree to which attitude crystallization actually moderates questionnaire form effects in practice (Herr, 1989; Krosnick and Schuman, 1988).

Topic salience, defined as the personal importance or relevance of the question subject to the respondent, has also been investigated as a potential moderator. Cognitive theorists have suggested that more important attitudes are more accessible in memory and tend to be more stable over time and thus more resistant to differences in questionnaire form such as response order and question context effects (Tourangeau and Rasinski, 1988). Available research has also produced inconsistent findings regarding the ability of topic salience to moderate questionnaire form effects (Chaiken and Baldwin 1981; Krosnick and Schuman 1988).

A third potential moderator is cognitive sophistication. It has been hypothesized that less sophisticated respondents are more vulnerable to influence by questionnaire form (Hyman, Wright and Reed, 1975). A meta-analytic study reported by Narayan and Krosnick (1996) concluded that one indicator of cognitive sophistication, educational attainment, may indeed moderate both response order and context effects, such that lower education is associated with stronger effects. Sigelman (1981) has also found lower education to be associated with stronger context effects. Bishop, Oldendick and Tuchfarber (1982), and Krosnick (1992) have produced similar findings using other indicators of cognitive sophistication, including an index of political information, and student grade point averages, respectively.

We report here findings from a recent study designed to simultaneously assess both response order and question context effects, as well as the effects of each of the moderating variables discussed above. To our knowledge, the relative effects of each of these potential sources of measurement error and moderating influences have not been previously assessed within a single study.

METHODS

The data for this study were collected as part of a statewide omnibus random-digit dial telephone survey conducted by the University of Illinois at Chicago Survey Research Laboratory between October 1997 and April 1998. A total of 1,251 interviews were completed with adults aged 18 and older who were sampled at random within households with current telephone service.

An experiment was programmed into the CATI questionnaire for this survey that introduced two orthogonal manipulations: one to assess response order effects and one to assess question context effects. To assess response order effects, the response options presented for the question "Which one of the following four issues do you think is the biggest problem in Illinois today?" were presented to respondents in one of two series (see Figure 1). The response option of primary interest to this study, "crime and drugs," was listed as the first choice for one of these two series, and as the final choice for the other series. To assess question context effects, the question regarding the biggest problem in Illinois was positioned in one of two locations within the questionnaire: either immediately before or immediately after a set of four questions con-

cerned with crime (see Figure 2). The focal question concerned with the biggest problem in Illinois was positioned as either the seventh or eleventh question in the instrument, depending on which version was used.

Figure 1. Response Order Manipulation: Respondents Randomly Assigned to be Read One of the Two Alternate Response Orderings for the Following Question.

“Which one of the following four issues do you think is the biggest problem in Illinois today?”

(Crime option first)

- <1> Crime and drugs,
- <2> A poor educational system,
- <3> Environmental problems, or
- <4> Jobs and the economy?

(Crime option last)

- <1> Jobs and the economy,
 - <2> Environmental problems,
 - <3> A poor educational system, or
 - <4> Crime and drugs?
-

Indicators of each potential moderator of context and response order effects were also included in the survey instrument. Attitude crystallization was assessed using an item that asked respondents how often they had discussed the topics of crime and drugs with other persons in the past year. Topic salience was measured by an item that asked respondents if they or a member of their family had been the victim of a violent crime during the past year. Respondent’s education was used as a proxy measure of cognitive sophistication. The precise wordings of these items are presented in Figure 3.

The dependent variable in these analyses was the respondent answer to the question that asked what was the biggest problem in Illinois. Responses were coded as ‘1’ for “crime and drugs,” and ‘0’ for all other responses. The effects of each experimental manipulation, and the effects of moderator variables on each relationship, were initially assessed using difference of proportions tests (Fleiss, 1982). Subsequently, logistic regression was used to simultaneously assess the individual and joint effects of each experimental manipulation, as well as interactions between each and the indicators of attitude crystallization, topic salience, and cognitive sophistication. The logistic regression model also controlled for several demographic variables thought to be associated with attitudes toward crime-related issues, including gender, age, race/ethnicity,

income, and location (i.e., urban, suburban or rural) of residence.

Figure 2. Question Context Manipulation: Respondents Randomly Assigned to be Asked About the Biggest Problem Before or After the Following Questions.

“In the past three years, do you feel that violent crime in Illinois has increased, stayed the same, or decreased?”

“Some people lock their cars all the time and others not at all. Would you say you lock your car all of the time, most of the time, sometimes, or never?”

“How satisfied or dissatisfied are you with the way the police in your community are dealing with crime?”

“How satisfied or dissatisfied are you with the way the courts in your community are dealing with crime?”

Figure 3. Moderator Variables.

Attitude Crystallization

“In the past 12 months, how many times have you discussed problems related to crime and drugs with anyone? Would you say never, once or twice, or several times?”

Topic Salience

“In the past three years, have you or any other member of your immediate family been a victim of a violent crime?”

Cognitive Sophistication (Education)

“What was the last grade in school that you completed?”

RESULTS

Bivariate results of the two experiments are presented in Table 1. Differences in the order of response options had no effect on the proportion selecting “crime and drugs” as the biggest problem facing the state (differences in proportions = 2.0 percentage points, *ns*). However, a greater effect of question context was observed. Respondents asked the crime-related questions listed in Figure 2 prior to the question regarding the biggest problem in the state were more likely to endorse “crime and drugs” than were those asked the crime-

related questions after the question concerning the biggest problem in the state (differences in proportions = 7.1 percentage points, $p < .01$).

The effects of response order and question context on survey responses were also examined separately for each level of the three moderators listed in Figure 3. Of these, only one interaction was observed. The effects of question context were significant for the least-educated group of respondents (i.e., those with less than a high school education), but not for those who reported graduating from high school or having college experience.

Table 1. Proportion Citing Crime as Biggest Problem in Illinois.

	<u>(N)</u>	<u>%</u>	<u>Diff</u>
<u>Response Order</u>			
Crime option first	(616)	45.9%	2.0%
Crime option last	(613)	43.9%	
<u>Question Context</u>			
Crime questions before	(610)	48.5%	7.1%**
Crime questions after	(619)	41.4%	

** $p < .01$

Table 2. Proportion Citing Crime as Biggest Problem by Question Context and Education.

	<u>(N)</u>	<u>%</u>	<u>Diff</u>
<u>1-11 Years of Education</u>			
Crime questions before	(53)	69.8%	25.1%**
Crime questions after	(47)	44.7%	
<u>High School Graduate</u>			
Crime questions before	(167)	52.1%	3.2%
Crime questions after	(180)	48.9%	
<u>13+ Years of Education</u>			
Crime questions before	(373)	44.0%	6.1%
Crime questions after	(380)	37.9%	

** $p < .01$

A multivariate assessment of both experiments and the interaction of each with the three potential moderators are presented in Table 3. This model confirmed the

earlier findings of both a direct context effect and a moderating effect of cognitive sophistication, or education, on the effects of question context. Education and age were also strongly associated with likelihood of endorsing "crime and drugs" as the biggest problem in Illinois, with smaller proportions of more educated and younger respondents concerned with this issue.

Table 3. Logistic Regression Analysis of Predictors of Identifying Crime as Biggest Problem ($n=1095$).

<u>Independent Variables</u>	<u>B</u>	<u>(SE)</u>
Response order effect	0.62	(0.60)
Context effect	1.40*	(0.60)
Response order effect X context effect	0.18	(0.20)
Education	-1.45***	(0.42)
Education X response order effect	0.18	(0.20)
Education X context effect	0.55**	(0.20)
Crystallization	0.02	(0.30)
Crystallization X response order effect	-0.08	(0.28)
Crystallization X context effect	0.33	(0.28)
Salience	0.60	(0.39)
Salience X response order effect	0.41	(0.39)
Salience X context effect	0.22	(0.38)
Gender (1=female)	-0.06	(0.06)
Age	0.01*	(0.00)
African American (1=yes)	0.08	(0.09)
Latino (1=yes)	-0.12	(0.15)
Other race/ethnic group (1=yes)	0.05	(0.12)
Income	-0.00	(0.05)
Urban residence (1=yes)	-0.09	(0.08)
Suburban residence (1=yes)	-0.12	(0.09)
Constant	-1.94	(2.03)

* $p < .05$

** $p < .01$

*** $p < .001$

DISCUSSION

In this experiment, only context effects were found to influence respondent answers. Manipulating the order in which response options were presented did not appreciably influence answers. Because a 2 X 2 factorial design was used to introduce each manipulation, these findings cannot be attributed to a confound between them. A single experiment, of course, is far from sufficient to conclude that context effects are more powerful than response order effects. In fact, we believe it would not be difficult for many researchers to deliberately design an experiment that produced results at odds with those presented here. We also believe, however, that an active research program to experi-

mentally assess the relative influence of these alternate sources of measurement error would result in improved "best practices" recommendations for the profession. Much of the available wisdom regarding the relative magnitudes of these various sources of error are based on meta-analyses (cf., Sudman and Bradburn, 1974), rather than experimental comparisons.

The moderating influence of cognitive sophistication (i.e., education) on context effects confirms previous research (Narayan and Krosnick, 1996) suggesting the importance of this variable. Although we believe that additional work is necessary to develop more refined measures of cognitive sophistication and the other potential moderating variables discussed in this paper, the findings to date suggest that investigators conducting surveys with predominately low education populations should pay particular attention to issues of context and other questionnaire form effects when designing their survey instruments.

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