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**RELATING QUESTION TYPE TO PANEL CONDITIONING: A  
COMPARISON BETWEEN TRAINED AND FRESH  
RESPONDENTS**

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# Relating Question Type to Panel Conditioning: A Comparison between Trained and Fresh Respondents

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**Abstract** Panel conditioning arises if respondents are influenced by participation in previous surveys, such that their answers differ significantly from the answers of individuals who are interviewed for the first time. Having two panels—a trained one and a completely fresh one—created a unique opportunity for analysing panel conditioning effects. To determine which type of question is sensitive to panel conditioning, 981 trained respondents and 2809 fresh respondents answered nine questions with different question types. The results in this paper show that panel conditioning only arise in knowledge questions. Questions on attitudes, actual behaviour, or facts were not sensitive to panel conditioning. Panel conditioning in knowledge questions was restricted to less-known subjects (more difficult questions), suggesting a relation between panel conditioning and cognition.

**Keywords:** panel conditioning, re-interviewing, measurement error, panel surveys

**JEL codes:** C42, C81, C93

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## **1. Introduction**

Trained respondents may answer questions differently than those with little or no experience in a panel. This can result in different responses with regard to content (e.g. because of increasing knowledge on topics) as well as the procedure (question-answering process). Panel members may learn from taking surveys. They may feel obliged to prepare for future surveys (increase their knowledge), or develop attitudes towards certain topics. In addition, they may become familiar with the question-answering process, learn how to interpret questions, and make fewer errors than new respondents. Or the opposite: experienced respondents may also answer strategically to avoid follow-up questions and reduce the burden of their task, speed through the survey, and therefore even make more errors. This paper addresses the issue of the first form of learning from taking surveys: knowledge on questions in a survey. It is investigated which type of question sensitive to panel conditioning is.

## **2. Background**

One of the basic decisions a survey researcher faces is whether or not to use trained respondents (using a panel) or fresh respondents (e.g. a cross sample). Shariot (1991) discusses advantages and disadvantages of panels. There are two important methodological issues associated with the use of panel surveys: panel attrition and panel conditioning. Panel conditioning arises if re-interviewing causes differences in knowledge, behaviour or attitude.

Panel conditioning has been studied in many social sciences, with mixed findings. While Williams (1970), Williams and Mallows (1970), Meurs et al. (1989), and Waterton and Lievesley (1989) found some evidence that respondents are influenced by re-interviewing, Dennis (2001) and Clinton (2001) found little evidence for panel conditioning in the 'Knowledge Networks' panel (an online panel that is representative of the entire US population). Van der Zouwen and Van Tilburg (2001) argue that conditioning effects sometimes appear and sometimes do not, without a clear indication of the conditions under which these effects occur. Trivellato (1999) argues that panel participation mainly affects the way in which behaviour is reported (response process), while it does not have pervasive effects on behaviour itself. Das et al. (2007) and Coombs (1973) argue that panel conditioning only arises for knowledge questions, but not in other types of questions. Sturgis et al. (2007) try to define a main theory behind panel conditioning: the cognitive stimulus hypothesis. Questions asked about certain topics may induce respondents to reflect more closely on them after the interview has ended, and possibly to talk about them with friends and relatives or to acquire additional information. Golob (1990) argues that no panel conditioning effects exist in questions that require simple reporting tasks, e.g. that panel conditioning relates to the cognitive difficulty in answering questions. Van der Zouwen and Van Tilburg (2001), on the other hand, found that panel conditioning did not take place via cognitive processes within the respondent's mind but via the interviewer.

### **3. Design and implementation**

To study the relation between panel conditioning and question type, we used two online household panels administrated by CentERdata (see [www.centerdata.nl](http://www.centerdata.nl) for more details about the panels). The first panel, the CentERpanel, consists for more than fifteen years. Panel members fill out questionnaires every week. Panel duration of respondents varies between fifteen years and a few months. The second panel is called the LISS-panel. Our questions were included in the first questionnaire presented to respondents in this panel. We fielded the questionnaire in June 2007. In the CentERpanel 1356 panel members were selected to fill out the questionnaire; 981 respondents responded (72.3%). In the LISS-panel, 4530 respondents were selected; 2809 respondents filled out the questionnaire (62.0%). Due to non-response, both panels were not entirely the same with regard to some key personal characteristics. Therefore, we used weights based upon sex, age, and education to compare the results of both panels. We used nine questions on two different subjects: food infection and old-age pensions. These subjects were presented to the trained panel multiple times, so we thought these would be the most sensitive to bias due to panel conditioning.

#### **4. Results**

Table 1 shows significant differences between trained and fresh respondents for the knowledge question about campylobacter<sup>1</sup>; 25.2% of the trained panels know what campylobacter is compared to 17.0% of the fresh panel. Salmonella and cross infection (also knowledge questions) do not show differences between the two panels. These concepts are relatively well-

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<sup>1</sup> Campylobacter is a bacterium found in the intestines of many types of animals and is the most common bacterial cause of diarrheal illness.

known, while campylobacter is a type of infection that less people know about. We found differences in the question about “Stichting Pensioen kijker”, an association to promote pension awareness that was mentioned in previous interviews the trained panel responded to, as well. Almost twice as much trained respondents compared to fresh respondents heard, saw, or read something about this association (39.7% in the trained panel compared to 21.8% in the fresh panel). Other types of questions (attitude, fact, behaviour, etc.) were not sensitive to repeated interviewing. Knowledge questions on less-known subjects seem to be sensitive to panel conditioning, indicating that panel conditioning relates to the cognitive difficulty in answering questions.

**Table 1.** A comparison between trained and fresh respondents for different Yes/No question types.

|  | Type of question | % Yes Trained panel | % Yes Fresh panel |
|--|------------------|---------------------|-------------------|
| Do you know what Campylobacter is?   | Knowledge        | 25.2                | 17.0*             |
| Do you know what Salmonella is?  | Knowledge        | 98.4                | 98.5              |
| Do you know what Cross infection is?   | Knowledge        | 80.9                | 79.1              |
| Did you think about your age of retirement the last year?                                | Behaviour        | 60.5                | 62.3              |
| Did you ever hear, see, or read something about “Stichting Pensioen kijker”?             | Knowledge        | 39.7                | 21.8*             |
| Do you think pensions will be higher about ten years from now?                           | Attitude         | 24.1                | 27.3              |
| Do you think people will be more satisfied with their pensions about ten years from now? | Attitude         | 10.2                | 9.1               |
| Do you think many people will retire partially in the future?                            | Attitude         | 64.0                | 64.2              |
| Are you retired?   | Fact             | 21.7                | 21.8              |

\*Difference between trained and fresh panel is significant ( $p < .01$ ).

## 5. Discussion and Conclusions

It is important to understand issues related to panel conditioning and their potential impact on the quality of research. Panel research gives big

advantages, but the fact that the panel is the foundation on which research projects are built, and trained respondents may respond differently than fresh respondents, causes concerns with regard to survey quality. This paper shows that knowledge questions on less-known subjects are very much affected by panel conditioning. When asking these kind of questions, a researcher has to be particular careful about the kind of sample used. We found that other types of questions are not sensitive to repeated interviewing. Our results hint at a relation between panel conditioning and cognitive demand. Knowledge questions on difficult subjects are more sensitive to panel conditioning. Future research can make the effect between panel conditioning and cognition more clear.

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