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Intra-individual variation of extreme response style in mixed-mode panel studies

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ABSTRACT

It is well known that the self-report survey method suffers from many idiosyncratic biases, such as varying response styles due to different survey modes used. Using latent state-trait theory it is argued that response styles will also vary intra-individually, depending on the particular survey situation. In this study we examine intra-individual variation in extreme response style behavior (ERS) using mixed-mode survey panel data as a quasi-experimental setting. Data from the Irish National Election Study panel are used, which consists of repeated face-to-face and mail-back surveys. Latent transition analysis is used to detect switches in ERS, distinguishing 'stable' and 'volatile' respondents in terms of their response style. Overall, ERS is inflated in the intermediate mail component of the panel, whereas preliminary analyses suggest that low education and ideological extremity are drivers of that change. Results are discussed with regards to measurement errors in mixed-mode and longitudinal surveys.

1. Introduction

Researchers in the social sciences and related disciplines make extensive use of standardized self-report surveys as a quantitative data collection tool. Nevertheless, it is well known that this method is susceptible to many flaws or errors that jeopardize the validity of results. The present study focuses on systematic measurement bias coming from the respondent, namely idiosyncratic differences in how individuals make use of response scales in reporting their answers. This phenomenon in surveys is usually defined as 'response styles' in the literature (for an overview: Van Vaerenbergh and Thomas, in press). More precisely, this type of bias naturally applies to rating scales (e.g. Likert-type agree-disagree) that are typically used for non-factual subjective measures.

This paper investigates extreme response style behavior (hereafter: ERS), a tendency to select endpoints of a response scale. Hence, ERS is assumed to be a systematic component in response patterns which, independent from the true attitude or assessment, biases observed scores. ERS has, for instance, gained growing attention as a source of nuisance in cross-cultural comparative survey research (e.g. Morren et al., 2012). Any idiosyncratic variation in that tendency is important, because extreme scores are used to make substantial inferences, such as 'attitude extremity' (Visser et al., 2006), 'opinionation' (Krosnick and Milburn, 1990), and 'attitude polarization' of issues in public opinion research (Baldassarri and Bearman, 2007). As a common source of variance ERS also artificially inflates correlations or item-factor loadings (Baumgartner and Steenkamp, 2001; Cheung and Rensvold, 2000).

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This study builds on a lively debate about whether response style behavior, in general, is a trait-like and stable individual feature or whether its manifestation is a state which primarily depends on external stimuli of the measurement method or situation (see, for example: Baumgartner and Steenkamp, 2001; Kieruj and Moors, 2013; Weijters, 2006). It is argued that both positions are valid. ERS is indeed a situation-dependent feature, though some individuals can be described as being rather stable (traited) and others as being volatile in this feature (instable, different states). A similar view on a segmented population can be found in latent state-trait (LST) theory (Eid and Langeheine, 2003) as well as in early controversies about the stability of attitudes (Converse, 1964).

More precisely, we analyze how ERS varies with the particular data collection method or survey mode used, comparing interview (face-to-face survey) and self-administered (mail-back survey) surveys. A wide literature suggests that response behavior, in general, differs between survey methods, resulting in differential measurement bias (Bowling, 2005; de Leeuw, 2005; Revilla, 2010; Schwarz et al., 1991; Weijters et al., 2008). Turning to ERS and survey mode, most studies coming from independent samples find that extreme responses are triggered in interview or aural modes, especially using CATI (telephone) (Dillman et al., 2009; Groves and Kahn, 1979; Jordan et al., 1980; Martin et al., 1993; Ye et al., 2011). Conversely, an in-depth study of Weijters and colleagues (2008) reports that the level of ERS is similar in telephone and mail surveys, but lower in internet surveys. Though findings are not unequivocal, we argue that differences in ERS originate from distinctive situational aspects of the survey mode, whereas social desirability and 'satisficing' strategies (Krosnick, 1991) of respondents play a key role for the manifestation of ERS.

It stands to reason that we would also find intra-individual variation in ERS for some respondents, conditional on the survey mode. As far as we know, this is the first study to look at this particular phenomenon. For this purpose we use the so called 'mixed-mode panel' design as a unique opportunity to study ERS. It is argued that this design allows us to examine ERS variation intra-individually and longitudinally in a quasi-experimental within-subject design, because we can observe identical individuals. As Vannieuwenhuyze and Loosveldt (in press) explain, it is usually difficult to disentangle the mode effect, which is comprised of (a) selection effects due to differences in respondent characteristics in different samples and (b) measurement effects or bias in different modes. So, the mixed-mode panel design represents a different approach towards evaluating mode effects (for other approaches: Vannieuwenhuyze and Loosveldt, in press), which tries to avoid confounding of mode and sample selection effects. However, some uncertainty regarding mode effects remains as we usually do not have an additional between-subject control group (a group with a different mixed-mode setting, with equal sample characteristics) alongside the within-subject design. Therefore we cannot prevent so called learning or carryover effects in the sense that having been surveyed using one mode affects how subjects behave in other modes. It is therefore mandatory that a mixed-mode panel design includes repeated survey modes to better deal with these issues.

Besides, while mixed-mode panels studies have become more and more common in recent decades (Couper, 2011; de Leeuw, 2005), we still know very little about the implications of switching modes for potential measurement bias or reliability. In this paper we thus ask: do people change their level of ERS with the survey mode and, if so, why?

It is important to note that strong variations of response style behavior with the measurement method would be fatal (see also Weijters et al., 2010a,b), since substantial change and artificial change in a variable can be confounded. Inconsistency implies that, besides random error inherent to survey questions, a kind of systematic bias in responses is introduced that is 'transient' from occasion to occasion (Le et al., 2009). For instance, the deleterious effect of volatile response behavior is supported by the finding that personality markers yield lower retest reliabilities when switching the survey mode in a panel study (e.g. Lang et al., 2011). This would imply that repeated measures in mixed-mode panels should be used with caution.

This study, for the first time, aims at providing insights into intra-individual variation in response style behavior (ERS) that accompanies a mixed-mode panel study. We show how a latent class model, so called latent transition analysis (LTA), can be used to detect switches as well as stability in a person's latent level of ERS. The contribution is thus twofold. This study will, first, contribute to a better understanding regarding the nature of survey response styles and the cognitive processes underlying the communication of self-reports. This has implications for studying 'true change' in attitudes as opposed to artificial changes. Second, it serves as a resource for applied researchers who work with mixed-mode data. For instance, the latent class model enables to identify respondents who are susceptible to vary their response behavior based on situational (mode) factors.

The paper is structured as follows. We, first, outline the theoretical perspective on the manifestation of individual response styles using latent state-trait theory. Taking a comprehensive approach, we argue that it is useful to separate respondents that actually change ERS behavior with the measurement situation from those who are rather stable. Next, we propose expectations regarding situational aspects in surveys and their impact on ERS. These expectations are examined using unique data from the Irish National Election Study (INES) panel, which uses a mixed-mode design of repeated face-to-face and mail-back surveys. For this purpose we present a latent transition model which helps us to detect variation in the overall level of ERS while allowing us to separate 'stable individuals' and 'variable individuals'. In an exploratory fashion, we also examine some individual covariates of ERS volatility. Finally, the results are summarized and discussed regarding implications for mixed-mode surveys and inherent measurement bias in longitudinal studies.

2. Perspectives on survey response styles

A large body of the applied survey research literature has been devoted to causes which are responsible for response style bias in public opinion surveys or psychometric tests (Van Vaerenbergh and Thomas, in press). As already mentioned, it is not