

How consequential is consequentiality? Testing impacts of survey consequentiality in an environmental Stated Choice Experiment

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Abstract

Stated preference (SP) surveys used for economic valuation of non-market environmental goods should ideally present scenarios and choice settings that stimulate respondents to answer the choice tasks truthfully. Failure to ensure such incentive compatibility may lead to a range of undesirable response behaviors causing hypothetical bias in Willingness-To-Pay (WTP) estimates (Carson et al., 2014). An important survey design feature in this regard is so-called consequentiality, which refers to a situation where respondents perceive that 1) their answers to the survey are likely to affect the policy decision in question; 2) the described policy will lead to the described environmental changes, and 3) they will have to pay the stated costs if the policy is realized (Carson et al., 2014; Herriges et al., 2010; Vossler et al., 2012).

We contribute to the literature on consequentiality by testing three different consequentiality scripts, designed to induce different degrees of consequentiality. We use data obtained from an online stated choice experiment (CE) aimed at eliciting Danish citizens' WTP for reducing the negative effects of new motorways on nature and outdoor recreational activities. A treatment-control design with three sample splits is used. In the first sample split, no particular efforts are made to induce consequentiality (Control). Respondents are essentially only instructed to be realistic and answer the questions carefully and honestly in order to ensure that results can be used for research purposes, whereas any linkage to actual decision-making is not mentioned. In the second sample split, respondents are additionally instructed that the researchers will present findings to the Danish Road Directorate, and, thus, it could potentially affect future planning of motorways in Denmark (Standard Consequentiality Treatment). This treatment is largely

in line with current guidelines for SP studies (Johnston et al., 2017; Mariel et al., 2021). In the third sample split, along with the invitation to the online survey, respondents also receive a letter from the Danish Road Directorate stating that the results of the research will be instrumental for future planning of motorways in Denmark (Enhanced Consequentiality Treatment).

A case-specific scenario describing a planned 180 km new motorway between Give, Viborg and Hobro in Jutland was used. The specific layout for the motorway was not yet determined, but respondents were explained that it would most likely affect nature areas, which the respondents use for outdoor recreational activities. The CE entailed five attributes associated with impacts of the new motorway in nature areas: levels of noise annoyance, amount of nature area converted to motorway, whether negative impacts on rare and endangered animal species will occur, whether mitigation measures to reduce roadkill numbers are introduced, and costs of adjusting the standard motorway layout. The payment vehicle was additional annual income tax, ensuring a high degree of payment consequentiality. Each respondent faced eight choice sets consisting of three alternative routes for a new motorway. A zero-cost status quo alternative was constant across all choice sets. This was described as a previously proposed route by the Danish Road Directorate with standard considerations for avoiding negative impacts on nature. The two experimentally designed alternative routes entailed further considerations for avoiding negative impacts on nature and outdoor recreational activities at the cost of an increase in annual household income tax.

Respondents were randomly drawn from the central civil registry (CPR) and questionnaires were sent out to their digital postbox “e-boks”. Data was collected from 3,616 respondents in total, each respondent randomly allocated to one of the three sample splits. Each sample split thus has about 1,200 respondents, providing a solid basis for comparisons between sample splits. The data was analyzed using random parameter logit model based on WTP space specification allowing for correlation between the random parameters. All quality attributes were specified to follow a normal distribution, while cost was specified as lognormal.

The results suggest that the WTP estimates obtained from the two treatments do not differ significantly from the control. Hence, varying the induced consequentiality appears to have had very limited if any effect in our empirical case. This is somewhat surprising given that we vary the degree of consequentiality from what may be considered a very low level of consequentiality to what may be considered a very high level of consequentiality compared to previous environmental CE studies. While we of course cannot generalize based on a single study, this finding is in line with, and expands on, the existing literature addressing consequentiality. We refrain from speculating whether this is because hypothetical bias has not been an issue in this empirical study in the first place – in which case we would not expect an effect of such scripts – or it rather implies that consequentiality scripts simply are not effective in terms of reducing or eliminating hypothetical bias.

References

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