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Household preferences for energy-saving measures: A conjoint analysis

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Abstract

Studies on household energy use generally focus on social and psychological factors influencing the acceptability of energy-saving measures. However, the influence of physical characteristics of energy-saving measures on their acceptability is largely ignored. In this study, preferences for different types of energy-saving measures were examined, by using an additive part-worth function conjoint analysis. Energy-saving measures differed in the domain of energy savings (measures aimed at home energy savings versus measures aimed at transport energy savings), energy-saving strategy (technical improvements, different use of products, and shifts in consumption), and the amount of energy savings (small versus large energy savings). Energy-saving strategy appeared to be the most important characteristic influencing the acceptability of energy-saving measures. In general, technical improvements were preferred over behavioral measures and especially shifts in consumption. Further, home energy-saving measures were more acceptable than transport energy-saving measures. The amount of energy savings was the least important characteristic: there was hardly any difference in the acceptability of measures with small and large energy savings. Except for respondents differing in environmental concern, there were no differences in average acceptability of the energy-saving measures between respondent groups. However, some interesting differences in relative preferences for different types of energy-saving measures were found between respondent groups.

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1. Introduction

In the last three decades, household energy conservation has been an important topic. While in the 1970s the oil crisis and an imminent energy shortage was the main motive for promoting energy conservation, from the late 1980s the negative consequences of fossil energy use for the environment, in particular global warming, became the principal reason for studying household energy use. An impressive amount of research has given insight into factors influencing household energy use and energy conservation. Many studies have focused on social or psychological factors related to energy-saving behavior, for example by examining the influence of cognitive variables, such as values, worldviews or attitudes towards energy conservation (Black, Stern, & Elworth, 1985; De Young, 1993; Gardner & Stern, 1996; Olson, 1981; Stern, 1992). Other studies stressed the importance of social processes (Cook & Berrenberg, 1981; Georg, 1999; Harland & Staats, 1997). Moreover, a large number of studies focused on the effects of information and various types of feedback on energy-saving behavior (Brandon & Lewis, 1999; Geller, Winett, & Everett, 1982; Midden, Meter, Weenig, & Zievering, 1983; Van Houwelingen & Van Raaij, 1989; Weenig, Schmidt, & Midden, 1990). In addition to the above-mentioned factors, characteristics of energy-saving measures themselves may influence the adoption of these measures. Although a distinction between behavioral and technical measures is often made (Gardner & Stern, 1996; Samuelson, 1990), little is known about the effects of these and other characteristics on the success of adopting these measures.

The present study is aimed at examining the influence of the characteristics of various measures on their acceptability by means of a conjoint analysis (e.g. Green & Srinivasan, 1978; Louviere, 1988; Luce & Tukey, 1964; see also the Data Analysis section). Conjoint analysis is a popular statistical technique in consumer research to examine people's preferences for products. However, to the authors' knowledge, it has not been applied to examine preferences for energy-saving measures. Conjoint analysis can be used to determine the importance of various measure characteristics for preferences about such measures.

In this paper, first, several strategies to reduce household energy use will be discussed. Next, results are presented of a study examining various measure characteristics influencing preferences for energy-saving measures.

1.1. Household energy-saving measures

Energy-saving measures may be characterized in various ways. In this study, energy-saving measures are characterized by the *domain* of energy savings (measures

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