



Environmental attitudes and preference for wetland conservation in Malaysia



Suziana Hassan^{a,b,*}

^a University of Copenhagen, Rolighedsvej 23, 1958 Frederiksberg C, Denmark

^b Faculty of Agriculture and Food Sciences, UPM Bintulu Campus, 97008 Bintulu, Sarawak, Malaysia

ARTICLE INFO

Article history:

Received 23 June 2016

Received in revised form 16 April 2017

Accepted 25 April 2017

Keywords:

Wetland conservation

Environmental attitudes

Economic valuation

Scale-adjusted latent class model

ABSTRACT

The incorporation of latent psychological factors in wetland valuation studies may improve our understanding of why some people value ecosystem services while others do not. This article focuses on public preferences for enhanced protection of the Setiu Wetland in Malaysia and explores the influence of environmental attitude on preference and the willingness to pay (WTP) for wetland conservation. The study reported here employs a discrete choice experiment to investigate household's WTP for a set of wetland attributes. A scale-adjusted latent class (SALC) model is applied to identify a latent preference structure combining choice attributes with attitude measures derived from the New Ecological Paradigm (NEP). We identified four NEP components in the respondent population to integrate with SALC model, and this revealed four latent classes and two scale classes which varied in their preferences. Class 1 was largely against wetland protection, although it showed a flooding preference, and was more likely to be 'Anthropocentric' but less likely to be 'Biocentric'. Class 2 had a positive preference for all attributes, and was more likely to be 'Biocentric'. Class 3 did not refer to any of the NEP components. A handful of responses in Class 4 were respondents more likely to be in the 'Risk of overuse' group and less likely to be 'Anthropocentric'. The result suggests that natural resource managers need to evaluate people's concerns over environmental protection to understand potentially conflicting views across populations.

© 2017 Elsevier GmbH. All rights reserved.

1. Introduction

Human behaviors are a significant driver for most environmental issues. Research outcomes of understanding the behaviors have been used to promote ecological and environment sustainability. Human attitudes and perceptions are specifically a topic of interest in the non-marketed valuation studies. Such human behaviors can be valuable in designing effective environmental policies (Choi & Fielding, 2013). For instance, the use of environmental attitude and preference measures can allow for a disaggregation of economic measure of willingness to pay (WTP) (Arrow et al., 1993; Bartczak, 2015; Hawcroft & Milfont, 2010; Meldrum, 2015). General environmental attitudes and specific attitudes to an issue are two types of attitudes that are commonly used in such environmental economic measure (Meldrum, 2015). The economic measure further disaggregates variable respondents' socioeconomic welfare, level of prior information, and their attitudes toward environmen-

tal issues (Hoyos, Mariel, & Hess, 2015). For example, individuals may have different motivations and may make different decisions to pay or not to pay to prevent environmental degradation (Jones, Botetzagias, & Malesios, 2009; Jones, Eavangelinos, Halvadakis, Iosofides, & Sophoulis, 2010). With the emergence of such untapped factors, studies that concern non-economic motives on WTP for environmental changes have now focused on public attitudes. This is because psychometric data of public attitudes (such as perceptions or beliefs, attitudes or values, and preferences) is sometimes necessary to understand the theoretical or latent construct underpinning choice behavior (McFadden, 1986). The data can in turn, be used to influence people to avoid continuous environmental degradation (Hoyos et al., 2015; Wolf, Adger, Lorenzoni, Abrahamson, & Raine, 2010).

Non-market valuation surveys have acknowledged the relevance of attitudes data for better understanding respondents' preferences (Arrow et al., 1993; Spash, 1997). The respondents' stated preference (SP) of either contingent valuation (CV) or discrete choice experiment (DCE) would have a significant effect on the decision for protecting the environment and valuing the ecosystem services (e.g. Aldrich, Grimsrud, Thacher, & Kotchen, 2007; Bartczak & Meyerhoff, 2013; Cooper, Poe, & Bateman, 2004;

* Correspondence to: University of Copenhagen, Rolighedsvej 23, 1958 Frederiksberg C, Denmark.

E-mail addresses: sbh@ifro.ku.dk, suzi@upm.edu.my

Kotchen & Reiling, 2000). The use of DCE over CV method for valuing non-marketed goods has advantages as it involves model structures that reflect repeated choices and reveals the heterogeneity in preferences (Ben-Akiva & Lerman, 1985; Boxall, Adamowicz, Swait, Williams, & Louviere, 1996; McFadden, 1974). Besides, the DCE model allows for the estimation of welfare impacts of changes in environmental attributes (Boxall et al., 1996; Colombo, Hanley, & Louviere, 2009; Louviere, Flynn, & Carson, 2010). Several studies have extended the model by incorporating socio-demographic and attitudinal characteristics as covariates to the indirect utility function (e.g. Choi & Fielding, 2013; Milon & Scrogin, 2006). The extensions facilitate researchers' better understanding of stated choice behavior that account for latent or unobserved heterogeneity in preferences.

Latent class (LC) model is one of the alternative approaches in the DCE that can accommodate respondents' preference heterogeneity. The LC analysis is fundamental to evaluate choice behavior as a function of observable attributes and inherent heterogeneity in respondent characteristics (Louviere et al., 2010). The LC model assumes that the overall preference distribution is a combination of unobservable latent classes, which are different in their utilities between classes, but similar within a class. The LC model is identical to the random parameter logit (RPL) model. Both models assume that all individuals respond to choice experiment (CE) with the same consistency (Mueller, Lockshin, Saltman, & Blanford, 2010). However, the consistency assumption is strongly violated when the error variance is not constant within or among respondents (Islam, Louviere, & Burke, 2007; Louviere, 2001). Such an issue creates a potential misinterpretation and a validity problem as to which preference utilities are confounded with a scale parameter (Magidson & Vermunt, 2007). To deal with this confounding issue, Islam et al. (2007) and Flynn, Louviere, Peters, and Coast (2010) suggested the scale-adjusted latent class (SALC) model that can avoid scale bias and improve estimation and interpretation.

Attitudes and motives toward the environment are important for understanding public values for environmental goods such as wetland ecosystem services (Bartczak, 2015; Choi & Fielding, 2013; Hammill, Tulloch, Possingham, Strange, & Wilson, 2016; Ndebele and Marsh, 2014; Ndebele & Marsh, 2014). Although the environmental attitudes may be a significant source of heterogeneity when assessing welfare and policy effects, attempts to account for such heterogeneity may encounter two problems. First, a type of scales should be selected and used to measure environmental attitudes. To solve the problem, Dunlap, Van Liere, Mertig, and Jones (2000) developed the New Ecological Paradigm (NEP) scale, which has been widely applied in environmental attitudes studies such as Amburgey and Thoman (2012), de Groot and Steg (2008), Dunlap (2008), Hawcroft and Milfont (2010), Pienaar, Lew, and Wallmo (2013), Schultz and Zeleny (1999) and Stern and Dietz (1994). Second how to identify various attitudinal groups and how to sort the characteristics into similar segments.

In this paper, principal component analysis (PCA) was applied to determine the elements of attitudinal statements in NEP scale. The elements were combined with choice data in order to assess the preference for wetland conservation. For each of the wetland attributes, the preference output was translated into a marginal WTP relative to the current condition. The objectives were to segment respondents into their respective preference groups based on the latent environmental attitudes, to determine the non-market values for the enhanced environmental conservation of SW and to measure the relationship between attitudinal groups and latent classes for WTP estimates. The findings offer insight into how differences in attitudes for wetland conservation can be accounted simultaneously with their underlying preferences. The paper is structured as follows: a literature review is followed by a consideration of data methodologies; then an econometric specification

is provided; after this the findings are presented, and finally there is a discussion and conclusion.

2. Literature review

2.1. The measurement of environmental attitudes

The Theory of Reasoned Action suggests that consumers' behavioral beliefs about environmental values influence their behavioral intentions and therefore affect their final purchasing decisions or choices (Ajzen, Brown, & Rosenthal, 1996). The theory states that individuals' decisions and behavior are based on their expectation as to the results of performing a given action. For example, pro-environmental behavior can contribute significantly to environmental sustainability, and potentially such behavior has an indirect positive impact on the environment (Steg & Vlek, 2009). Pro-environmental behavior refers to human behavior that aims either to damage the environment as little as possible or to benefit the environment.

For this reason, economists are interested in incorporating psychometric measures in environmental valuation studies. In addition, attitudes and perception regarding environmental issues can be used to investigate people's judgments about natural resources (Dietz, Fitzgerald, & Shwom, 2005; Hoyos et al., 2015). Studies frequently find that attitudes and beliefs have motivated people's responses on WTP for the environment (Franco & Luiselli, 2014; Johnson, Bowker, & Cordell, 2004; Pouta, 2004; Spash, 2000; Stern & Dietz, 1994). There is also a growing literature on the influence of non-economic motives on WTP for environmental protection, with most studies focusing on individual attitudes to the environment (Bartczak, 2015). Instead of using self-reported attitudes, Dunlap et al. (2000) developed and later updated NEP scales which concentrate on measuring the overall relationship between humans and the environment. The new revised NEP is composed of 15 statements assessed on a five-point Likert scale, and the statements are grouped into five core facets. The facets are 'limit to economic growth'; 'anti-anthropocentrism'; the 'fragility of nature balance'; 'rejection of human exemptionalism'; and, the 'possibility of potentially catastrophic environmental changes' or 'eco-crisis'. Table 1 presents the NEP statements in their five core environment facets.

This measure of environmental attitudes has been applied in many studies and found useful in clarifying the value bases of environmental concern (Amburgey & Thoman, 2012; de Groot & Steg, 2008; Dunlap, 2008; Hawcroft & Milfont, 2010; Pienaar et al., 2013; Pienaar, Lew, & Wallmo, 2015; Schultz & Zeleny, 1999; Stern & Dietz, 1994). The application of NEP psychometric data in discrete choice models is becoming more common in environmental economics. Studies such as Bartczak (2015), Kotchen and Reiling (2000), Aldrich et al. (2007), Milon and Scrogin (2006), and Sevenant and Antrop (2010) all incorporate this scale in their attitudes measure to account for the heterogeneity in respondents' preferences. The incorporation of such heterogeneity in preferences and attitudes is important to potential policy design, because it can influence people's choices and WTP.

2.2. Accounting for heterogeneity in preferences

The preferences of respondents in economic valuation might be heterogeneous, and accounting for the presence of heterogeneity enables us to avoid biased estimates of individual preferences (Garrod, Ruto, Willis, & Powe, 2012). Moreover, accounting for preference heterogeneity delivers a wider picture of distributional consequences and better insights to be used in policy actions and outcomes. Random parameter logit (RPL) models and LC models are

Download English Version:

<https://daneshyari.com/en/article/5744838>

Download Persian Version:

<https://daneshyari.com/article/5744838>

[Daneshyari.com](https://daneshyari.com)