



Approach to a causal model between attitudes and environmental behaviour. A graduate case study



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ABSTRACT

This paper offers a study of the environmental attitudes of graduates from the University of Zaragoza and their relationship with pro-environmental behaviour. These attitudes were analysed using a validated Likert scale, along with a questionnaire on environmental behaviours. A set of 20 items in the scale were grouped into four categories: Formation, Outreach activities, Conservation and Intention to act. Also, a set of 12 items were used to evaluate environmental behaviour. Structural equation modelling was used to test a causal model relating attitude to behaviours. The model shows the connection between two of the attitudinal factors – conservation and intention to act – with pro-environmental behaviour. The most relevant to the causal model is that the Conservation factor is the one that has shown the closest relation with Behaviour and this relation is shown through the Intention to act. The study involved 60 graduates that belong to departments that offer either compulsory or optional courses concerning the environment. This study suggests that conservation perspective should be considered in the university studies, both in interdisciplinary education programs and research programs. Moreover, the results obtained in this research work suggest that providing in the University adequate resources and habits in everyday academic life turns to be a very significant aspect for fostering pro-environmental behaviour.

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1. Introduction

Education has always been seen as key to improving quality of life, not just of individuals but also collectively for humankind (Tilbury, 2012).

Higher education is, unquestionably, an important tool for building the future. In the words of Lozano (2006), “the future leaders, decision-makers and intellectuals of the social, political, economic and academic sectors are created, formed and shaped within the world’s higher education institutions”. Universities are starting to realise the impact they have on the environment, but according to authors such as Lidgren et al. (2006), Lozano (2006, 2012), Desha and Hargroves (2010), Ferrer-Balas et al. (2010) or Jones et al. (2010), this awareness is still relatively new in most universities.

The recognition of the significant role played by human activities in the degradation of the environment should be associated with an increased awareness of environmental problems. If this relationship of human activities–environmental degradation is widely accepted, it will be possible to also address the need to achieve more sustainable lifestyles. Researchers interested in finding out how people view environmental problems are gradually paying more attention to environmental conscience and to new “attitudinal goals” associated with the environment (Dunlap et al., 2000).

Several attitudinal studies have been carried out in social and behavioural sciences: a reason for this interest is the belief that people make evaluative judgements about a wide variety of objects and rely on these judgements, or attitudes, in deciding among several possible courses of action in the future (Crawley and Koballa, 1994).

A common definition of attitude describes it as including the three components of cognition, affect, and behaviour (Crano and

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Prislin, 2006). As Ajzen (2001) pointed out, when we have an attitude, we judge something along emotional dimensions, such as good or bad, harmful or beneficial, pleasant or unpleasant and likable or dislikable. It is important to notice that these evaluative judgements are always focused towards something, often called the attitude object. Herein, the attitude object refers to the environmental judgement made by university graduates, and evaluated through their cognition, affect and willingness to act.

Systematic research of environmental attitudes started to be carried out in the early seventies (Wiegel and Wiegel, 1978) and is now a clearly defined field, as shown by several studies like Stern et al. (1999), Dunlap et al. (2000) or Schultz (2001) among others.

The study of environmental attitudes is interesting, above all, because of the possible influence on human behaviour. Environmental attitudes provide a good understanding of the set of beliefs, interests or rules that influence pro-environmental action. Consequently, numerous theoretical frameworks have been developed to explain the relationship between attitudes and pro-environmental action (Schwartz, 1977; Ajzen and Fishbein, 1980, 2000; Triandis, 1980; Hines et al., 1986/87).

Key researches that establish the potential relationship between environmental attitudes and behaviours are presented next.

Many studies were conducted based on prediction of behaviour from attitudinal variables within the framework of the theory of reasoned action described by Ajzen and Fishbein in 1980. This theory states that attitudes are important to the behaviour but do not determine behaviour directly; rather, attitudes influence behavioural intentions, which in turn shape our actions.

Theories in social and health psychology assume that intentions cause behaviours. The relevance of intention to act or willingness to act is justified in many research works, e.g., Armitage and Conner (2001), Bamberg and Schmidt (2003), Webb and Sheeran (2006), Bamberg and Möser (2007) or Rivas et al. (2009). These studies use modern statistical methods to synthesise results of a body of primary studies, and have provided convincing empirical evidence for the utility of intention as predictor of environmental behaviour.

Other models have been developed throughout the search for variables associated with responsible environmental behaviour (Stern, 2000; Courtenay-Hall and Rogers, 2002; Kollmus and Agyeman, 2002; Juárez-Nájera et al., 2010; Lin and Huang, 2012), which have highlighted the influence of internal factors, called environmental consciousness (such as values and attitudes, knowledge, feelings, emotional involvement or psychological benefit) and external factors (such as infrastructure, social and cultural factors, economic situation, etc.).

Stern (2000) indicates the types of variables that may influence behaviour and analyses the strength and implications. Apart from attitudes, Stern considers three variables to be important: contextual aspects, personal skills, and habits or routines. It is also stated that environmental behaviour cannot be explained solely by the action of variables, such as attitudes or social and cultural variables. According to the Stern, context plays a key role in understanding and assessing behaviours, and attitudinal factors have an important predictive function for behaviour when not constrained by context or personal abilities. However, when a suitable context comes about, both institutional factors (some actions only take place with the presence of adequate infrastructures) and economic factors intervene. In the present paper, several aspects suggested by Stern have been considered when analysing the environmental behaviours of the university graduates, based on context, habits or institutional factors.

In a higher education level, there is a lack of models analysing the connection between environmental attitudes and behaviours. Nevertheless, a model recently published by Juárez-Nájera et al. (2010) focuses on German and Mexican universities and explores

values and moral norms grounded within individuals, rather than grounded in rational choice and self-interest. This model considers motivation, largely related to a personal sense of responsibility, as a stimulus to perform specific pro-environmental actions.

Considering the aforementioned research studies, it can be concluded that the scenario is quite complex and it is essential to further examine the relationship between environmental attitudes and behaviours.

Research at the University of Zaragoza verified whether university education has equipped students with environmental attitudes, and the extent of these attitudes in connection with environmental behaviour. This paper analyses the environmental attitudes of university graduates, according to the definition of attitudes by Ajzen (2001). The scale of attitudes used herein (see Appendix 1) was developed in an earlier work (Fernández-Manzanal et al., 2007) to obtain insight in the graduates' environmental attitudes (Environmental Attitudes of the University, EAU Scale). The use of the same scale of attitudes will help discover if university environmental education has provided students with environmental attitudes.

Furthermore, an analysis of everyday environmental behaviours explored through a self-report is also presented (Questionnaire on Environmental Behaviours, see Appendix 2).

Results of these questionnaires are applied to the analysis and search for a possible influence of attitudes on proenvironmental behaviour. A causal model is proposed, in which attitudes and environmental behaviours in everyday life are related. Following this analysis, it is explained how the proposed causal model reflects the relationship between environmental attitudes and behaviours. The model was developed using structural equation modelling.

2. Case study: the University of Zaragoza

Environmental evaluation of graduate students aims at establishing the extent of environmental attitudes provided by university education and verifying whether such attitudes are displayed in everyday pro-environmental behaviour.

Addressing such issues allows the validity and reliability of the proposed questionnaires to be contrasted, evaluating whether university education is promoting sustainable behaviour through its education, and searching for a relationship between environmental attitudes and behaviours, i.e., find a causal model that enables the establishment of a relationship between the attitudes examined and everyday environmental behaviours.

The following questions were part of the questionnaire:

1. What are the characteristics of the environmental attitude displayed by University of Zaragoza graduates?
2. What environmental behaviours in everyday life are displayed by University of Zaragoza graduates?
3. Is there a causal relationship between environmental attitudes and behaviours? Which factors of the environmental attitude explain the causal model between environmental attitudes and pro-environmental behaviours?

3. Method

3.1. Sample

The sample consisted of 60 university graduates who obtained their degrees from various faculties of the University of Zaragoza, Spain. The participants belong to departments that offer either compulsory or optional courses concerning the environment or environmental training. The faculties and centres involved in this

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