



The importance of survey content: Testing for the context dependency of the New Ecological Paradigm Scale

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ABSTRACT

Using a regression-based analysis of a survey of U.S. households, we demonstrate that both environmental concern, as measured by the New Ecological Paradigm (NEP) Scale, and facets of environmental concern, as measured by three NEP factors, are influenced by survey context. Survey respondents were presented with detailed information about two to four threatened and endangered marine species in the United States, including the Endangered Species Act listing status of the species and threats to the survival of the species. All else being equal, measures of environmental concern are influenced by both which species were included in the survey and by the concern expressed about these species. As such, measures of environmental concern are found to be context dependent since they are correlated with the species included in each survey. We also demonstrate that NEP-based measures of environmental concern are affected by socio-demographic variables, opinions about government spending, and environmental knowledge. Given the wide, multi-disciplinary use of the NEP Scale, it is important for researchers to recognize that NEP-based measures of environmental concern may be sensitive to information included in surveys.

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1. Introduction

For decades, researchers have investigated the social determinants of increasingly severe environmental degradation and emerging pro-environmental attitudes. According to this research, two paradigms inform individuals' attitudes and behavior: the dominant social paradigm (DSP) and the new environmental paradigm (Dunlap and Van Liere, 1978), which was later re-named the new ecological paradigm (NEP) (Dunlap et al., 2000). Environmental degradation is driven by the DSP, which is based on libertarian principles, and faith in science, technology, and resource abundance (Catton and Dunlap, 1978; Dunlap and Van Liere, 1984; Dunlap and Jones, 2002). In contrast, pro-environmental behavior arises from the NEP, which explicitly recognizes societies' dependence on natural resources, and the environmental consequences of pollution and excessive resource use.

To empirically measure commitment to the NEP, Dunlap et al. (2000) designed the New Ecological Paradigm Scale (NEP Scale), an updated version of the original New Environmental Paradigm Scale (Dunlap and Van Liere, 1978). The NEP Scale is composed of 15 Likert-scale items intended to measure five core facets of individuals' attitudes toward the environment:

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limits to economic growth, anti-anthropocentrism; the fragility of nature's balance; rejection of human exemptionalism (the belief that people are not bound by the constraints of nature); and the possibility of potentially catastrophic environmental changes or eco-crises affecting people (Dunlap et al., 2000). The New Environmental Paradigm and New Ecological Paradigm Scales are the most widely used measures of environmental concern² (Hawcroft and Milfont, 2010; Dunlap, 2008; Amburgey and Thoman, 2012).

Considerable research has been conducted on the validity of the NEP Scale as a measure of environmental concern (e.g., Stern et al., 1995; Spash, 2006); socio-demographic determinants of the NEP Scale (e.g., Fransson and Gärling, 1999); and how the NEP Scale responds to environmental education (Rideout, 2005) and knowledge about native species (Hunter and Rinner, 2004). Simultaneously, research has been conducted on how responses to survey questions, in particular attitudinal questions, are influenced by information and questions included on surveys (e.g., Tourangeau, 2003; Swait et al., 2002; Tourangeau and Rasinski, 1988; Krosnick and Alwin, 1987). However, with the exception of Pienaar et al. (2013), who examined the influence of survey context³ on individual NEP Scale items, there has been no systematic examination of how survey context may affect responses to the NEP Scale, and associated conclusions about environmental concern. In this paper, we explicitly test how environmental concern and dimensions of environmental concern, as measured by the NEP Scale, are influenced by survey context.

The paper proceeds as follows: Section 2 reviews the literature pertaining to the NEP Scale and survey context. Section 3 describes the data used for the analysis. Section 4 outlines the methods used in this paper to test for context dependency of environmental concern, namely, the use of factor analysis to test for the dimensionality of the NEP Scale and the regression model to be estimated. Section 5 presents the results of the exploratory factor analysis. Section 6 presents regression results and discusses how these results relate to the existing literature. Section 7 concludes.

2. Previous research

In order to make inferences about environmental concern, an aggregate NEP score is calculated. Individuals' level of agreement with each of the 15 NEP Scale items is assigned a score between one and five. For odd-numbered pro-ecological statements (see Table 1), the lowest value of one is assigned to an answer of 'strongly disagree' and the highest value of five is assigned to an answer of 'strongly agree', such that a value of three is assigned to the neutral response of 'neither agree nor disagree'. For even-numbered pro-DSP statements this scoring rule is reversed. Individual NEP item scores are then summed together to determine the NEP score, which ranges from a minimum of 15 to a maximum of 75. An NEP score exceeding the median of 45 indicates a higher degree of environmental concern, which should result in pro-environmental behavior, subject to budgetary and other constraints (e.g. Olli et al., 2001; Weigel and Newman, 1976). For this survey, the mean and median NEP scores (51.3 and 52 respectively) exceed a 'neutral' score of 45, which suggests that survey respondents tend toward a pro-ecological worldview.

Multiple papers have been written on determinants of the NEP score. There is some evidence that education, age, residential area and political ideology affect environmental concern (Fransson and Gärling, 1999; Grendstad, 1999). Jones and Dunlap (1992) found that environmental concern is higher for younger and/or more highly educated adults, political liberals, Democrats, and urban residents (see also Johnson et al., 2004; Lundmark, 2007; Hawcroft and Milfont, 2010; Grendstad, 1999). There is also evidence that NEP scores are affected by culture (Vikan et al., 2007; Pierce et al., 1987; Schultz and Zelezny, 1999), class structures (Skogen, 1999), gender (Rideout et al., 2005; Johnson et al., 2004), and family size (Johnson et al., 2004). Using the 2000 National Survey on Recreation and the Environment, Johnson et al. (2004) found that ethnicity affects NEP scores, as whites have higher scores, in general, than blacks and foreign-born Latinos. And there is some evidence that environmental concern is lower for individuals who are employed in primary industries or blue-collar jobs (Jones and Dunlap, 1992; Hawcroft and Milfont, 2010).

In addition, NEP scores have been used as explanatory variables in models examining stated behavior toward specific environmental issues (e.g., Aldrich et al., 2007; Kotchen and Reiling, 2000). However, there has been little examination of how information presented in stated behavior or environmental surveys might influence measures of environmental concern, despite Dunlap et al.'s (2000) assertion that responses to the NEP Scale would be responsive to information. Rideout (2005) found that environmental education results in increased endorsement of the NEP. Hunter and Rinner (2004) found that prior knowledge about six native species did not significantly affect NEP scores, even when controlling for socioeconomic variables.

The only study to test for context dependency in relation to the NEP Scale was recent work by Pienaar et al. (2013), which demonstrated that the distribution of responses to individual NEP Scale items was affected by survey information about marine species. However, their analysis was limited to individual NEP Scale items, which precluded tests for context dependency of the full NEP score.

This is an important consideration, given research findings that demonstrate that survey context may affect responses to attitudinal questions. In the process of answering survey questions, respondents may form a perception of themselves that

² The term "environmental concern" is used throughout this paper to refer to "beliefs, attitudes, intentions, and behaviors related to environmental issues" (Milfont and Duckitt, 2010: 81; see also Dunlap and Jones, 2002, and Fransson and Gärling, 1999).

³ We define survey context as survey content that may influence responses to questions. "Context effects refer to changes in the answers to a survey question as a function of the previous items in the questionnaire" (Tourangeau et al., 2003: 486).

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