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Is the New Ecological Paradigm Scale Stuck in Time? A Working Paper

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ABSTRACT: The most frequently used environmental attitude scale – the New Environmental Paradigm scale – may be woefully dated. The scale was designed to measure adherence to a paradigm of environmentally focused ethics and beliefs. However, scale items drawn on a not-yet-solidified worldview have led to issues of reliability and validity.

KEYWORDS: ecological paradigm, environmental attitudes, ethics, evaluation, measurement, NEP, New Ecological Paradigm, New Environmental Paradigm, scale, validity

1. INTRODUCTION

Consideration of the natural environment enters into decision-making at many levels, from personal to professional, industrial, governmental and corporate. However, in the 1960s and 1970s, environmental concern emerged onto the public's radar. Rachel Carson published her ground-breaking book *Silent Spring* in 1962, a treatise on how chemicals had permeated our environment and affected human and wildlife health and habitat (Carson, 2002). In June 1969, the Cuyahoga River in Ohio caught fire, serving as a tangible illustration of extreme water pollution (Scott, 2009). The February 1970 issue of *Time Magazine* featured a cover image of Barry Commoner, renowned biologist, and introduced lay publics to the idea of ecology (Lewis, 2012). Also in 1970, Earth Day was founded and the Environmental Protection Agency was established (Lewis, 2012). However, far from catapulting Western culture into a new era fully embracing environmental concern, these “astounding events” as William Catton and Riley Dunlap (1978) refer to them, merely laid the first transitional steps toward a re-envisioned relationship with nature (p. 41).

Today, facing issues of species extinction, resource scarcity, and global climate change, social and natural scientists alike understand not only that we must consider the natural environment, but also that our relationship with nature touches on the very survival of the

planet. It is our ethical imperative to recognize just how great human impacts are while finding ways to mitigate these effects.

Mitigation efforts require public support, so it makes sense to understand how lay attitudes and behaviors align with environmental concerns. Moreover, the urgency of these issues underlie why understanding the lay public's attitudes toward the environment is important.

This working paper discusses one of the key empirical measures of environmental concern, the New Environmental Paradigm scale. Its worldwide use accords it the powerful potential to measure changes and variations of environmental attitudes across time, disciplines, and populations. However, this scale, now more than 35 years old, seems to be stuck in time. Concerns have been raised about the scale's reliability and validity, calling into question its efficacy while raising ethical issues surrounding its usefulness and application.

2. SCALE BACKGROUND

In 1976, Dunlap and his research assistant Kent Van Liere created a scale to measure lay attitudes about what they saw as an emerging paradigm: one that emphasized ecocentric beliefs as opposed to the anthropocentric paradigm (Dunlap & Van Liere, 1978). According to Dunlap, the anthropocentric paradigm, which was dominant in the west at the time the scale was created, had been rooted in a 400-year period of abundance generated both through growth in technology and imperial expansion and exploitation of resources, often referred to as the Human Exemptionalism Paradigm (HEP) (Catton & Dunlap, 1978; Dunlap, 1980, 2008). Dunlap argued that wealth of resources and technological innovation enabled humans to see themselves as infinitely adaptable and separate from ecological limitations. This Human Exemptionalism (also referred to as Exceptionalism) Paradigm posited that humans distinguish themselves from other species through the development of culture, which allows for more variation and adaptation than biology alone. Since variability can be altered by society's influence, humans can solve differences in ways that other species are not capable. Ultimately, this means that human progress is unlimited because all social problems can be solved through our unique ability to quickly adapt (Catton & Dunlap, 1978). Dunlap referred to this paradigm as the Dominant Social Paradigm, or DSP (Dunlap, 1980).

Dunlap asserted that one need look only at the anthropocentric assumptions upon which social science was firmly based prior to the 1970s in order to recognize the solid establishment of the DSP. The fact that research looked at many relationships except for those between society and its biological environment is proof of wide acceptance of the DSP (Catton & Dunlap, 1978; Dunlap, 1980).

The focus of humans at the center of life's web (the anthropocentric view) began to shift in the 1970s toward an ecological emphasis, fueled by popular writing by scientists including Rachel Carson and Barry Commoner, who posited that humans are woven into the interdependent biological community, rather than the pilots of that community. Adherents to the ecological worldview suggest that due to interdependence, human actions can cause unintended consequences; additionally they acknowledge that there are physical and biological constraints that limit the growth and progress of society (Catton & Dunlap, 1978). Dunlap and Van Liere were caught up in this paradigm shift, as witnessed by their creation of a scale to capture this shift in environmental worldviews.

In order to measure whether this new paradigm was indeed emerging, Dunlap and Van Liere developed a 12-item Likert-type scale dubbed the New Environmental Paradigm Scale (Dunlap & Van Liere, 1978). At the heart of the scale are three fundamental premises: 1) “Humanity’s ability to upset the balance of nature, 2) Existence of limits to growth for human societies, and 3) Humanity’s right to rule over the rest of nature,” or concisely, “balance of nature, limits to growth, and antianthropocentrism” (Dunlap, Van Liere, Mertig, & Jones, 2000, pp. 427, 432). The NEP scale was designed to measure judgments about the fundamental relationships between humans, nature, and animals, as evidenced by the scale’s 12 questions. Note that the questions (see Table 1) ask respondents their level of agreement (Strongly Agree, Mildly Agree, Mildly Disagree, Strongly Disagree) with a series of statements that describe either a new and emerging environmental worldview or a traditional anthropocentrism (human exemptionalism) worldview reflected by what scholars called a Dominant Social Paradigm.

Table 1

Original NEP Statements
<ol style="list-style-type: none"> 1. We are approaching the limit of the number of people the earth can support. 2. The balance of nature is very delicate and easily upset. 3. Humans have the right to modify the natural environment to suit their needs. 4. Mankind was created to rule over the rest of nature. 5. When humans interfere with nature it often produces disastrous consequences. 6. Plants and animals exist primarily to be used by humans. 7. To maintain a healthy economy we will have to develop a “steady-state” economy where industrial growth is controlled. 8. Humans must live in harmony with nature in order to survive. 9. The earth is like a spaceship with only limited room and resources. 10. Humans need not adapt to the natural environment because they can remake it to suit their needs. 11. There are limits to growth beyond which our industrialized society cannot expand. 12. Mankind is severely abusing the environment.
<p><i>Source: Dunlap & Van Liere (1978)</i></p> <p><i>Items 1, 2, 5, 7, 8, 9, 11, and 12, if rated highly on the four-point Likert-type response format, reflect endorsement of the NEP. Items 3, 4, 6, and 10, if rated highly on the four-point Likert-type response format, reflect endorsement of the HEP.</i></p>

3. CHALLENGES EMERGE

In 2000, Dunlap et al. published a revised scale, named the New Ecological Paradigm Scale, to address some problems that had begun to arise with the original scale (see Table 2). Perhaps most obvious of those problems was the use of sexist language. For example, one item was originally phrased, “Mankind was created to rule over the rest of nature” (Dunlap & Van Liere,

1978). The authors revised it to read “Humans were meant to rule over the rest of nature” (Dunlap et al., 2000).

Research results had begun to emerge that led scholars to question the dimensionality of the scale; the scale authors attempted to attend to this matter by changing the balance of pro- and anti-NEP items. Originally, there were four items that were negatively phrased and all addressed the same construct, antianthropocentrism.

Additionally, the authors added and removed scale items, a net increase from 12 to 15, to address what they perceived to be recently emerging facets of the NEP – antiexemptionalism and ecocrises¹. Lastly, they altered the item response choices by replacing the four choices with five. The revised scale includes an Unsure midpoint, anchored by Strongly Agree, Mildly Agree, Mildly Disagree, Strongly Disagree (Dunlap et al., 2000). This revision appears to have been a turning point in popularity of the scale, as a large majority of the published research using the scale is cited after 1997 (Hawcroft & Milfont, 2010).

Table 2

Revised NEP Statements
<ol style="list-style-type: none"> 1. We are approaching the limit of the number of people the Earth can support. 2. Humans have the right to modify the natural environment to suit their needs. 3. When humans interfere with nature it often produces disastrous consequences. 4. Human ingenuity will insure that we do not make the Earth unlivable. 5. Humans are seriously abusing the environment. 6. The Earth has plenty of natural resources if we just learn how to develop them. 7. Plants and animals have as much right as humans to exist. 8. The balance of nature is strong enough to cope with the impacts of modern industrial nations. 9. Despite our special abilities, humans are still subject to the laws of nature. 10. The so-called “ecological crisis” facing humankind has been greatly exaggerated. 11. The Earth is like a spaceship with very limited room and resources. 12. Humans were meant to rule over the rest of nature. 13. The balance of nature is very delicate and easily upset. 14. Humans will eventually learn enough about how nature works to be able to control it. 15. If things continue on their present course, we will soon experience a major ecological catastrophe.
<p><i>Source: Dunlap et al. (2000)</i></p> <p><i>Items 1, 3, 5, 7, 9, 11, 13, and 15, if rated highly on the five-point Likert-type response</i></p>

¹ An additional 6-item version of the scale exists that has been employed by several researchers (Arcury, Johnson, & Scollay, 1986; Dunlap, Van Liere, Mertig, & Jones, 2000); however, this scale was never published so is in limited use. This scale is briefly described in Hawcroft & Milfont (2010). Many other “unofficial” iterations of the scales ranging from 5 to 15 items have been employed by researchers (Hawcroft & Milfont, 2010).

format, reflect endorsement of the NEP. Items 2, 4, 6, 8, 10, 12, and 14, if rated highly on the five-point Likert-type response format, reflect endorsement of the HEP.

4. APPLICATION OF THE NEP SCALE

By using the scale as an attitude measure over several decades, scholars have found lay attitudes have demonstrably shifted toward more environmental (and less anthropocentric) worldviews. For example, Dunlap et al. (2000) showed a modest increase in adherence to the NEP over a 14-year period. Arcury and Christianson (1990) found more alignment to environmentalism (more concurrence with positive NEP worldviews) after those surveyed had encountered an environmental hardship. Arcury and Christianson also found more positive NEP worldviews among respondents in their 40s over time, likely signaling that, as cohorts age, they maintain pro-environmental attitudes.

Based on its breadth of use, the NEP scale is established as a normative measure of environmental attitudes. The scale has been widely used in multiple fields such as sociology, political science, social and environmental psychology (e.g. Dunlap et al., 2000; Grendstad, 1999; Hawcroft & Milfont, 2010), communication (Coleman, 2012), science and environmental education (e.g. Brossard, Lewenstein, & Bonney, 2005; Cordano, Welcomer, & Scherer, 2003; Noe & Snow, 1990), travel and tourism (e.g. Luo & Deng, 2008; Uysal, Jurowski, Noe, & McDonald, 1994), economics (e.g. Anderson, 2012; Noblet, Anderson, & Teisl, 2013) and agriculture and natural resources (e.g. Edgell & Nowell, 1989).

Given that the NEP was based on Western ideals, the scales have been used most frequently in the United States and secondly in Europe, but Hawcroft and Milfont's meta-analysis in 2010 found utilization of the scale in 36 countries including non-Western locations such as China, India, Turkey, Brazil, Hong Kong, Japan, Dominican Republic, and Russia.

The scale has been used as an empirical indicator for a variety of variables. In reviewing use of the scale in 2000 and 2008, Dunlap et al. found that it had been used to measure pro-ecological beliefs, worldview, attitudes, and values. Cordano et al. (2003) used the scale to measure intent to participate in pro-environmental behavior. Although the scale was meant to measure general attitudes about the environment, researchers have used the NEP scale to gauge specific attitudes toward particular behaviors as well (Fransson & Garling, 1999).

Therefore the scale is an established tool for use in measuring environmental attitudes in a multiplicity of applications and locations.

5. IS THE NEP SCALE STILL VALID?

The value of a consistent scale cannot be understated. The full NEP scale is easily accessible to anyone wishing to measure environmental concern by doing a quick Google Scholar search. The fact that so many researchers have taken advantage of the scale makes it easy to compare methodologies and results of individual studies. Its widespread use over populations, time, and disciplines allows for greater possibility of generalizability. However, if the scale is neither reliable nor valid, there is little possibility of generalizability.

The conceptualization of the NEP and a number of its scale items are more than 35 years old. It is only reasonable to assume that our understanding of the relationship between

humans and the environment has not remained stagnant during this period. It is worth investigating whether the scale and its theoretical constructs are still reliable and valid.

Pertinent to our critique at hand are the deep meanings rooted in the constructs that the question-items are reported to operationalize. Issues of reliability, as mentioned above, started to emerge with the original scale configuration. Although Dunlap et al. (2000) addressed one issue that may have been leading to the emergence of multiple dimensions by changing the makeup of the negatively and positively worded items, the scale continues to show multiple dimensions in numerous studies.

An illustration of the construct operationalizations arises when examining the ways in which the items have loaded when measured through orthogonal factor analysis. Critics wonder what constructs the original scale is actually measuring. For example, when researchers find that the 12-items load on two dimensions, does this mean there are two paradigmatic worldviews in play: one that reveals an emerging environmental worldview that imagines humans as interwoven with nature, and another anthropocentric worldview that features humans at the helm of all relationships? Some scholars argue that the original scale reflects a single dimension only—the New Environmental Paradigm worldview—and that, when two loadings emerge, this merely demonstrates a pro-environmental focused perspective and an anti-environmental focused perspective. To make matters more oblique, researchers have discovered that sometimes different loadings emerge: sometimes questions align on one dimension, sometimes on two, sometimes on three, four, or five. Scholars wonder what factors contribute to the appearance of the different dimensions: is this the result of myriad respondents answering surveys? Could it be the result of different operational tweakings of the questions?

At the time the original scale was developed, the concept of a pro-environmental worldview was new. As discussed earlier, in the 1970s, western society was just beginning to acknowledge human reliance on the environment; that humans are governed by the same laws as other species (Dunlap, 1980). The scale embraced wording perhaps relevant at the time, but dated today. For example, respondents are asked to agree or disagree with the statement that “The Earth is like a spaceship with very limited room and resources” (Dunlap et al., 2000; Dunlap & Van Liere, 1978). Although this phrase remains in the NEP revision, we wonder whether it continues to be salient.

Referring to the Earth as a spaceship is a practice that became popular after Apollo 8 astronauts photographed the Earth rising over its moon in 1968. The image was widely circulated in the US and helped people envision our planet as unified and finite (Poole, 2010). The photograph shows the Earth hovering in space, similar to the way we may have envisioned a spaceship floating in the ether, hence the phrase spaceship Earth. Although used frequently in popular and scholarly materials alike in the late 1960s and 1970s, in the 21st century, the spaceship Earth term may serve to bring to mind its namesake amusement ride at Disney’s Epcot rather than its association with the iconic space photograph. Lalonde and Jackson found near the turn of the century that the image “no longer is prevalent nor is it perceived as an accurate reflection of current understanding” (Lalonde & Jackson, 2002, p. 32). Survey respondents have complained that the term is “weird,” too technological or mechanical, or implies human control. Lalonde and Jackson note that “carrying capacity” reflects the same notion today, but they suggest the term is too scientific for survey use.

Even in their attempt to embrace the emerging environmentally focused paradigm in their wording, Dunlap and Van Liere used phrases that nevertheless reflect humans’

separateness from nature, indicating how deeply the HEP paradigm was embedded in the thought processes of even those who were trying to objectively evaluate it. The most obvious illustrations are the original and revised NEP scale items referring to living in harmony with nature (“Humans must live in harmony with nature in order to survive”) and interfering with nature (“When humans interfere with nature it often produces disastrous consequences”) (Dunlap et al., 2000; Dunlap & Van Liere, 1978). Several items reflecting anthropocentrism also frame humans and nature as separate entities. Although these concepts may have reflected a new way to think about the environment at the time the scale was written, both phrases imply that humans and nature are two separate entities (Lalonde & Jackson, 2002), without recognizing interdependence.

Another concept that may be outdated in the scale is the reference to population growth. One scale item used in both versions states that “We are approaching the limit of the number of people the Earth can support” (Dunlap et al., 2000; Dunlap & Van Liere, 1978). Given the exponential population growth over the past 35 years, there are people who may find themselves disagreeing with this statement because they feel we have surpassed the number of people the Earth can support (Lalonde & Jackson, 2002). Since this scale item is meant to positively correlate with adherence to the NEP, the wording of this item could skew results.

6. ETHICS OF CONTINUED USE OF THE SCALE

Clearly, the NEP scale has proven a common measure of environmental attitudes that have shifted remarkably since the scale’s creation in the 1970s. We cannot help but wonder, however, if the scale is salient. The very core of its creation occurred at a time when human-centric attitudes were shifting toward a more interdependent worldview. Original scale items spring from constructs that represent paradigmatic worldviews under flux. As a result, the attitude items – such as “Humans were meant to rule over the rest of nature” – seem seriously outdated at a time when lay publics most likely acknowledge the interdependence of humans with nature. Indeed, Dunlap has noted that respondents’ attitudes have shifted over time and today hold more environmentally friendly attitudes (Dunlap et al., 2000).

Addressing the issue of environmental attitudes seems particularly germane at a point in time when science is often viewed through a political lens, thus raising issues of ethical management of natural resources. For example, mass communication scholars argue that lay publics seem to attend to information that reinforces their existing beliefs (Festinger, 1957). If Dunlap and Van Liere are correct, attitudes about human relationships with nature oppose the more human-centric view in favor of a more holistic approach to managing resources. If lay publics are more willing to adopt such a view, and if such a view reflects “best practices” in managing resources, then policy makers and elected officials who eschew scientific data and misinterpret public opinion exemplify unethical responses to resource management.

7. CONCLUSION

Is the New Environmental Paradigm scale stuck in time? We contend the NEP measures short-term understanding of environmental concerns based on social norms and mores from the 1970s. Although Dunlap, Van Liere and their colleagues revised the scale in 1990, the instrument fails to capture contemporary attitudes and normative values regarding the environment, thus calling into question its reliability and validity while raising ethical issues

surrounding its usefulness and application. We encourage researchers to rethink the conceptual and methodological shortcomings of the New Ecological Paradigm scale and forge a fresh dialogue about whether and how the scale should be revised. The scale's items reflect paradigms in flux, and we argue that, rather than merely reframing the attitude questions, we should reexamine the constructs and assumptions that underpin the worldviews of contemporary lay publics.

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