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The Influence of Individualist-Collectivist Values, Attitudes Toward Women, and Proenvironmental Orientation on Landscape Preference

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THE INFLUENCE OF INDIVIDUALIST-COLLECTIVIST VALUES, ATTITUDES TOWARD WOMEN, AND PROENVIRONMENTAL ORIENTATION ON LANDSCAPE PREFERENCE

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Abstract

The purpose of this study was to explore individual variables affecting preferences for natural or managed landscapes. Environmental attitudes and value systems of student participants ($N = 147$) were assessed using the revised New Ecological Paradigm (NEP) scale and the Scenarios for the Measurement of Collectivism and Individualism (SMCI) scale, respectively. In addition, feminist orientation was assessed using the Attitudes toward Woman scale (AWS). The hypothesis that proenvironmental attitudes would be positively correlated with a preference for natural landscapes was supported. However, hypotheses that alignment with collectivist values would correlate positively with a preference for natural landscapes and that a feminist orientation would be positively correlated with a preference for natural landscapes were not supported. Demographic variables are discussed with respect to landscape preference. Caveats of the individualism-collectivism variable are also discussed.

The Influence of Individualist-Collectivist Values, Attitudes toward Women, and Proenvironmental Orientation on Landscape Preference

Environmental issues have developed increasing importance within many academic fields, including Psychology. The study of landscape preference has moved research toward an environmental perspective and the study of proenvironmental attitudes is ensuring the significance of environmental issues in future research. With regard to landscape preference, previous studies have found that preferences for natural landscapes vary by culture (Herzog, Herbert, Kaplan, & Crooks, 2000; Kaplan & Herbert, 1987; Peron, Purcell, Staats, Falchero, & Lamb, 1998). With regard to environmental attitudes, proenvironmental orientation varies by culture as well (Clayton, 2003; Deng, Walker, & Swinnerton, 2006; Olofsson & Ohman, 2006; Vikan, Camino, Biaggio, & Nordvick, 2007). Gender has also been shown to influence environmental attitudes (Acury, 1990; Blaikie, 1992; Deng et al., 2006; Mainieri, Barnett, Valdero, Unipan, & Oskamp, 1997; Zelezny, Chua, & Aldrich, 2000). However, previous research has not fully explored how environmental attitudes impact landscape preferences.

Dominant Western Worldview

A brief foray into the Western World's environmental history begins, here, with the Dominant Western Worldview. The basic assumption of this worldview is that humans are fundamentally different from and ultimately in control of the natural world (Buttel, 1987). The advent of this worldview began with a shift in religious belief from Paganism to Christianity. Pagan religious thought held that nature was to be revered and worshiped, whereas, Christian religious thought held nature not as sacred, but as hostile

and in need of civilization (Nash, 1982). Rene Descartes combined the Christian idea of man above nature with the Platonic dualism of mind and body. With his 'Cogito ergo sum/Je pense, donc je suis', Descartes placed a divinely generated rationality (mind) above a mechanistic physical being (body) and ultimately the natural world (Bookchin, 1993). Cartesian thought led to not only the domination of humans over nature, but also the domination of one human over another by fragmenting all of nature, including humans, into hierarchies (Bookchin, 1993).

Ecofeminism

This idea of Cartesian fragmentation is the driving force behind a feminist movement that began in the 1970's known as ecofeminism (List, 1993). According to the ideas put forth by ecofeminists, the fragmentation and subsequent domination of man and nature is at the foundation of our environmental problems (Merchant, 1993). Throughout history, nature was often equated with the maternal: The mother earth nurtured us as did our own mothers. As pagan, nature-based religions were replaced with Christianity, this maternal culture was replaced with a patriarchal culture of male deities who ruled over man and nature. From an ecofeminist perspective, the scientific revolution of the seventeenth century advanced the Cartesian mechanistic view of the world and brought with it a capitalistic patriarchy that further degraded the status of both women and nature (Merchant, 1993).

New Environmental Paradigm

With emerging ecological movements of the 1970's like ecofeminism, there appeared to be a shift in the Western Worldview towards a new environmentalism. In contrast to the Dominant Western Worldview, the New Environmental Paradigm (NEP)

moved toward an interconnectedness between humans and nature. The NEP was conceptualized by Catton and Dunlap in 1978 as an alternative to the anthropocentric environmental ideas of the time. At its core, the NEP consists of three basic assumptions:

> 1. Human beings are but one species among the many that are interdependently involved in the biotic communities that shape our social life.
> 2. Intricate linkages of cause and effect and feedback in the web of nature produce many unintended consequences from purposive human intention.
> 3. The world is finite, so there are potent physical and biological limits constraining economic growth, social progress and other societal phenomena. (Catton & Dunlap, 1978, p. 45)

No longer seen as dominant over nature, man is viewed as being an interdependent part of the whole of nature. For every action we make, there is a reaction within the web of life (Buttel, 1987). In stark contrast to the Social Darwinists' view of nature in competition, the more Newtonian assumption here is that nature is a cooperative network.

Not surprisingly, Dunlap and colleagues (2000) found high NEP endorsement among environmentalists. Their results indicated that higher NEP scores were related to an increase in the perceived seriousness of world ecological problems. Likewise, high NEP endorsement related to increases in the perceived seriousness of air and water pollution (Dunlap, Van Liere, Mertig, & Jones, 2000). Alignment with NEP values has also been shown to be linked with support for proenvironmental policies and proenvironmental behavior (Dunlap et al., 2000). In contrast, Dunlap & Van Liere (1984) found that alignment with the Dominant Western Worldview significantly decreases concern for environmental quality.

Proenvironmental Orientation and Gender

Other studies involving NEP values have found that scores differ by gender. Females were found to have significantly higher NEP scores than males (Acury, 1990; Blaikie, 1992; Deng et al., 2006; Mainieri et al., 1997; Zelezny et al., 2000). Further, alignment with the Dominant Western Worldview significantly decreases alignment with feminist attitudes (Heaven, 1999).

Research has also shown that females are significantly more likely than males to participate in proenvironmental behaviors (Baldassare & Katz, 1992; Mainieri et al., 1997; Roberts, 1993; Schahn & Holzer, 1990; Steel, 1996; Stern, Dietz, Kalof, & Guagnana, 1995; Widegren, 1998; Wolkomir, Futreal, Woodrum, & Hoban, 1997; Zelezny et al., 2000). These studies looked at various proenvironmental behaviors including recycling and socially responsible or "green" buying. It has been suggested that the socialization of females across cultures to be interdependent creates an "other" orientation that is at the root of this gender difference in both proenvironmental attitude and behavior (Stern, Dietz, & Kalof, 1993; Zelezny et al., 2000).

A study by Zelezny, Chua and Aldrich (2000) is of particular interest because of its cross-cultural approach. Sampling over 2,000 college students from 14 countries within Europe, Latin America and the United States, Zelezny et al. (2000) found that females had higher NEP endorsement than men. Participants were given a questionnaire that included measures of environmental attitudes, proenvironmental behaviors, and general demographics. When looked at as a whole, Zelenzy et al. (2000) found that females had higher NEP endorsement than men. A similar pattern was found regarding proenvironmental behaviors, with females reporting greater participation in

proenvironmental behaviors than males. It was suggested that these differences may be due to cultural similarities in gender socialization (Zelezny et al., 2000).

Proenvironemtnal Orientation and Individualism-Collectivism

Research has indicated that NEP endorsement and individualism are negatively correlated (Vikan et al., 2007). Chinese heritage, often associated with collectivist values, has been shown to increase alignment with NEP attitudes (Deng et al., 2006). Collectivist values have also been shown to predict greater environmental concern than individualist values (Clayton, 2003; Olofsson & Ohman, 2006).

In particular, Viken, Camino, Biaggio, and Nordvick (2007) investigated NEP endorsement in both Brazil and Norway. In this study, participants were given both a measure of NEP endorsement and a measure of individualism-collectivism. Consistent with their hypothesis, Brazilian participants scored as collectivists and the Norwegian participants scored as individualists. With regard to NEP endorsement, the Brazilian participants scored higher than the Norwegian participants. There was also a negative correlation found between the NEP scores and individualism (Vikan et al., 2007). When looking at the specific response sets on the NEP, the Brazilian participants gave higher ratings to those involving man as participant in nature and the Norwegian participants gave higher ratings to those involving man acting on the environment The results of this study suggest that Latin collectivist culture adheres to an interdependent view of nature (Vikan et al., 2007).

Landscape Preference

Differences across cultures also exist in landscape preferences (Herzog et al., 2000; Kaplan & Herbert, 1987; Peron et al., 1998). Specifically, preferences for natural

vs. managed landscapes vary cross-culturally. One explanation for this difference may be the value systems within each nation, such as individualism-collectivism. The widely known measure of a nation's individualism, Hofstede's Cultural Dimensions, ranks a nations' level of individualism and family cohesion on a scale of 0 – 100, with high scores indicating high levels of individualism and low scores indicating higher family cohesion. Hofstede's Cultural Dimensions lists the United States, Finland, Sweden and the United Kingdom as individualist nations (Hofestede & Hofstede, 2005). Studies with American subjects found preferences for managed landscapes (Balling & Falk, 1982; Brown, Kaplan, & Quaderer, 1999; Herzog, 1984; Orland, 1988). Finnish subjects were also found to prefer managed over natural landscapes (Tyrvainen, Silvennoinen, & Kolehmainen, 2003). Likewise, a study in Sweden found that preference for a landscape increased with the degree of management (Hagerhall, 2000).

In the United Kingdom, Coles and Bussey (2000) found a preference for open and controlled as opposed to wild and dense forests. The participants, who lived in Redditch, a town replete with a variety of green-space woodlands (i.e., municipal parks), were asked to fill out a questionnaire regarding use of and preferences for these woodlands. Though the species of vegetation did not affect preference, amount of vegetation did (Coles & Bussey, 2000). Participants preferred open structured woods to those with a dense canopy structure. This preference for more managed environments appeared to be related to perceived management rather than actual controlled environments. For example, the study's results indicated that the participants gave lower ratings to any areas that had brush remaining on the forest floor. However, this is a common management practice of their local parks service in Redditch (Coles & Bussey, 2000).

In contrast, preferences for natural landscapes have been found in collectivist countries (Arriaza, Canas-Ortega, Canas-Madueno, & Ruiz-Aviles, 2004; Real, Arce, & Sabucedo, 2000). Research has indicated that individuals in Spain prefer natural over 'civilized' (or managed) landscapes (Real et al., 2000). Similarly, a study addressing rural landscapes in southern Spain found preferences increased as the degree of wilderness in the landscape increased (Arriaza et al., 2004). Though Spain has a Hofstede score near the midpoint (Hofstede score = 51, from Hofestede & Hofstede, 2005), it is similar to Japan's score (Hofstede score = 46, from Hofestede & Hofstede, 2005) and is considered a collectivist nation (Gouveia, Clemente, & Espinosa, 2003).

Proenvironmental Orientation and Landscape Preference

Research has indicated that proenvironmental attitudes and preferences for natural landscapes are positively correlated (de Groot & Van den Born, 2003). A study by de Groot and Van den Born (2003) focused on proenvironmental attitudes and landscape preference. A questionnaire was used to assess the participant's proenvironmental attitudes as being one of three 'image of nature' categories: adventurer/exploiter of nature (least proenvironmental), having a responsibility for nature, or being a participant in nature (most proenvironmental). The participants were also asked to rank their preferences for the following types of landscapes: well-ordered, park-like, untamed nature, and that "allowing for experiences with the greatness and forces of nature" (de Groot & Van den Born, 2003, p.1). Overall, the participants preferred the 'greatness of forces' category of landscape, followed by the untamed nature category. The least preferred was the well-ordered landscape (de Groot &Van den Born, 2003).

With regard to proenvironmental attitudes, those participants who adhered to the 'man as participant in nature' belief set preferred the 'greatness and forces' category and those who adhered to the 'adventurer/exploiter of nature' belief set preferred the well-ordered and park-like categories. Those participants who adhered to the 'man having responsibility for nature' belief set had no significant likes or dislikes, though they tended toward the 'greatness and forces' and untamed nature categories. This study found a shift away from the domination of nature image and suggested a new environmental focus on stewardship (de Groot & Van den Born, 2003).

Hypotheses

The purpose of the current study was to explore how the constructs of proenvironmental attitudes, attitudes toward women and individualism-collectivism affect preferences for natural or managed landscapes. It was hypothesized that a preference for natural landscapes would be positively correlated with proenvironmental attitudes and a preference for managed landscapes would be negatively correlated with proenvironmental attitudes. Further, it was hypothesized that feminist attitudes would be positively correlated with a preference for natural landscapes and negatively correlated with managed landscapes. Lastly, it was hypothesized that alignment with collectivist values would correlate positively with a preference for natural landscapes and alignment with individualist values would correlate positively with managed landscapes.

Method

Participants

Students from the University of North Florida ($N = 147$; 111 females, 36 males) participated in this study for course extra-credit. Participants ranged in age from 18 to 53

years (mean age = 23 years). The participants were mostly Psychology majors (69%). The remaining 31% of participants were "other" majors. The majority of participants was Caucasian (71%), followed by African American and Hispanic (each 10%) and Asian American (5%). The remaining 4% of participants identified themselves as being of "other" ethnicity. The study's participants were mainly from the southeastern United States (65%), followed by the northeastern United States (20%) and a small number were from outside the United States (5%). The remaining 10% of participants hailed from other areas of the United States.

The amount of time spent in nature was also measured for each participant, ranging from every day (14% of participants) to never (15%). The majority of participants fell into the middle categories of once a week (35%), twice per month (10%), once per month (8%) and a few times a year (18%). The amount of time spent in nature was operationalized as how often a participant spent at least 30 minutes or more in nature participating in activities such as hiking, boating or bird-watching.

Surveys

Revised New Ecological Paradigm Scale (NEP). Environmental attitudes were measured using the Revised New Ecological Paradigm Scale (NEP) (Appendix A). The NEP is a 15-item questionnaire designed to measure the extent to which the respondent subscribes to an ecological worldview. The respondents rated each item using a 5-point Likert scale which ranges from a low score of 1 (strongly disagree) to a high score of 5 (strongly agree). A high score on the NEP suggests strong NEP endorsement and pro-environmental attitudes. The authors reported a coeffieient alpha of .83 (Dunlap et al., 2000). For the current study, a Cronbach alpha of .82 was indicated. The NEP has

strong predictive validity as it correlates with other measures of environmental attitudes such as: a measure of the perceived seriousness of world ecological problems (r = .61), a measure of support for proenvironmental policies (r = .57), a measure of the perceived seriousness of state and community air and water pollution (r = .45) and also a measure of pro-environmental behavior (r = .31) (Dunlap et al., 2000). The NEP also demonstrates construct validity. It has been found to correlate with political orientation (r = .22) and political liberalism (r = .32) as well as with age (r = -.11) and education (r = .10) (Dunlap et al., 2000).

Scenarios for the Measurement of Collectivism and Individualism (SMCI). Individual values systems were measured using the Scenarios for the Measurement of Collectivism and Individualism (SMCI) developed by Triandis, Chen and Chan (1998) (Appendix B). The SMCI is a 16–item questionnaire designed to measure the respondent's value system (alignment with collectivist or individualist attitudes) with regard to their life choices. Each question consisted of a scenario and four options. Each option set had choices that corresponded to individualist or collectivist orientations. The respondents chose the answer that best represents the option they would chose in that particular scenario. Answers were scored as being either individualist or collectivist.

The SMCI was developed in response to difficulty in consistently measuring collectivist and individualist attitudes. The authors noted that most instruments designed to measure individualism and collectivism have both convergent and divergent validity but lack internal reliability (Triandis et al., 1998). It is believed that this difficulty in reliability may be due to social desirability issues of attitude measures. The scenario method is believed to decrease this risk (Triandis et al., 1998). Triandis et al. (1998)

reported a Spearman rank order correlation of .80. For the current study, reliability was calculated at .30. The potential impact of the low reliability coefficient will be discussed later. The SMCI has been shown to correlate with other established instruments including a 32-item attitude questionnaire developed to measure individualism and collectivism (*r* ranges from .11 to .51) (Triandis et al., 1998).

Attitudes toward Woman Scale (AWS). Attitudes toward women were measured using the Attitudes toward Woman Scale (AWS) (Appendix C). The AWS is a 15-item questionnaire designed to measure the respondent's attitudes toward women and feminism. The respondents rate each item using a 4-point Likert scale which ranges from a low score of 1 (agree strongly) to a high score of 4 (disagree strongly). High scores on the AWS suggested more egalitarian/feminist attitudes. For some items on the scale, scoring is reversed helping avoid any acquiescence bias (Spence & Hahn, 1997). The AWS has a "Cronbach alpha in the mid-.80s" (Spence & Hahn, 1997, p.21). For the current study, a Cronbach alpha of .83 was indicated. In demonstrating convergent validity, the authors found that the 15-item AWS is "highly correlated with the original version" of the scale containing 55-items (Spence & Hahn, 1997, p. 19).

Stimuli

The stimulus set consisted of 10 slides, each with 2 color pictures depicting various landscapes of the American eastern coast. The use of photographs or pictures in assessing landscape preference has been shown to have representational validity, in that the use of photo-realistic images allows for valid predictions of preferences for actual or "real" environments (Daniel & Meitner, 2001). For the purpose of this study, several criteria were used in selecting the photographs to remove confounding variables. The

first criterion for the pictures was that they represent either natural or managed scenes. Natural was defined as not being visibly altered by humans (i.e. heavily wooded) and managed was defined as being visibly altered by humans (i.e. pasture land). Each slide set consisted of a managed scene and a natural scene that were related (i.e. open, sandy beach and driftwood prominent beach). The scenes were randomly assigned to the left or right of the screen, allowing for counterbalancing of the managed and natural scenes. The second criterion for the pictures was that none of them contain any intrusive signs of human influence, such as buildings or vehicles. The third criterion for the pictures was that none contain any visible animals or humans. Lastly, all of the pictures were at eye-level. No birds-eye views or close-up details were included. All pictures were taken by either the author or a colleague in locations along the eastern seaboard of the United States. Each picture was selected from a large collection of potential scenes to best represent managed and natural landscape pairs. Reliability analyses of the landscape preference measure indicated a Cronbach alpha of 0.73.

Design and Procedure

Participants were seen in groups up to 15. After giving informed consent and completing a demographics questionnaire, participants were shown the slides of landscapes arranged in one order which was consistent throughout the study. To measure a participant's landscape preference, they were asked to select the picture within the slide set that they preferred and to circle the corresponding letter (A or B) on a survey form. The participants were then given the aforementioned scales. The scales were also arranged in random order to produce one form of the survey that was consistent; in order, all participants were presented with the NEP, SMCI, and AWS.

Results

An alpha of 0.05 was used for all tests. A median split was performed on the landscape preference variable to create a category score for each participant as either preferring managed landscapes or preferring natural landscapes. Likewise, a median split was performed on the individualist-collectivist variable to create a category score for each participant as being either individualist or collectivist. For the remaining variables (NEP and attitudes toward women) the average of a participant's responses to the questionnaires was used in the analysis. All following analyses assume equal variances between groups unless otherwise noted.

As hypothesized, a preference for natural landscapes was correlated with proenvironmental attitudes as scores on the NEP were found to be positively correlated with landscape preference ($r = 0.28, p < 0.001$). Results of an independent-samples t-test (assuming unequal variances) indicated that there was a significant difference in NEP scores between landscape preference groups ($t = -3.55, p < 0.001$). Participants who preferred managed landscapes ($M = 3.78, SD = 0.54$) scored significantly lower on the NEP than those who preferred natural landscapes ($M = 3.42, SD = 0.53$). There was no significant correlation found between attitudes towards women and landscape preference ($r = 0.06, p > 0.05$). Likewise, there was no significant correlation between collectivist-individualist values and landscape preference ($r = -0.03, p > 0.05$).

The amount of time spent in nature was found to correlate with landscape preference ($r = 0.37, p < 0.001$). The more time a participant spent in nature, the greater the preference for natural landscapes. Results of an ANOVA revealed that there was a significant difference in landscape preference with regard to time spent in nature, F (5,

141) = 5.00, $p < 0.001$. Post hoc LSD t-tests revealed a significant difference in landscape preference between participants who spent time every day in nature and those that spent a few days a year ($p < 0.01$) and those who were never in nature ($p < 0.01$). Likewise, those who spent at least one day a week in nature differed significantly from those who spent a few days a year ($p < 0.001$) and those who were never in nature ($p < 0.001$). Specifically, participants who spent one day a week or more in nature preferred more natural landscapes (Table 1).

Scores on the NEP were found to correlate with several demographic factors. Age of participant positively correlated with NEP scores ($r = 0.25$, $p < 0.01$) with older participants having greater NEP endorsement and proenvironmental attitudes. This is in the opposite direction of previous research that found that NEP endorsement and proenvironmental attitudes decrease with age (Acury, 1990; Acury & Christianson, 1990; Dunlap et al., 2000). Gender was also found to correlate with scores on the NEP ($r = 0.17$, $p < 0.05$). Post hoc t-tests found that there was a significant difference in NEP scores with regard to gender ($t = 2.04$, $p < 0.05$). Females scored higher on the NEP than males (females $M = 3.57$, $SD = 0.57$ versus males $M = 3.35$, $SD = 0.49$), suggesting females have more NEP endorsement and proenvironmental attitudes. This replicates findings of previous research (Acury, 1990; Blaikie, 1992; Deng et al., 2006; Mainieri et al., 1997; Zelezny et al., 2000). Attitudes toward women were also correlated with gender ($r = 0.26$, $p < 0.01$), with females scoring significantly higher on the Attitudes toward Women scale than males (females $M = 3.37$, $SD = 0.41$ versus males $M = 3.11$, $SD = 0.45$; $t = 3.17$, $p < 0.01$).

Scores on the Attitudes toward Women scale (AWS) were found to be positively correlated with scores on the NEP scale ($r = 0.26, p < 0.001$) with increasing feminist attitudes associated with increasing proenvironmental attitudes. Scores on the Attitudes toward Women scale were also found to correlate with those from the Individualist-Collectivist scale ($r = -0.18, p < 0.05$). Post hoc t-tests revealed that individualists scored significantly higher on the AWS than collectivists ($t = 2.20, p < 0.05$), indicating that feminist attitudes were correlated with individualist values. These findings need to be viewed cautiously as the distribution of scores on the AWS in this participant population displayed ceiling effects. The average score on the AWS in this study ($M = 3.30$, $SD = 0.43$) was well above the midpoint of the scale (2.5). In fact, only 7% of this sample scored below the midpoint.

Discussion

It was hypothesized that a preference for natural landscapes would be positively correlated with proenvironmental attitudes and a preference for managed landscapes would be negatively correlated with proenvironmental attitudes. Results of this study supported this hypothesis. Having a preference for natural landscapes was found to be correlated with proenvironmental attitudes as high scores on the NEP scale were associated with a preference for pictures of natural landscapes. It should be noted that previous studies have found distribution skewness of NEP scores in their samples (i.e., Widegren, 1998). Though increasingly high proenvironmental attitudes across a wide variety of populations are a positive phenomenon, it is of concern with regard to the use of the NEP scale in this research. A check for distributional skew revealed a normal distribution of scores for this sample.

The second hypothesis was that alignment with feminist attitudes would be positively correlated with a preference for natural landscapes and negatively correlated with managed landscapes. Results of this study found no significant difference in landscape preference with regard to feminism scores. However, scores on the NEP were found to correlate with feminist values. This is consistent with previous research findings (Smith, 2001). Further, it was found that feminist attitudes correlated with individualist values rather than collectivist values. Previous research has also indicated that collectivist nations exhibit more traditional attitudes toward women and individualist countries exhibit less traditional attitudes toward women as indicated by higher scores on the AWS (Gibbons, Stiles, & Shkodriani, 1991). Ceiling effects were displayed by the distribution of scores on the AWS in this participant population. The majority of scores in this study were well above the midpoint, with only 7% below that point. This restriction of range could explain the lack of significant difference found in scores on the AWS with regard to a number of variables tested in this study. The authors of the AWS warned that "severe restriction at the upper end of the scale can limit the capacity of the AWS to detect such relationships" (Spence & Hahn, 1997, p. 30).

The third hypothesis was that alignment with collectivist values would correlate positively with a preference for natural landscapes and alignment with individualist values would correlate positively with managed landscapes. This hypothesis was not supported by the results of this study. Analyses indicated that the participant population did not demonstrate a large difference with regard to the individualist-collectivist variable. The population sampled was found to be 71% individualist, which is not

surprising considering most were from the United States, a predominantly individualist nation.

The Scenarios for the Measurement of Collectivism and Individualism (SMCI) scale may not have tapped into the expected constructs for this participant population. Previous research found a correlation between individualism-collectivism and NEP endorsement (Vikan et al., 2007). Similarly, results from previous research indicated a correlation between individualism-collectivism and environmental concern (Clayton, 2003; Olofsson & Ohman, 2006). There was no significant correlation found between proenvironmental attitudes and individualism-collectivism in this study. Further, reliability analyses performed on the SMCI indicated a Cronbach alpha of 0.30 for this population demonstrating poor internal reliability. Researchers in the area note that there is a difficulty in consistently measuring collectivist and individualist attitudes (Gouveia et al., 2003; Singelis, 1994; Triandis et al., 1998). The scales of this nature are measuring individualism and collectivism as dichotomous constructs, a person is either individualist or collectivist. However, it may be more appropriate to view them as multidimensional; a person can be both individualist and collectivist to varying degrees (Gouveia et al., 2003). This could explain why some of the participants in this study had difficulty with the SMCI; many participants asked to use multiple answers or give qualifiers for their selection (i.e., "in instance 'x' I would do (a) and in instance 'y' I would do (b)"). Likewise, it is not uncommon for contrary results to occur when measuring these constructs (Gouveia et al., 2003). It has been suggested that the multitude of scales and measures available for individualism-collectivism has lead to a nonconvergence of

findings resulting from different operationalizations of the constructs (Gouveia et al., 2003).

This difference in operationalization is best illustrated with regard to the country of the Netherlands. Though the Netherlands is considered an individualist nation, its citizens' proenvironmental attitudes and landscape preferences are more in line with those of a collectivist nation (de Groot & Van den Born, 2003; Peron et al., 1998; Van den Berg, Vleck, & Coeterier, 1998). Hofstede's Cultural Dimensions lists the Netherlands as a nation high in individualism (Hofstede score = 80, from Hofestede & Hofstede, 2005). As measured on Hofstede's scale, a nation high in individualism is one in which the population views the individual as most important and a nation low in individualism is one in which the population views the family as most important (Hofstede & Hofstede, 2005).

Triandis et al. (1986) used four different dimensions to assess a nation's level of individualism-collectivism. One of these dimensions was family integrity, similar to Hofstede's measure of individualism. The Netherlands scored the lowest in family integrity (cohesion of the family unit). This would be consistent with having a high level of individualism on the Hofstede scale. Conversely, Costa Rica scored the highest in family integrity, and is labeled as low in individualism on the Hofstede scale (Hofstede score = 15, from Hofestede & Hofstede, 2005). For the remaining three dimensions used in the Triandis study (self-reliance, separation from ingroups, and interdependence), the Netherlands scores aligned more closely with those of nations labeled as low in individualism on the Hofstede scale (Triandis et al., 1986). Of particular interest is the dimension of interdependence. The level of interdependence within the country of

Indonesia (Hofstede score = 14, from Hofestede & Hofstede, 2005) was most closely related to the level found within the Netherlands (Triandis et al, 1986). With regard to proenvironmental attitudes and landscape preference, a nation's level of interdependence would appear a priori to be more predictive than the level of family integrity. Consistent with this, the United States scored as much less interdependent than the Netherlands (Triandis et al., 1986). Much like the differential socialization of genders across nations, an interdependent focus may influence a nation's environmental worldview.

Although some of the hypothesized factors included in this study were not found to be correlated with landscape preference, other demographic factors were. The amount of time an individual spent in nature was correlated with landscape preference; the more time a person spent in nature, the more likely they were to prefer a natural landscape. One explanation for this is that individuals who have an affinity for nature may spend more time surrounded by it. Although there was no significant correlation found between time spent in nature and scores on the NEP (which might imply an affinity for nature) it approached significance ($r = -0.16$, $p = 0.056$). Further, having a preference for natural landscapes was found to significantly correlate with higher scores on the NEP

Scores on the NEP were also found to be correlated with a participant's age. Older participants scored higher on the scale than younger participants. This is opposite the direction indicated by previous research that found NEP endorsement and proenvironmental attitudes decrease with age (Acury, 1990; Acury & Christianson, 1990; Dunlap et al., 2000). Evolutionary psychological theory suggests that our need for safe (managed) environments increases with our age. From this perspective, as we were evolving into modern man, our landscape preferences shifted toward those that offered

the most resources while allowing for our safety as well. The older we were, the less able to defend ourselves we became. As a result, nature became increasingly more dangerous causing a shift in landscape preference away from a wild environment (though more bountiful) toward safer landscapes with more protection and possibly less biological resources (i.e., food and water sources). Evolutionary psychological theory posits that this pattern of landscape preference remains in the psyche of modern man (Orians & Heerwagen, 1992).

One explanation for the difference between the results found in this study and those of previous research may be the skewed distribution of age groups in this study. A check of the frequencies revealed that nearly 75% of the sample population fell at the mean or below it. Blaikie (1992) suggested that the relationship between age and NEP score was curvilinear. He found that NEP scores fell near the median for 18-24 year olds, peaked from the ages of 25-34 and then declined after the age of 65 (Blaikie, 1992). The majority of participants in this study were in the 18-24 year old category (78%). It is possible that this study failed to detect the expected pattern due to a limited age range. When separating the NEP scores by age, a similar pattern begins to form in the sample population. However, given the skewness of age group, no significant differences between the 18-24 year old subset and the over 24 years old subset could be detected.

It is clear that further research is necessary to understand the relationships between landscape preference and personal attitudes. However, the patterns found in this study, as well as those of previous studies, suggests an ability to promote the development of proenvironmental attitudes early in life through egalitarian socialization. It is quite possible that an "other" orientation is also a factor contained in the

individualist-collectivist construct. Further analysis should pay close attention to the measures used to ensure consistent operalizationalizing of the constructs. Additionally, future research should focus on those dimensions within the individualism-collectivism construct (i.e., interdependence) that are most applicable to the variables studied. Either of these approaches may lead to a better understanding of how this factor affects landscape preference and proenvironmental attitudes. As we become increasingly globalized, it is not only important to develop a better understanding of other cultures, but it is also necessary to develop the ability to influence those other cultures to utilize their resources effectively and proenvironmentally.

Research in the field of environmental psychology, specifically landscape preference and proenvironmental attitudes, can facilitate appropriate use of environmental resources. From a land management aspect, understanding what people find visually and aesthetically appealing in a landscape can help in creating and preserving public lands by giving clues to the level of management the park should exhibit. From an environmental protection aspect, knowing what landscapes the population is likely to prefer helps in formulating action plans for designating environmentally protected areas and in gaining public support (whether fiscal or attitudinal) of environmental projects. Having the ability to bolster proenvironmental attitudes and an understanding of what influences landscape preference could aid in advancing an attitude of protection and respect for the natural world and its resources.

Appendix A

Revised New Ecological Paradigm (NEP) Scale

(modified from Dunlap et al., 2000, p. 433).

Listed below are statements about the relationship between humans and the environment. For each one, please indicate on a scale of 1-5 whether you STRONGLY DISAGREE (1), MILDLY DISAGREE (2), are UNSURE (3), MILDLY AGREE (4) or STRONGLY AGREE (5) with it.

1. We are approaching the limit of the number of people the earth can support.

   1 2 3 4 5

2. Humans have the right to modify the natural environment to suit their needs.

   1 2 3 4 5

3. When humans interfere with nature, it often produces disastrous consequences.

   1 2 3 4 5

4. Human ingenuity will insure that we do NOT make the earth unlivable.

   1 2 3 4 5

5. Humans are severely abusing the environment.

   1 2 3 4 5

6. The earth has plenty of natural resources if we just learn how to develop them.

   1 2 3 4 5

7. Plants and animals have as much right as humans to exist.

   1 2 3 4 5

8. The balance of nature is strong enough to cope with the impacts of modern nations.

1 2 3 4 5

9. Despite our special abilities, humans are still subject to the laws of nature.

1 2 3 4 5

10. The so-called "ecological crisis" facing humankind has been greatly exaggerated.

1 2 3 4 5

11. The earth is like a spaceship with very limited room and resources.

1 2 3 4 5

12. Humans were meant to rule over nature.

1 2 3 4 5

13. The balance of nature is very delicate and easily upset.

1 2 3 4 5

14. Humans will eventually learn enough about how nature works to be able to control it.

1 2 3 4 5

15. If things continue on their present course, we will soon experience a major ecological catastrophe.

1 2 3 4 5

Appendix B

Scenarios for the Measurement of Collectivism and Individualism (SMCI)

(modified from Triandis et al., 1998, pp. 280-283)

Below are several scenarios. Each scenario is followed by four options. Please imagine yourself in those situations and choose the option you consider the best or most appropriate for you. Remember there are no "correct" answers, just your opinion of what is best.

1. You and your friends decided spontaneously to go out to diner at a restaurant. What do you think is the best way to handle the bill?

a. Split equally, without regard two who ordered what
b. Split it according to bow much each person makes
c. The group leader pays the bill or decides how to split it
d. Compute each person's charge according to what that person ordered

2. You are buying a piece of art for your office. Which one factor is most important in deciding whether to buy it?

a. It is a good investment
b. Your coworkers will like it
c. You just like it
d. Your superior will approve it

3. Suppose you had to use one word to describe yourself. Which one would you use?

a. Unique
b. Competitive
c. Cooperative
d. Dutiful

4. Happiness is attained by

a. Gaining a lot of status in the community
b. Linking with a lot of friendly people
c. Keeping one's privacy
d. Winning in competition

5. You are planning to take a major trip that is likely to inconvenience a lot of people at your place of work, during your absence. With whom will you discuss it, before deciding whether or not to take it?

a. No one
b. My parents
c. My spouse or close friend
d. Experts about the place I plan to travel to so I can decide if I want to go

6. Which one of these four books appears to you to be the most interesting?

a. How to make friends
b. How to succeed in business
c. How to enjoy yourself inexpensively
d. How to make sure you are meeting your obligations

7. Which is the most important factor in an employee's promotion, assuming that all other factors such as tenure and performance are equal? Employee is/has

a. Loyal to the corporation
b. Obedient to the instructions from management
c. Able to think for him- or herself
d. Contributed to the corporation much in the past

8. When you buy clothing for a major social event, you would be most satisfied if

a. You like it
b. Your parents like it
c. Your friends like it
d. It is so elegant that it will dazzle everyone

9. In your opinion, in an ideal society, national budgets will be determined so that

a. All people have adequate incomes to meet basic needs
b. Some pole will be rewarded for making brilliant contributions
c. There will be maximal stability, law, and order
d. People can feel unique and self-actualized

10. When people ask me about myself, I

a. Talk about my ancestors and their traditions
b. Talk about my friends, and what we like to do
c. Talk about my accomplishments
d. Talk about what makes me unique

11. Suppose your fiancé(e) and your parents do not get along very well. What would you do?

a. Nothing
b. Tell my fiancé(e) that I need my parents' financial support and he or she should learn to handle the politics
c. Remind my fiancé(e) that he or she should make a grater effort to fit with the family.
d. Remind my fiancé(e) that my parents and family are very important to me and he or she should submit to their wishes

12. Teams of five people entered a science project contest. Your team won first place and a prize of $100. You and another person did 95% of the work on this project. How should the money be distributed?

a. Split it equally, without regard to who did what
b. The other person and I get 95% of the money and the rest goes to the group
c. The group leader decides how to split the money
d. Divide the money the way that gives me the most satisfaction

13. Imagine you are selecting a band for a fund-raising event given by your organization. Which are the most important factors in making your decision?

a. I really like the band
b. My friends approve of this band
c. The administration of my organization approves of the band
d. The band will draw a large crowd

14. You need to choose one more class for next semester. Which one will you select?

a. The one that will help me get ahead of everyone else
b. The one my parents said to take
c. The one my friends plan to take
d. The one that seems most interesting to me

15. You are at a pizza restaurant with a group of friends. How should you decide what kind of pizza to order?

a. The leader of the group orders for everyone
b. I order what I like
c. We select the pizza that most people prefer
d. We order a most extravagant pizza available

16. Which candidate will you vote for in the election for president of the student government?

a. The one your friends are voting for
b. The one I like best
c. The one who will reward me personally
d. The one who is a member of an organization important to me. The status of the organization will improve if that candidate is elected.

Appendix C

The Attitudes toward Women Scale

(modified from Spence & Hahn, 1997, pp. 24-25).

The statements listed below describe attitudes toward the roles of women in society which different people have. There are no right or wrong answers, only opinions. You are asked to express your feeling about each statement by indicating whether you (A) agree strongly, (B) agree mildly, (C) disagree mildly, or (D) disagree strongly.

1. Swearing and obscenity are more repulsive in the speech of a woman than a man.

A	B	C	D
Agree strongly	Agree mildly	Disagree mildly	Disagree strongly

2. Under modern economic conditions with women being active outside the home, men should share in household tasks such as washing dishes and doing laundry.

A	B	C	D
Agree strongly	Agree mildly	Disagree mildly	Disagree strongly

3. It is insulting to women to have the "obey" clause remain in the marriage service.

A	B	C	D
Agree strongly	Agree mildly	Disagree mildly	Disagree strongly

4. A woman should be free as a man to propose marriage.

A	B	C	D
Agree strongly	Agree mildly	Disagree mildly	Disagree strongly

5. Women should worry less about their rights and more about becoming good wives and mothers.

A	B	C	D
Agree strongly	Agree mildly	Disagree mildly	Disagree strongly

6. Women should assume their rightful place in business and all the professions along with men.

A	B	C	D
Agree strongly	Agree mildly	Disagree mildly	Disagree strongly

7. A woman should not expect to go to exactly the same places or to have quite the same freedom of action as a man.

A	B	C	D
Agree strongly	Agree mildly	Disagree mildly	Disagree strongly

8. It is ridiculous for a woman to run a locomotive and for a man to darn socks.

A	B	C	D
Agree strongly	Agree mildly	Disagree mildly	Disagree strongly

9. The intellectual leadership of a community should be largely in the hands of men.

A	B	C	D
Agree strongly	Agree mildly	Disagree mildly	Disagree strongly

10. Women should be given equal opportunity with men for apprenticeship in the various trades.

A	B	C	D
Agree strongly	Agree mildly	Disagree mildly	Disagree strongly

11. Women earning as much as their dates should bear equally the expense when they go out together.

A	B	C	D
Agree strongly	Agree mildly	Disagree mildly	Disagree strongly

12. Sons in a family should be given more encouragement to go to college than daughters

A	B	C	D
Agree strongly	Agree mildly	Disagree mildly	Disagree strongly

13. In general, the father should have greater authority than the mother in the bringing up of the children.

A	B	C	D
Agree strongly	Agree mildly	Disagree mildly	Disagree strongly

14. Economic and social freedom is worth far more to women than acceptance of the ideal of femininity which has been set up by men.

A	B	C	D
Agree strongly	Agree mildly	Disagree mildly	Disagree strongly

15. There are many jobs in which men should be given preference over women in being hired or promoted.

A	B	C	D
Agree strongly	Agree mildly	Disagree mildly	Disagree strongly

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Table 1

Mean Landscape Preference Score as a Function of Time Spent in Nature

	Landscape Preference Score		
Time in Nature	Mean	Sample Size	Standard Deviation
Every Day	1.40	20	0.50
Once a Week	1.42	52	0.50
Twice a Month	1.29	14	0.47
Once a Month	1.17	12	0.39
Few a Year	1.04	27	0.19
Never	1.26	22	0.44
Total	1.26	147	0.44

Landscape Preference Score of 1.00 = managed preference
Landscape Preference Score of 2.00 = natural preference

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