DEVELOPMENT AND INITIAL VALIDATION OF A MEASURE OF ECOPSYCHOLOGICAL SELF

David St. John, Ph.D.
Ann Arbor, MI

Douglas A. MacDonald, Ph.D.
Detroit, MI

ABSTRACT: This paper reports on a study involving the development and initial validation of a scale designed to assess the concept of ecopsychological self. This concept can be defined as the extent to which individuals identify with nature. Using a sample of 150 university students, an 11 item instrument, comprised of two subscales (nature inclusive self-concept and nature stewardship) was constructed through both exploratory and confirmatory factor analytic techniques. The instrument was found to have adequate inter-item reliability and satisfactory convergent, discriminant, and criterion validity. Correlational and regression analyses found that the two subscales were significant predictors of mental and spiritual well-being. The study concludes with a discussion of the findings, limitations of the study, and directions for future research.

For at least a century, concerns have been raised about the impact of civilization on the natural world (e.g., Abbey, 1968; Brown, 2001; Leopold, 1948/1966; Muir, 1901/1976; Snyder, 1990). In the last few decades, the study of human/nature interaction has begun to be formalized. Hibbard (2003) identified four primary interrelated groups–*ecophilosphy* (Zimmerman, 1997), *ecotheology* (White, 1967), *deep ecology* (Naess, 1989), and *ecofeminism* (Warren, 1994)—that have contributed to a new area of study: *ecopsychology*. This term, coined by Roszak (1992), refers to the study of how human psychology and ecology interact in a powerful and deeply connected way.

While ecopsychology shares an interest with a range of traditional psychological disciplines, most notably environmental psychology, it fundamentally differs from these areas due to ecopsychologists' subscription to the tenet that humans are integrally connected to nature. As stated by Roszak (1995) "…ecopsychology proceeds from the assumption that at its deepest level the psyche remains sympathetically bonded to the Earth that mothered us into existence" (p. 5). In the context of this assumption, human well-being is understood, at least in part, to be the product of people's acceptance of the inherent union between themselves and nature.

Correspondence regarding this manuscript should be directed to the first author at dsaintjohn@gmail.com

Note: The study reported in this paper is based upon the doctoral dissertation of the first author (St. John, 2004). The authors would like to thank Dr. John Davis, Dr. Harris Friedman, and Don St. John for reviewing the content of the preliminary NIM items.

Copyright © 2007 Transpersonal Institute

Although environmental psychological research has shown that exposure to nature and the natural world has a positive impact on human health and wellness (e. g., Frumkin, 2002; Ulrich et al., 1991; Kaplan & Kaplan, 1989), ecopsychologists have not operationalized or empirically investigated their concept of the ecopsychological self. In fact, virtually all published work to date has been theoretical (e. g., Sheppard, 1982; Roszak, 1992; Metzner, 1999; Roach, 2003).

Recent published studies have examined key aspects of ecopsychology through psychometric instruments (e. g., Mayer & Frantz, 2004; Shultz, Shriver, Tabanico, & Khazian, 2004). The initial findings are promising; Consistent with the ecopsychological world view (e. g.; Metzner, 1999; Winter 1996; Roszak, 1992), attitudes about the environment have been linked to the degree to which people believe that they are part of nature, and a positive association between feelings of connection to nature and well-being has been found (Mayer & Frantz, 2004; Schultz, 2000; Schultz, Shriver, Tabanico, & Khazian, 2004). Nevertheless, these investigations only represent the beginning of a new research tradition and the need to devise further measurement instruments is still great.

In this vein, the primary goal of this study was to create a model and measure of the notion of the ecopsychological self, which is open to empirical study. This model could give ecopsychologists the ability to further verify its foundational theoretical concepts, and open up further avenues of empirical study using a common research technique. A second goal of this study was to explore the assumption that well-being is positively affected by the relationship of humans and nature. Specifically, it was asked: Does a nature inclusive self-concept correlate with increased levels of well-being, as ecopsychologists propose?

An Ecopsychological Model of Self

Although conceptualizations of a flexible, permeable or expanded boundary between self and other already exist in psychology (e.g., Loewald, 1980; Friedman, 1983; Mitchell, 1988; Wilber, 1979/2001), ecopsychologists focus on the specific boundary between self and nature. Where an individual, and society as a whole, draws the line between the two is the heart of this new field of psychology. An ecopsychological model of self is based on the two fundamental assumptions, namely that (a) the boundary between the human self and nature is flexible, and (b) a sense of self that includes nature is beneficial to an individual's well-being.[1]

Friedman (1983) adopted the position that the boundaries of self are flexible and permeable; that is the boundaries of the self can expand to include a sense of oneness, or unity, with the world, and ultimately, the universe. He called this construct *self-expansiveness*. It is the limit, or boundary, we put on what is our 'self,' and what we consider to be other than us. But this boundary is not static. He states ''that the relationship between self and non-self is inherently unlimited'' (p. 38).

This study also uses the idea of an expanding self, but whereas Friedman was concerned primarily with self-expansiveness as expressed through identification with the entire universe, ecopsychologists focus primarily on the expansion of self to include our natural world. The goal of psychological development, from this perspective, is to include nature in one's conceptualization of self. It assumes that the manner in which individuals conceptualize their own self will reflect the extent to which they include aspects of nature as residing within their selves. We call this self-concept a *nature inclusive self-concept.*

In our formulation, the nature inclusive self-concept may be understood to be a bipolar continuum. On one end, the self boundary is constricted, and does not include nature. We refer to this sense of identity as conventional individuality or the personal self. The more people deny a nature inclusive self-concept, the narrower their self-boundaries are assumed to be. It also is assumed that the narrower a self–concept, the lower a person's sense of well-being will be. This follows from the ecopsychological assumption that those who 'repress' or deny their relationship with nature are more likely to suffer from psychological distress (Roszak, 1992).

On the other end of the continuum, we see the self as more open, or broad, and as including aspects of nature (e.g. plants, animals, water-ways, landscapes) within the self-concept. The more individuals acknowledge nature as falling inside their self-concept, the broader their self-boundaries will be assumed to be. It also is believed that the broader the self-concept, the more likely an individual will report higher levels of well-being. This prediction follows from the assumption that the deeper an individual's relationship with nature is, the better they will function.

Research Expectations

Based on this formulation, this paper reports on the development and initial validation of a new instrument, the Nature Inclusive Measure (NIM). It was expected that (a) the construct of nature inclusive self-concept could be adequately captured with a standardized paper and pencil questionnaire as reflected in internal (i.e. factorial) structure, and correlations with theoretically related measures, (b) the NIM would be found to have satisfactory reliability and validity as shown in analyses of item response consistency and correlations with self-reported environmental attitudes and behaviors, (c) the NIM would not be confounded with demographic variables including age, sex, ethnicity, and religiousness, and (d) the NIM would be associated positively with measures of physical, psychological, and spiritual well-being.

Method

Participants

Participants consisted of 150 college students (32 male and 118 female) who were enrolled in both undergraduate and graduate programs at an urban

comprehensive Master's university in the mid-western United States. The mean age of the sample was 31 years, with a standard deviation of 10.35, and a range from a minimum of 18 years to a maximum of 67 years. In terms of ethnicity, 76 participants were African-American, 70 white, and the remainder Hispanic, Asian, and Native American. 126 participants reported a Christian religious affiliation and 112 indicated that they are involved actively in their faith.

Measures

Nature Inclusive Measure (NIM). The NIM was developed by creating a pool of self-descriptive statements that were thought by the authors to reflect the inclusion of nature in an individual's self-concept. It included statements that indicate an identification or affiliation with plants, animals, landscapes (including forests, mountains and deserts) and water ways (including rivers, lakes and oceans), and statements that reflected an endorsement of ecopsychological assumptions of the interrelatedness of humans and nature. The item content was generated by reviewing *The Sacred Earth* (Gardner, 1998), an anthology of nature writings from established nature writers, all of whom agree that the earth and humans are intimately interrelated. This initial pool of items was then evaluated critically by three reviewers with expertise in the areas of environmentalism and/or ecopsychology and related disciplines (e.g., transpersonal psychology). Items were either dropped or revised based upon reviewer feedback.

The preliminary version of the NIM consisted of 30 statements (see Appendix A) to which respondents use a five-point response scale (ranging from strongly disagree to strongly agree) to rate the extent to which they agree that the statements are true of themselves.

Demographic and Environmental Attitudes and Behaviors Survey. A 12-item survey was developed to gather basic biographical information (e.g., age, gender), as well as data on the general attitudes and behaviors of participants with regards to environmentalism (e.g., involvement in an environmental organization, recycling). Information concerning location of residence (urban versus rural) during childhood and at time of completing questionnaires was also obtained.

Self Expansiveness Level Form (SELF; Friedman, 1983*)*. To measure the expansiveness of an individual's self-concept, Friedman created a paper and pencil test consisting of 18 self-descriptive statements, divided unequally across 3 subscales: personal, middle and transpersonal. Participants rate the statements on a five point response scale which reflects their degree of willingness to identify with the item (ranging from very willing to very unwilling). MacDonald, LeClair, Holland, & Friedman (1995) report that the SELF has generally satisfactory reliability as reflected in test-retest correlations ranging from .34 to .83 across two and 12 week retest intervals and inter-item consistency coefficients ranging from .58 to .81 across the three subscales. Evidence supportive of criterion, discriminant, and factorial validity also has

been generated (MacDonald et al., 1995). This test was used to establish convergent validity, because of the similarities between the construct of self-expansiveness and the Nature inclusive Self-Concept. In the present investigation, inter-item consistencies for the Personal, Middle, and Transpersonal subscales were .70, .74, and .81, respectively.

East-West Questionnaire- Man the Nature subscale (EWQ; Gilgen & Cho, 1979*)*. Gilgen and Cho created a 68 item paper and pencil test to measure Western and Eastern world views. It is divided into five subscales: Man and Spirituality, Man and Nature, Man and Society, Man and Himself and the Rationality of Man. Each item is rated by the examinee on a five-point Likert scale ranging from 'strongly agree' to 'strongly disagree.' It has a test – retest reliability of .76 for the entire scale. Some evidence of criterion, convergent and discriminative validity has been reported by MacDonald et al. (1995). The Man and Nature subscale, which was the only subscale used in this study, has 16 items. Eastern-type items include an affiliation and appreciation of nature, while Western-type items express nature as something to be controlled and exploited by humans. In this study, the inter-item reliabilities for the Man and Nature- East and West were .67 and .56, respectively.

Ego Grasping Orientation (EGO; Knoblauch & Falconer, 1986*)*. The EGO is a twenty item true/false questionnaire designed to measure a Taoist orientation. Specifically, the researchers described the ego grasping construct as consisting of a person's attempt to accentuate the positive, while ignoring the negative features of human experience. A person high in ego grasping may be understood as having a constricted sense of identity. The authors of the measure believe that a person who is high in this trait is more inclined to ego idealism and ego centeredness. The questionnaire is scored in the direction of ego grasping. The greater the score, the more likely the person would ego-grasp. Research shows good inter-item consistency (Kuder-Richardson alpha of .81) and test-retest reliability ($r = .72$ using a three month retest interval). Criterion, convergent and discriminant validity has also been demonstrated (MacDonald, et al, 1995). In this study, the EGO produced a Cronbach's alpha of .77.

Mental, Physical and Spiritual Well-being scale (MPSWBS; Vella-Brodrick & Allen, 1995*)*. Vella-Brodrick (1994) created a 30-item questionnaire that measures holistic health by integrating mental, physical and spiritual subscales. Subscale scores range between 5 and 50, with higher scores indicating greater well-being. Studies show it to have good psychometric properties (Vella-Brodrick & Allen, 1995; Vella-Brodrick & White, 1997). Test-retest reliability for the Mental subscale was .87, for the Physical subscale it was .87 and for the Spiritual subscale it was .97. Coefficient alphas were .75 for the Mental subscale, .81 for the Physical subscale and .97 for the Spiritual subscale. Criterion, concurrent and discriminative validity has also been obtained (MacDonald, Kuentzel & Friedman, 1999). In the present investigation, the alpha coefficients for the Mental, Physical, and Spiritual well-being subscales were .70, .54, and .81, respectively.

Procedure

The NIM, SELF, EWQ, EGO, and the Mental, Physical, and Spiritual Wellbeing scale, along with the demographic/environmental attitudes and behaviors survey and a consent form, were given to interested students. They were provided with a brief description of the study and instructions on how to fill out the questionnaires. Participation was strictly on a volunteer basis, though many students were awarded extra credit by their instructors for their time in completing the questionnaires.

Results

NIM Item Analysis

Descriptive statistics for the NIM items are presented in Table 1.

An exploratory Principal Components Analysis (PCA) of NIM items was done to determine how many items and factors to use in subsequent analyses. Extracting components with eigenvalues greater than 1.00, they were then orthogonally rotated to facilitate interpretation. Table 2 presents the rotated component solution.

Examination of eigenvalues along with inspection of elevated item loadings (i.e., 40 or greater) and associated item content suggested that at least the first two components appeared conceptually and statistically meaningful. Component one appears to be comprised of high loadings from items concerning identification with nature (e.g., 'I have had the experience of feeling ''at one'' with nature') and was labeled *Nature Inclusiveness*. Component two appears to be comprised of high loadings from items comprised of an action-oriented protection of nature (e.g., 'It is valuable to protect wildlife from extinction'), and was labeled *Nature Stewardship*. Component three appears to have high loadings from items concerning nature politics (e.g., 'The natural environment is a key political issue'). Component four appears to have high loadings on items concerned with general usage of nature (e.g., 'Eating organic food helps me feel more harmonious with nature, and is less harmful to the planet). Component five has high loading items centering around nature and lifestyle (e.g., 'There are house plants in my home'). Component six had high loadings from items suggesting that the earth is an organism (e.g., 'The earth is alive'). Component seven appears to have no apparent content theme.

Based on these results, it was decided that only the first two components would be the focus of additional analyses. Although loosely related on a conceptual level, the five other components do not directly relate to a nature inclusive self-concept, and also account for relatively little variance. As such, they are probably best viewed as being technical factors.

Next, a second PCA was done to determine if the two components from the first PCA were replicable. In order to keep the number of items to a minimum,

TABLE 1
Descriptive Statistics For Nature Inclusiveness Measure Items

	NIM item	Mean	Std Dev	Minimum	Maximum
1	Watching the sunset calms me	4.07	.95	1.00	5.00
2	Eating organic foods helps me feel more harmonious with nature, and is less harmful to the planet	2.97	1.07	1.00	5.00
3	I have felt a sense of empathy toward an animal	4.33	.71	2.00	5.00
4	I try to spend as much time in nature as I can	3.38	1.12	1.00	5.00
5	Pollution contributes to many human illnesses	4.29	.87	1.00	5.00
6	I believe that I am connected to the earth	3.81	1.00	1.00	5.00
7	If humans don't stop abusing the earth, then there will be an environmental disaster	4.17	.81	2.00	5.00
8	Plants and animals have as much a right to life and freedom as humans do	3.79	1.08	1.00	5.00
9	I have had the experience of feeling "at one" with nature	3.59	1.09	1.00	5.00
10	I think it's important to recycle	4.23	.75	1.00	5.00
11	The natural environment is a key political issue	3.73	.97	1.00	5.00
12	Having a pet gives me pleasure	3.70	1.35	1.00	5.00
13	The earth is alive	4.28	.89	1.00	5.00
14	If given the choice, I would prefer to live in a neighborhood with trees, then one without	4.41	.92	1.00	5.00
15	At least one time in my life, I have felt united with nature	3.85	1.03	1.00	5.00
16	The earth is my mother	2.81	1.21	1.00	5.00
17	There are houseplants in my home	3.90	1.27	1.00	5.00
18	I like to go to National/State Parks	4.00	.99	1.00	5.00
19	The overuse of natural resources has disastrous effects on the earth and humans alike	4.11	.83	1.00	5.00
20	Ultimately, I am related to trees	2.75	1.15	1.00	5.00
21	If the planet is unhealthy, then I am unhealthy	3.42	1.07	1.00	5.00
22	It is valuable to protect wildlife from extinction	4.29	.74	1.00	5.00
23	Industrial societies create boundaries between humans and nature	3.76	.95	1.00	5.00
24	It is important to contribute to environmental causes	3.95	.74	2.00	5.00
25	I support solar power and other forms of "clean" energies	3.99	.84	3.00	5.00
26	Humans are intimately connected to oceans, rivers, mountains, and forests	3.49	1.02	4.00	5.00
27	The earth is like an organism, not like a machine	3.93	.90	4.00	5.00
28	I admire environmental activists	3.53	.97	4.00	5.00
29	The weather affects my mood	4.11	.95	4.00	5.00
30	I am part of the earth	3.71	1.08	4.00	5.00

Note. N = 150

and to best differentiate the constructs underlying the two factors, only items whose highest loading were on factor 1 or 2 in the first PCA were used in the second analysis. Consequently, the following items were used- items 9, 10, 15, 16, 19, 20, 21, 22, 25, 26, 27, and 30 The PCA was set to extract two components and a varimax rotation was completed to aid interpretation of results. Examination of the rotated solution indicated that the two factors are emerged reliably with Nature Inclusiveness being comprised of items 9, 15, 16, 20, 26, and 30 and Nature Stewardship of items 10, 19, 22, 25, and 27. One item (i.e., item 21) was found to have virtually identical loadings on each factor. Considering the content of item 21 ('If the planet is unhealthy, then I am unhealthy'), the researchers surmised that it does not measure anything crucial

TABLE 2
Varimax Rotated Loadings for Exploratory Principal Components Analysis of NIM Items

	NIM Item	Component						
		1	2	3	4	5	6	7
1	Watching the sunset calms me	−.04	.31	.05	**.73**	−.06	.03	.11
2	Eating organic foods helps me feel more harmonious with nature, and is less harmful to the planet	**.45**	.07	.11	**.52**	.06	−.21	.04
3	I have felt a sense of empathy toward an animal	.09	.05	.17	**.53**	.17	**.42**	.17
4	I try to spend as much time in nature as I can	**.41**	.01	−.05	**.63**	.26	.05	−.01
5	Pollution contributes to many human illnesses	.06	.14	.70	−.03	.15	.23	.23
6	I believe that I am connected to the earth	**.40**	−.01	**.54**	.19	.11	.22	**.40**
7	If humans don't stop abusing the earth, then there will be an environmental disaster	.06	**.50**	.05	−.01	−.10	**.54**	.35
8	Plants and animals have as much a right to life and freedom as humans do	**.41**	.17	.09	−.07	−.03	**.52**	.07
9	I have had the experience of feeling "at one" with nature	**.59**	.01	.32	**.49**	.17	.18	.16
10	I think it's important to recycle	.20	**.55**	.05	.20	.20	.05	.28
11	The natural environment is a key political issue	.27	.22	**.59**	.01	.17	.16	−.05
12	Having a pet gives me pleasure	.08	−.06	.14	.38	**.47**	**.41**	−.22
13	The earth is alive	.28	.19	.24	.13	−.01	**.65**	−.05
14	If given the choice, I would prefer to live in a neighborhood with trees, then one without	.03	.07	.31	.15	**.69**	−.01	.04
15	At least one time in my life, I have felt united with nature	**.59**	.18	.13	.27	.29	.15	.10
16	The earth is my mother	**.77**	.11	−.07	−.02	.09	.25	−.01
17	There are houseplants in my home	.15	.31	−.07	−.03	**.71**	−.07	.14
18	I like to go to National/State Parks	.04	**.41**	.12	**.50**	.51	.05	.06
19	The overuse of natural resources has disastrous effects on the earth and humans alike	.14	**.62**	.18	.24	.09	.19	−.02
20	Ultimately, I am related to trees	**.70**	.16	.29	.23	−.02	.01	−.04
21	If the planet is unhealthy, then I am unhealthy	**.49**	**.53**	.21	−.01	−.11	.07	.09
22	It is valuable to protect wildlife from extinction	−.02	**.63**	.11	.12	.26	.20	.18
23	Industrial societies create boundaries between humans and nature	.07	.38	**.57**	.23	−.13	−.02	−.15
24	It is important to contribute to environmental causes	.27	.32	**.55**	.13	.18	.02	.23
25	I support solar power and other forms of "clean" energies	.18	**.50**	.27	.28	.15	.01	−.03
26	Humans are intimately connected to oceans, rivers, mountains, and forests	**.61**	.32	.39	.08	.05	.12	.08
27	The earth is like an organism, not like a machine	.26	**.63**	.23	−.13	.11	.07	.03
28	I admire environmental activists	.33	.38	.33	.24	−.03	−.22	**.40**
29	The weather affects my mood	.05	.13	.08	.08	.09	.05	**.82**
30	I am part of the earth	**.57**	.19	.24	.08	.06	.24	.40
Eigenvalue		9.50	2.04	1.88	1.33	1.21	1.20	1.14
% of variance		31.7	6.8	6.3	4.4	4.0	4.0	3.8

Note. N = 150. Component loadings .40 or greater are in bold.

TABLE 3
Two-Component Orthogonal and Oblique Rotated Solutions for NIM Items

		Varimax-Rotated Components		Oblique Rotation			
				Pattern		Structure	
	NIM Item	1	2	1	2	1	2
Nature Inclusiveness							
9	I have had the experience of feeling "at one" with nature	.80	.21	.82	.01	.82	.40
15	At least one time in my life, I have felt united with nature	.69	.32	.67	.16	.74	.48
16	The earth is my mother	.71	.05	.77	−.14	.70	.22
20	Ultimately, I am related to trees	.82	.15	.86	−.07	.83	.34
26	Humans are intimately connected to oceans, rivers, mountains, and forests	.70	.37	.67	.21	.77	.53
30	I am part of the earth	.68	.32	.66	.16	.74	.47
Nature Stewardship							
10	I think it's important to recycle	.22	.66	.06	.66	.37	.69
19	The overuse of natural resources has disastrous effects on the earth and humans alike	.22	.67	.06	.67	.38	.70
22	It is valuable to protect wildlife from extinction	.05	.79	−.16	.85	.24	.78
25	I support solar power and other forms of "clean" energies	.28	.60	.14	.58	.42	.65
27	The earth is like an organism, not like a machine	.22	.68	.06	.68	.38	.71

Note. N = 150. Based upon the oblique rotation, factor intercorrelation is r = .47.

to either Nature Inclusiveness or Nature Stewardship. Consequently, the decision was made to exclude the item.

Two additional PCAs were conducted on the remaining 11 items, the first involving the use of orthogonal rotation and the second employing oblique rotation to assess the degree of component inter-correlation (see Table 3). Both sets of rotated loadings revealed that the items differentially contributed to the expected components. The factors were found to intercorrelate to a moderate extent (r = .47).

Next, Maximum Likelihood Confirmatory Factor Analysis (CFA) using the 11 items was completed. The CFA was done to assess the goodness of fit of the items to a two correlated factors model (see Table 4). Overall, the goodness-of-fit indices for the CFA (see Table 4) suggest that 2 correlated factors fit the data reasonably well (e.g., chi-squared/df < 3.00, GFI = .90, CFI = .92, TLI = .90). A one-factor model, where all 11 items contributed to a single 'Nature Inclusiveness' factor, was also tested but resulted in a much poorer fit (e.g., chi-square/DF > 3, GFI, CFI, and TLI $< .90$). Due to the fact that the one factor solution had a considerably poorer fit than the two factor, the two factor was retained.

TABLE 4
Confirmatory Factor Analyses of NIM Components- Standardized factor loadings and Goodness of Fit Statistics for Separate One-Factor Models and Combined Two-Factor Correlated Model

		Correlated Two Factor	
NIM Component/Item	Separate One Factor	1	2
Nature Inclusiveness			
9	.80	.77	–
15	.71	.72	–
16	.59	.58	–
20	.76	.75	–
26	.73	.75	–
30	.70	.71	–
Fit Indices			
X^2	26.19*		
Df	9		
X^2/df	2.91		
GFI	.95		
CFI	.95		
TLI	.92		
Nature Stewardship			
10	.60	–	.60
19	.63	–	.63
22	.66	–	.62
25	.58	–	.61
27	.62	–	.63
Fit Indices			
X^2	5.61**	90.81*	
Df	5	43	
X^2/df	1.12	2.11	
GFI	.98	.90	
CFI	.99	.92	
TLI	.99	.90	

Note. N = 150. All loadings significant at $p < .05$. For one-factor models, items belonging to Nature Inclusiveness and Nature Stewardship were used in separate analyses. *$p < .05$, **$p > .05$

Finally, separate CFAs of the Nature Inclusiveness and Stewardship items were conducted to see if these items fit separate one factor models (see Table 4). Overall, the Nature Inclusiveness items seem to fit a one factor structure quite well (e.g., chi-square/df = 2.91, GFI = .95, CFI = .95), as do the Nature Stewardship items (e.g., chi-square/DF = 1.12, GFI = .98, CFI = .99).

Considering the results obtained thus far, it was decided that all further analyses would involve the Nature Inclusive and Nature Stewardship dimensions used as subscales. Numerical responses for items belonging to each component were summed to arrive at subscale total scores. The Nature Inclusive subscale generated a mean of 20.20, and a standard deviation of 5.07. The Nature Stewardship subscale produced a mean of 20.55 and a standard deviation of 2.88.

Reliability of the NIM Subscales

Corrected item-to-scale correlations and inter-item consistency coefficients were calculated for both the Nature Inclusive and Nature Stewardship

subscales. The Nature Inclusive subscale produced an alpha of .86 and corrected item-to-scale total correlations ranging from .55 to .72 for all items. The Nature Stewardship subscale generated an alpha of .75 and corrected item-to-scale total correlations ranging from .49 to .55.

NIM Subscales, Demographics, and Environmental Attitudes and Behaviors

In order to determine if NIM subscale scores are effected by demographic variables and environmental attitudes and behaviors, one-way Analyses of Variance (ANOVA) were completed wherein Nature Inclusiveness and Nature Stewardship subscales served as dependent variables and, sex (male/female), ethnicity/race (African American/White), religious involvement (involved/not involved), involvement in environmental organizations (yes/no), recycling (yes/no), participation in environmental clean-ups (yes/no), awareness of environmental issues (yes/no), location of residence (urban/not-urban), and self description as an 'environmentalist' (yes/no) were used as independent variables. (see Table 5). In addition, correlations between age and NIM subscale scores were also calculated.

With respect to the correlations, age was found to be significantly correlated with Nature Inclusiveness ($r = .23$, $p < .01$) but not Nature Stewardship ($r = .09$, $p > .05$). In terms of the ANOVAs, non-significant results were found for both NIM subscales for sex, ethnicity/race, religious involvement, and living environment variables (i.e., current living environment and environment where participants grew up as children). For the Nature Inclusiveness subscale, two significant ANOVAs were obtained for awareness of environmental issues ($F(1,147) = 12.36$, $p < .001$. Yes group, $n = 74$, mean = 21.62, No group, $n = 75$, mean = 18.80) and self-identification as an environmentalist ($F(1, 148) = 17.16$, $p < .001$. Yes group, $n = 41$, mean = 22.85, No group, $n = 109$, mean = 19.20). For the Nature Stewardship subscale, significant ANOVA results were generated for membership in an environmental organization ($F(1, 148) = 6.87$, $p < .01$. Yes group, $n = 14$, mean = 22.43, No group, $n = 136$, mean = 20.35), participation in an environmental clean-up ($F(1, 147) = 7.03$, $p < .01$. Yes group, $n = 83$, mean = 21.06, No group, $n = 66$, mean = 19.83), awareness of environmental issues ($F(1, 147) = 5.06$, $p < .05$. Yes group, $n = 74$, mean = 21.04, No group, $n = 75$, mean = 20.00), and self-description as an environmentalist ($F(1, 148) = 14.68$, $p < .001$. Yes group, $n = 41$, mean = 21.95, No group, $n = 109$, mean = 20.02). As can be seen in the table, effect size estimates for significant ANOVAs reflect a small effect size (eta squared ranges from .03 to .10).

NIM subscales and Theoretically Similar Measures

Correlations were calculated between the two NIM subscales and the EGO, SELF and EWQ Man and Nature scales and can be found in Table 6.

The NIM Nature Inclusiveness subscale was found to significantly positively correlate with the SELF Personal ($r = .17$, $p < .05$), Middle ($r = .37$, $p < .001$),

TABLE 5
One-Way ANOVA Results for NIM Subscales as a Function of Demographic and Environmental Attitude and Behavior Variables

		Nature Inclusive			Nature Stewardship		
Variable	n	Mean	F	η^2	Mean	F	η^2
Sex							
Males	32	20.41	0.07		20.31	0.27	
Females	118	20.14			20.61		
Ethnicity/Race							
African American	76	20.16	0.00		20.13	2.63	
White	70	20.13			20.90		
Religious Involvement							
Involved	112	19.77	3.27		20.65	0.59	
Not Involved	38	21.47			20.24		
Current living environment							
Urban	83	20.70	1.81		20.66	0.30	
Non-Urban	67	19.58			20.40		
Living environment where you grew up							
Urban	78	20.12	0.05		20.35	0.79	
Non-Urban	72	20.29			20.76		
Do you belong to an environmental organization which is concerned with environmental issues or environmental sustainability (e.g., Sierra Club, Greenpeace)?							
Yes	14	22.43	3.03		22.43	6.87**	.04
No	136	19.97			20.35		
Do You Recycle?							
Yes	104	20.63	1.91		20.71	0.99	
No	45	19.40			20.20		
Have you ever participated in an environmental clean up?							
Yes	83	20.36	0.19		21.06	7.03**	.05
No	66	20.00			19.83		
Do you take time to be aware of current environmental issues?							
Yes	74	21.62	12.36***	.08	21.04	5.06*	.03
No	75	18.80			20.00		
Do you consider yourself to be an "environmentalist"?							
Yes	41	22.85	17.16***	.10	21.95	14.68***	.09
No	109	19.20			20.02		

Note: N = 150. *$p < .05$, **$p < .01$, ***$p < .001$. Other than ethnicity, variables for which subgroups do not sum to 150 were missing data. For ethnicity, subgroups other than African American and White were too small for inclusion in analyses. For the two living environment items, "non-urban" encompasses suburb, small town, and rural settings. η^2 is an estimate of effect size reported for significant results only.

and Transpersonal ($r = .48$, $p < .001$) subscales and with the EWQ Man and Nature Eastern subscale ($r = .62$, $p < .001$). A significant negative correlation was found with the EWQ Man and Nature Western subscale ($r = -.38$, $p < .001$). The NIM Nature Stewardship subscale generated significant positive correlations with the SELF Middle ($r = .16$, $p < .05$) and Transpersonal ($r = .19$, $p < .05$) subscales, and the EWQ Man and Nature Eastern subscale ($r = .50$, $p < .001$). Significant negative correlations were obtained with the Ego Grasping Orientation ($r = -.19$, $p < .05$), and the EWQ Man and Nature Western subscale ($r = -.31$, $p < .01$).

TABLE 6
Correlations Between NIM Subscales and the Ego Grasping Orientation, Self-Expansiveness Level Form, and the East-West Questionnaire

	NIM Subscale	
	Nature Inclusiveness	Nature Stewardship
Ego Grasping Orientation	−.13	−.19*
Self Expansiveness Level Form		
Personal Subscale	.17*	.10
Middle Subscale	.37***	.16*
Transpersonal Subscale	.48***	.19*
East West Questionnaire-Man and Nature		
East	.62***	.50***
West	−.38***	−.31**

Note. N = 150 except for East-Questionnaire where n = 149. *p < .05, **p < .01, ***p < .001.

NIM Subscales and Wellbeing

In order to determine if NIM subscale scores are related to, and could be used in the prediction of, well-being, two sets of analyses were done. First, product-moment correlations between Nature Inclusiveness and Nature Stewardship subscales and the three subscales of the Mental, Physical, and Spiritual Well-Being Scale were calculated. Next, standard multiple regressions were completed where the NIM scales served as predictors of mental, physical, and spiritual well-being, respectively (see Table 7).

Significant correlations (ranging in magnitude from .34 to .37, all $p < .001$) were found between both NIM subscales and Mental and Spiritual subscales. Physical well-being was not significantly correlated with either NIM subscale. With respect to the regressions, NIM Nature inclusiveness and Nature-Stewardship subscales served as significant predictors of Mental Well-Being ($F = 12.78$, $p < .001$, $R = .38$, R = squared = .15) and Spiritual Well-Being ($F = 15.11$, $R = .41$, $p < .001$, R-squared = .17) but not Physical Well-Being ($F = 0.72$, $p > .05$). Examination of the squared semipartial correlations for the significant regressions reveals each NIM subscale uniquely accounts for significant proportions of the total explained variance (i.e., R-squared).

Discussion

Results from this investigation are generally supportive of our expectations. First, the notion of nature inclusive self-concept appears to be a substantive construct as seen in the factor analyses of NIM items where a six-item factor labeled Nature Inclusiveness was found. Further support is seen in the correlations between the NIM Nature Inclusiveness scale score and the Self-Expansiveness Level Form (SELF), the East-West Questionnaire (EWQ)-Man and Nature subscale, and the Ego Grasping Orientation (EGO). In particular, NIM Nature-Inclusiveness significantly correlated with all three SELF subscales, with the magnitude of the coefficients increasing predictably across the SELF subscales. The increasing size of the correlations between the NIM

TABLE 7
Standard Multiple Regression Using NIM Scales To Predict Mental, Physical, and Spiritual Well-Being Scale Subscale Scores

NIM Subscale	Bivariate r	B	β	sr^2 (unique)
		Mental Well-Being		
Nature Inclusiveness	.34***	.24	.22*	.03
Nature Stewardship	.34***	.44	.22*	.03
Intercept		20.21		
		Physical Well-Being		
Nature Inclusiveness	−.10	−.11	−.11	
Nature Stewardship	−.03	.05	.03	
Intercept		28.94		
		Spiritual Well-Being		
Nature Inclusiveness	.37***	.36	.25*	.05
Nature Stewardship	.35***	.53	.22*	.03
Intercept		19.57		

Note. N = 150. For Mental Well-Being F(2, 147) = 12.78, $p < .001$, * $p < .05$, ***$p < .001$. R = .39, R-squared = .15, Adjusted R-squared = .14. For Physical Well-Being, F(2, 147) = 0.72, $p > .05$. R = .10, R-squared = .01, Adjusted R-squared = −.00.For Spiritual Well-Being, F(2, 147) = 15.10, $p < .001$, * $p < .05$, ***$p < .001$. R = .39, R-squared = .17, Adjusted R-squared = .16. B = unstandardized regression coefficient, β = standardized regression coefficient. sr^2 (unique) = squared semi-partial correlations.

Nature Inclusiveness and the SELF Personal, Middle, and Transpersonal subscales, respectively, indicates that NIM Nature Inclusiveness is more strongly associated to expanded self boundaries. Correlations with the EWQ-Man and Nature subscale scores were highly significant and indicate that people who subscribe to Eastern values (which portray humans and nature as interconnected and interdependent) are more likely to generate higher NIM nature inclusiveness scores while those who hold Western values (e.g., beliefs that humans and nature are separate and that nature is controllable and available for human exploitation) are more likely to obtain lower NIM nature inclusiveness scores. Finally, although the correlation did not come out statistically significant, NIM nature inclusiveness produced a correlation in the expected direction (i.e., negative) with the EGO, suggesting that tendencies to constrict one's awareness of one's self is inversely associated with a nature inclusive self-concept.

The second expectation, namely that the NIM would be found as having satisfactory psychometric properties, also was largely supported. With regards to reliability, the six-item NIM Nature Inclusiveness scale produced a very good inter-item consistency coefficient and adequate corrected item-to-scale total correlations. In terms of validity, content validity was generally established through the review of items done by three experts. Evidence of convergent validity can be inferred from the correlations already described with the SELF, EGO, and EWQ as can support for factorial validity from the confirmatory factor analyses. Moreover, NIM Nature Inclusiveness scores were found to vary significantly as a function of participant self-identification as being an environmentalist and with participant self-reported interest in environmental issues. Though the results with the other three environmental attitude and behavior variables came out non-significant (see Table 5), in all

cases, there is a consistent trend in group mean score differences indicating that those who belong to an environmental organization, participate in recycling, and participate in environmental clean-ups obtain higher mean NIM Nature Inclusiveness scores than those who report not doing these things.

The third hypothesis, i.e., the NIM would not be adversely affected by demographic variables, was mostly upheld. NIM Nature Inclusiveness scores were not found to vary as a function of sex, ethnicity, religious involvement, or past or present location of residence. A significant positive correlation with age was obtained, however. This finding may be the product of developmental (i.e., maturational) influences on the inclusion of nature in the self-concept. At the same time, this association could simply reflect the fact that older people have had more opportunities to learn about and directly experience nature. Additional research is needed to explore these interpretive possibilities.

The final expectation—that NIM scores would be associated positively to, and predictive of, well-being—was generally supported. Correlations and multiple regressions involving NIM Nature Inclusiveness and the three subscales of the Mental, Physical and Spiritual Well-Being Scale indicate that individuals with higher NIM scores also report higher levels of both mental and spiritual well-being but not physical well-being. The lack of a significant relation between NIM Nature Inclusiveness and physical well-being might be seen as presenting a challenge to the position of a health-nature inclusive self-concept relation. However, the MPSWBS Physical Well-Being subscale produced a grossly unsatisfactory inter-item consistency coefficient with this sample (alpha = .54). Given this, it appears highly likely that this subscale suffered from marked psychometric problems in the present study.

Nature Stewardship Factor

While six of the original 30 NIM Nature Inclusiveness items represent the notion of nature inclusive self-concept (e.g., item content clearly contain themes of an individual reporting having had experiences of oneness with nature, and other themes that suggest an intimate connection between human psychology and nature such as being a part of the earth, having feelings of union with the earth, and being interrelated with nature), five other items whose content revolves around the perception of how an individual's actions affect nature contributed to a second factor labeled Nature Stewardship. Although not a direct expression of the nature inclusive self-concept as conceived by the authors of this paper, Nature Stewardship appears to be conceptually and empirically related (as shown in the confirmatory factor analyses) and produced a pattern of findings in this study generally similar to that of Nature Inclusiveness across the majority of variables and measures used. As such, it seems reasonable to argue that nature inclusive self can be conceptualized as being not only an attitude or belief, but also as including a specific behavioral orientation toward the natural world. This is consistent with ecopsychological theory that maintains that people's values are "likely to be especially strong determinants of their pro-environmental behavior"

(Gardner & Stern, 1996, p. 68; Stern, Dietz & Kalof, 1993; Stern, Dietz, Abel, Guagnano, & Kalof, 1999; Stern & Dietz, 1994).

More generally, and with regards to applied areas of psychology, especially clinical psychology, the findings of this study suggest that the narrow self-boundaries constituting conventional individualism—a cornerstone of many psychological conceptualizations of health—may need to be reconsidered (Fox, 1989; Roszak, 1995; Barrows, 1995; Wilber, 1979/2001). The ecopsychological concept that the boundary between human psychology and nature should be inclusive undermines a key notion of most areas within clinical psychology: that to be mature, healthy and normal is to develop and maintain a strict and stable boundary between self and other.

Limitations Of Study And Directions For Further Research

Due to the fact that this is one of the few empirical studies on a core ecopsychological concept, a second study that replicates these findings is in order. This is standard scientific protocol, and essential to creating a solid empirical foundation for ecopsychological theory. Specific to this study, the use of a relatively small sample made up exclusively of college students of largely Christian backgrounds introduces concerns about the robustness and generalizability of the findings. Future research using larger samples drawn from more diverse populations is warranted and strongly encouraged.

Additional areas for further studies using the NIM might include a more in-depth look at individuals who score high on the NIM with other psychological traits and demographic variables—such as dominance, social adjustment, socio-economic status and individualism–would help expand the empirical base of ecopsychological assumptions. This is crucial if ecopsychology is to be embraced more vigorously by mainstream psychology. Further research on the possible role of developmental and educational factors in the emergence of a nature inclusive self-concept also appears warranted.

More detailed research into the relationship of psychological and spiritual well-being, and a nature inclusive self-concept would be highly advantageous. Studies that involve other measures of well-being, and measures of psychopathology, would help flesh out the intricacies of the relation of ecopsychological self and psychological functioning.

Last, research exploring the relationship of the NIM with other measures of environmental attitudes such as the New Ecological Paradigm scale (Dunlap, Van Liere, Mertig, & Jones, 2000) and the Connectedness to Nature Scale (Mayer & Frantz, 2004) would not only contribute to our understanding of the psychometric properties of the NIM but would also help establish a nomological net of ecopsychologically relevant constructs which could serve as the basis for theoretical and empirical developments in the area.

Conclusion

The results of the present study provide preliminary support for the tenets of human-nature interconnectedness, as well as for the benefits of identifying with nature as a basis for mental and spiritual well-being. As importantly, this article provides interested investigators with a new research tool that seems to hold promise in making ecopsychology accessible to scientific methodologies. It is the hope of the authors that this study will serve to stimulate research and theory in this new and important area of psychology.

Notes

[1] It is important to note that the concept of ecopsychological self as discussed by the authors is not new. Naess (1989), a deep ecologist, believed that through the process of identification and empathy with wilderness, people establish the sense of an *ecological self*. He stated: "The 'everything hangs together' (or 'everything is interrelated') maxim of ecology applies to the self and its relation to other living beings, ecosystems, ecosphere, and to the Earth itself, with its long history" (p. 164).

It should also be kept in mind that there is some degree of controversy to the concept of an ecopsychological self. This is especially true in regards to using an individual's degree of connectedness as an indicator of mental health. Resner (1995) argues that it is "a naïve phenomenology which gives primacy to direct experience at the expense of a more objective account of the nature of such experiences" (p. 246). Other authors, while embracing many aspects of ecopsychology, also raise concerns about the philosophical, and even psychological, dangers inherent in the concept of an ecopsychological self (e.g., Metzner, 1991; Wilber, 1995; and Winters, 1996).

References

Abbey, E. (1968). *Desert solitude*. New York: Touchstone.

Barrows, A. (1995). The ecopsychology of child development. In T. Roszak, M. Gomes, & A. Kanner (Eds.), *Ecopsychology: Restoring the earth, healing the mind* (pp. 101–110). San Francisco: Sierra Club Books.

Brown, L. (2001). *Eco-economy: Building an economy for the earth*. NY: W. W. Norton & Co.

Dunlap, R., Van Liere, D., Mertig, A., & Jones, R. (2000). New trends in measuring environmental attitudes: Measuring endorsement of the new ecological paradigm: A revised NEP Scale. *Journal of Social Issues*, *56*(3), 425–442.

Fox, W. (1989). Deep ecology—ecofeminist debate and its parallels. *Environmental Ethics*, *11*(5), 5–25.

Friedman, H. (1983). The self-expansiveness level form: A conceptualization and measurement of a transpersonal construct. *Journal of Transpersonal Psychology*, *15*(1), 37–50.

Frumkin, H. (2002). Beyond toxicity: Human health and the natural environment. *American Journal of Preventative Medicine*, *20*, 47–53.

Gardner, G., & Stern, P. (1996). *Environmental problems and human behavior*. London: Allyn and Bacon.

Gardner, J. (Ed.). (1998). *The Sacred Earth: Writers on nature and spirit*. Novato, CA: New World Library.

Gilgen, A., & Cho, J. (1979). Questionnaire to measure Eastern and Western thought. *Psychological Reports*, *44*, 835–841.

Hibbard, W. (2003). Ecopsychology: A Review. *The Trumpeter*, *19*(2), 23–52. Cambridge: MIT Press.

Kaplan, R., & Kaplan, S. (1989). *The experience of nature: A psychological perspective*. Cambridge: Cambridge University Press.

Knoblauch, D., & Falconer, J. (1986). The relationship of measured Taoist orientation to Western personality dimensions. *Journal of Transpersonal Psychology*, *18*(1), 73–83.

Leopold, A. (1948/1966). *A Sand County almanac and sketches here and there*. New York: Oxford Press.

Loewald, H. (1980). *Papers on psychoanalysis*. New Haven, CT: Yale University Press.

MacDonald, Kuentzel, J., & Friedman, H. L. (1999). A survey of measures of spiritual and transpersonal constructs- Part two- Additional instruments. *Journal of Transpersonal Psychology*, *31*(2), 155–177.

MacDonald, D., LeClair, L., Holland, C., Alter, A., & Friedman, H. (1995). A survey of measures of transpersonal constructs. *Journal of Transpersonal Psychology*, *27*(2), 171–235.

Mayer, F. S., & Frantz, C. M. (2004). The connectedness to nature scale: A measure of individuals' feeling in community with nature. *Journal of Environmental Psychology*, *24*(4), 503–515.

Metzner, R. (1991). Psychologizing deep ecology: A review essay. *ReVision*, *13*(3), 147–152.

Metzner, R. (1999). *Green psychology: Transforming our relationship to the Earth*. Rochester: Park Street Press.

Mitchell, S. (1988). *Relational concepts in psychoanalysis: An integration*. Cambridge, MA: Harvard University Press.

Muir, J. (1901/1976). The philosophy of John Muir. In E. W. Teale (Ed.), *The wilderness of John Muir* (pp. 311–323). Boston: Houghton Mifflin.

Naess, A. (1989). *Ecology, community and life style: Outline of an ecosophy*. Cambridge: Cambridge University Press.

Roach, C. (2003). *Mother/nature*. Bloomington: Indiana University Press.

Resner, J. (1995). Whither environmental psychology? The transpersonal ecopsychology crossroads. *Journal of Environmental Psychology*, *15*, 235–257.

Roszak, T. (1992). *The voice of the earth*. New York: Simon and Schuster.

Roszak, T. (1995). Where psyche meets Gaia. In T. Roszak, M. Gomes, & A. Kanner (Eds.), *Ecopsychology: Restoring the earth, healing the mind* (pp. 1–20). San Francisco: Sierra Club Books.

Schultz, W. P. (2000). Empathizing with nature: The effects of perspective taking on concern for environmental issues. *Journal of Social Issues*, *56*(3), 391–406.

Schultz, W. P., Shriver, C., Tabanico, J. J., & Khazian, A. M. (2004). Implicit connections with nature. *Journal of Environmental Psychology*, *24*(1), 31–42.

Sheppard, P. (1982). *Nature and madness*. San Francisco: Sierra Club Books.

Snyder, G. (1990). *The practice of the wild*. New York: North Point Press.

Stern, P. C., Dietz, T., & Kalof, L. (1993). Value-orientations, gender and environmental concern. *Environmental Behavior*, *25*, 322–348.

Stern, P. C., & Dietz, T. (1994). The value basis of environmental concern. *Journal of Social Issues*, *50*(3), 65–84.

Stern, P. C., Dietz, T., Abel, T., Guagnano, G. A., & Kalof, L. (1999). A value-belief-norm theory of support for social movements: The case of environmentalism. *Research in Human Ecology*, *6*(2), 81–97.

Ulrich, R., Simons, R. F., Losito, B. D., Fiorito, E., Miles, M. A., & Zelson, M. (1991). Stress recovery during exposure to natural and urban environments. *Journal of Environmental Psychology*, *11*, 201–230.

Vella-Brodrick, D. (1994). The development of the MPS Wellbeing scale. Unpublished Masters Thesis, Monash University, Caufield, Australia.

VELLA-BRODRICK, D., & ALLEN, E. (1995). Development and psychometric validation of the Mental, Physical and Spiritual Wellbeing Scale. *Psychological Reports*, *77*, 659–674.

VELLA-BRODRICK, D., & WHITE, V. (1997). Response set of social desirability in relation to the Mental, Physical and Spiritual Well-Being scale. *Psychological Reports*, *81*, 127–120.

WARREN, K. (1994). *Ecological feminism*. New York: Routledge.

WHITE, L. (3767). The historical roots of our ecological crisis. *Science*, *155*(3767), 1203–1207.

WILBER, K. (1979/2001). *No boundary*. Boston, MA: Shambhala Publications.

WILBER, K. (1995). *Sex, ecology, spirituality: The spirit of evolution*. Boston: Shambhala.

WINTER, D. (1996). *Ecological psychology: Healing the split between planet and self*. New York: HarperCollins.

ZIMMERMAN, M. (1997). *Contesting Earth's future: Radical ecology and postmodernity*. Berkeley & Los Angeles: University of California Press.

The Authors

David St. John, Ph.D., is a staff psychologist at Ann Arbor Rehabilitation Centers in Ann Arbor, MI. He is also an Adjunct Professor of Psychology at the University of Detroit-Mercy. His primary research interest involves the dynamic relationship between humans and nature.

Douglas A. MacDonald, Ph.D., is an Associate Professor of Psychology and Director of the Clinical Psychology MA program at the University of Detroit-Mercy as well as a licensed psychologist. He has an active research program relating to the assessment of spirituality and examination of its relation to psychological functioning. He is Research Editor for the *Journal of Humanistic Psychology* and Associate Editor for the *Journal of Transpersonal Psychology*.

Appendix A

Nature Inclusive Measure

Instructions: Below are several statements which people might use to describe their experiences, attitudes, beliefs, and behaviors regarding nature. Utilizing the five point response scale provided below, please rate the extent to which you agree with the statements as they apply to you. Record your responses in the spaces provided. There are no right or wrong answers. Please respond to all questions and try to respond as honestly as possible.

1----------2----------3----------4----------5
Strongly Agree Disagree Neutral Agree Strongly Agree

_____1) Watching the sunset calms me.
_____2) Eating organic foods helps me feel more harmonious with nature, and is less harmful to the planet.
_____3) I have felt a sense of empathy toward an animal.
_____4) I try to spend as much time in nature as I can.
_____5) Pollution contributes to many human illnesses.
_____6) I believe that I am connected to the earth.
_____7) If humans don't stop abusing the earth, then there will be an environmental disaster.
_____8) Plants and animals have as much a right to life and freedom as humans do.
_____9) I have had the experience of feeling "at one" with nature.
_____10) I think it's important to recycle.
_____11) The natural environment is a key political issue.
_____12) Having a pet gives me pleasure.
_____13) The earth is alive.
_____14) If given the choice, I would prefer to live in a neighborhood with trees, then one without.
_____15) At least one time in my life, I have felt united with nature.
_____16) The earth is my mother.
_____17) There are houseplants in my home.
_____18) I like to go to National/State Parks.
_____19) The overuse of nature resources has disastrous effects on the earth and humans alike.
_____20) Ultimately, I am related to trees.
_____21) If the planet is unhealthy, then I am unhealthy.
_____22) It is valuable to protect wildlife from extinction.
_____23) Industrial societies create boundaries between humans and nature.
_____24) It is important to contribute to environmental causes.
_____25) I support solar power and other forms of "clean" energies.
_____26) Humans are intimately connected to oceans, rivers, mountains, and forests.
_____27) The earth is like an organism, not like a machine.
_____28) I admire environmental activists.
_____29) The weather affects my mood.
_____30) I am part of the earth.