

Expansion of Self-Boundaries Foster Humans' Ecological Behaviors: Relationship Between Self-Transcendence and Connectedness to Nature

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Abstract - Environmental sustainability is one of the major social issues discussed in the current scenario. Connectedness to nature is the key factor fosters humans' ecological behaviors. Self-transcendence is the expansion of the self-boundaries through connectedness with the self, individual, environment and transcendent beings. The current study examines the relationship between self-transcendence and connectedness to nature. We hypothesized that self-transcendence significantly predicts connectedness to nature feelings of participants. To verify this hypothesis we conducted a survey among 102 participants in the age group 20 to 58 from the southern states of India. Selected tools were administered to the participants and obtained data was analyzed using Pearson's correlation coefficient and linear regression. The results showed that self-transcendence significantly predicted the participants' feelings of connectedness to nature.

Keywords: Connectedness to Nature, Ecological Behaviors, Intrapersonal Self-Transcendence, Interpersonal Self-Transcendence, Transpersonal Self-Transcendence, Temporal Self-Transcendence

I. INTRODUCTION

Wellbeing of the human race mostly depends on lifestyle integrated with ecology, but unfortunately, this orientation is lost in present day lifestyle dominated by consumerist values encouraging the acquisition of goods and services in ever-increasing amounts. It is one of the major social issues discussed in present century (Wilson, 2002). Since environmental sustainability is a progressive human behavior, psychologists have much to contribute to understanding and formulating how such behaviors can inculcate in the societal value system.

Connection to nature is a fundamental component of fostering ecological behavior (Mayer & Frantz, 2004). We abuse nature because we consider it as a commodity belongs to us (Leopold, 1949). Environment protection is possible only when we change this attitude and approach nature with love and respect not as a commodity but as a community to which we belong (Roszak, 2001).

Connectedness to nature is the extent to which an individual includes nature within his/her cognitive and affective representation of self (Schultz, 2002). It is the level of a person's emotional and experiential connection to nature (Mayer & Frantz, 2004).

Many studies had attempted to identify the psychological factors contributing to environment protection behaviors. However, most of these studies were efforts to determine the role of causal factors in specific environmental behaviors. As energy use in the home (Pallak, Cook, & Sullivan, 1980), littering (Cialdini, Reno, & Kallgren, 1990), re-use of materials (Burn, 1991), green electricity products (Bamberg, 2003), etc. Stronger associations also had found between environmental concern and various social psychological variables like attitudes (Kellert, 1993), values (Pereira & Forster, 2015) and worldviews (Dietz, Stern & Guagnano, 1995). Mayer and Frantz (2004) observed that these early studies were mostly attempts to explore cognitive beliefs towards environmental sustainability which had less scope to foster environmental friendly behaviors. Taking inspiration from Leopold's (Leopold, 1949) and Arne Naess's (Naess, 1976) ideas Mayer and Frantz proposed ecological self as a better alternative for promoting ecologically oriented behaviors. The concept of 'ecological self' was simplified by them to fit with a measurement model as connectedness to nature. Connectedness to nature scale measures individual's affective and experiential connection to nature.

Self-transcendence is a self related concept comes from the realm of existential and transpersonal movements in psychology. Self-transcendence is a state of mind with increased self-awareness and expansion of self beyond personal boundaries within intrapersonal, interpersonal, transpersonal, and temporal domains (Reed, 2013; McCarthy, Ling & Carini, 2013). Individuals with great self-transcendence have superior self-acceptance, they find meaning in life, are tend to surrender themselves to a higher entity or purpose and consider life as a holistic integration of past present and future (Reed, 2009). They also view the world more contextually, more easily tolerate ambiguity and paradoxes inherent in life, and demonstrate greater awareness towards spiritual and existential aspects of life (Reed, 2008).

Early research in the area of self-transcendence was of the opinion that it was a one-dimensional construct (Coward & Reed, 1996; Coward & Khan, 2005; Reed, 2008). Later, Haugan, Rannestad, Garåsen, Hammervold and Espnes (2012) revised the dimensionality of the self-transcendence construct and proposed a four-factor model. The four factors

are interpersonal, intrapersonal, transpersonal and temporal self-transcendence. Interpersonal self-transcendence is explained as self-acceptance and finding meaning in life; intrapersonal self-transcendence is reaching out others or connecting with nature, transpersonal self-transcendence is reaching out higher entity or being of purpose, and temporal self-transcendence is integrating one's past and future in the present.

Previous research suggests that connectedness to nature is negatively related to individuals' egoistic value concerns i.e. focus on self-oriented goals, and positively related to biospheric value concerns i.e. focus on the well-being of all living thing (Stern & Dietz, 1994; Stern, Dietz, &Guagnano, 1995). In Schwartz's theory of values (Schwartz, 2013) self-transcendence is interpreted as a concern for "the welfare and interests of others and the natural world". Schultz, Gouveia, Cameron, Tankha, Schmuck and Franek (2005) reported that self-transcendence level of participants across different cultures in the world is positively correlated with their biospheric value concerns.

Similarly, Schwartz, Sagiv, and Boehnke (2000) in an earlier study reported that self-transcendence is positively related to environmental concerns. Schultz and Zelezny (1999) and Schultz (2000) also suggested that pro-environmental attitudes of individuals are causally related with self-transcendence. In sum, even though studies directly linking self-transcendence with connectedness to nature are not available there are plenty of theoretical and empirical evidence to suspect that self-transcendence is positively associated with connectedness to nature.

With this direction, we wanted to examine the relationship between self-transcendence and connectedness to nature. Based on the previous review, we predicted that self-transcendence would explain the largest amount of variance in participants' feelings of connectedness with nature.

II. METHODOLOGY

A. Participants

We approached 102 individuals in the age group of 25 to 58 residing in various cities and towns of southern states of India because of their convenient accessibility and proximity. The average age was 35 years (S.D. = 8 years). Out of the total participants 77 (75.5 %) were males and 25 (24.5 %) were females. The participants were also better educated, out of the total 70.6 % had a bachelor's degree, 11.8 % had a postgraduate degree and remaining 17.6 % had completed some diploma or certificate courses. All the participants were employed with a range two years to thirty-five years experience.

B. Materials

Participants answered a survey questionnaire package contained items assessing general demographic

characteristics like gender, age, and level of education, as well as standardized instruments to measure self-transcendence and connectedness to nature. Details of the instrument are given below.

C. Self-Transcendence

Self-transcendence was assessed by Reed's self-transcendence scale (Haugan, Rannestad, Garasen, Hammervold, &Espnes, 2012; Reed, 1991, 2009). The scale is a fifteen item rating scale designed to rate interpersonal, intrapersonal, transpersonal and temporal dimensions of self-transcendence on a four-point scale in which high scores indicate high self-transcendence. The instrument has high internal consistency reliability (Cronbach's alpha range was between 0.80 and 0.88) as well as high content and construct validity.

D. Connectedness to Nature

Connectedness to nature scale (Mayer & Frantz, 2004) was used to measure participants' trait levels of feeling emotionally connected to the natural world. The scale is a fifteen item rating scale designed to rate individual's affective and experiential connection to nature on a five-point rating scale. The scale has excellent psychometric properties and also correlates with related variables.

E. Procedure

Participation in the survey was voluntary without any payment. After consenting to participate in the study, participants completed the questionnaire package containing the measures listed above. The purpose of the research was well explained to the participants and confidentiality of the information was assured. They were free to quit from the survey at any stage of the research. After completion of the survey, the completed questionnaires were collected back. We then thanked the participants for their cooperation. There were few participants failed to follow instructions leaving a significant portion of the survey blank. We removed those survey questionnaires from the final data.

III. RESULTS

1. Descriptive Statistics

The variables are summarized in Table I. Normality of the data was checked using Shapiro Wilk's test. The test result shows that both connectedness to nature and self-transcendence, test statistic for the total scores are not significant. It means that both these data comes from a population that is near to normal. The skewness of both the scores is negative. It means that both the data sets were slightly left-skewed. The kurtosis of connectedness to nature is positive while the self-transcendence total score is negative. It means that the distribution of connectedness to nature is slightly heavy-tailed while that of self-transcendence is somewhat light-tailed.

From our earlier reference, it is evident that connectedness to nature scale was in four-point Likert scale and self-transcendence scale was in five point scale. Since there is a difference in the measurement scale, the obtained raw scores of the subjects were converted into standardized T scores. We used this converted standard scores for further data analyses.

2. *Connectedness to Nature and Self-Transcendence Relationships*

The interrelationship between connectedness to nature and self-transcendence was tested using Pearson product-moment correlation coefficient. The results of the analyses are summarized in Table II.

TABLE I DESCRIPTIVE DETAILS AND NORMALITY TESTS FOR CONNECTEDNESS TO NATURE AND SELF TRANSCENDENCE SCORES

Variables	Mean	SD	Skewness (SE =0.24)	Kurtosis (SE =0.47)	Shapiro-Wilk Statistic
Connectedness to nature	51.08	4.95	- 0.41	0.55	0.98 NS
Self transcendence total score	48.92	6.01	- 0.32	-0.85	0.97 NS
Interpersonal self transcendence	19.87	2.91	- 0.59	0.52	0.95**
Intrapersonal self transcendence	16.40	2.45	- 0.32	- 0.65	0.96**
Transpersonal self transcendence	5.86	1.52	- 0.28	-0.72	0.93**
Temporal self transcendence	6.78	1.43	- 1.24	- 0.28	0.79**

SE = Standard Error, NS = Not Significant, **= *p* value < 0.01, two tailed

TABLE II CORRELATION BETWEEN CONNECTEDNESS TO NATURE AND SELF TRANSCENDENCE SCORES

Variables	Pearson's coefficient
Connectedness to nature with	
Self transcendence total score	0.41**
Interpersonal self transcendence	0.32**
Intrapersonal self transcendence	0.26**
Transpersonal self transcendence	0.23*
Temporal self transcendence	0.36**

**= *p* value < 0.01, two tailed, *= *p* value < 0.05, two tailed

TABLE III MULTIPLE REGRESSION ANALYSIS BETWEEN CONNECTEDNESS TO NATURE AND SELF TRANSCENDENCE DIMENSIONS

Self-transcendence dimensions	Beta	R ²	F Value
Interpersonal self transcendence	0.21 (2.10) *	0.19	5.95**
Intrapersonal self transcendence	0.07 (0.70) NS		
Transpersonal self transcendence	0.04 (0.42) NS		
Temporal self transcendence	0.27 (2.74) **		

NS= Not Significant, **= *p* value < 0.01, two tailed, *= *p* value < 0.05, two tailed

Correlations between connectedness to nature and self-transcendence revealed a significant positive association between them. This indicates that participants who scored high on self-transcendence scale are more connected with nature compared to individuals who scored less. Since the correlation between self-transcendence and connectedness to nature is significant, we did a simple linear regression to determine the quantity of variance in the feelings of connectedness to nature contributed by self-transcendence. The linear regression results indicate that total self-transcendence explains 16 % of the variance ($R^2 = 0.16$, *FValue* = 20.01 significant at 0.01 level) of connectedness to nature scores of participants.

Further, we also did a multiple linear regression analysis to find out the particular contribution of interpersonal, intrapersonal, transpersonal and temporal self-transcendence in predicting participants feelings of connectedness to nature. The linear regression analysis including all dimensions of self-transcendence confirmed that only interpersonal and temporal dimensions of self-transcendence are significant predictors of connectedness to nature. Details of the analyses are summarized in Table III.

IV. DISCUSSION

Self-transcendence is a psycho-social-spiritual force toward personal maturity (Haugan&Innstrand, 2012). Frankl (2000) regarded self-transcendence as an innate desire to discover meaning in human life. It enhances people's search for new perspectives, provides meaning to lives and helps them to overcome selfish goals. The core concept of self-transcendence is the connection between individual, environment, and transcendent being (Reed, 2008). It is a multidimensional expansion of the self-boundaries in terms of intrapersonal i.e. through self-acceptance and finding meaning in life, interpersonal i.e. by reaching out to others or connecting with nature, transpersonal i.e. reaching out to a higher entity or being of purpose, and temporal i.e. by integrating one's past and future into the present. The findings of the present study are highly relevant as it has found that self-transcendence is positively related with individuals' feelings of connectedness to nature. Additionally, it is also fascinating to find that out of the four dimensions of self-transcendence interpersonal and temporal self-transcendence significantly predicts connectedness to nature.

Interpersonal self-transcendence is the expansion of self towards others and nature (Haugan *et al.*, 2012). The connection is not just with few people who are personally related but with the humanity and nature as a whole. This concept is similar to the idea of substance monism (Mathews, 2006) that considers the world as a single universal substance opposite to the viewpoint of substance pluralism that sees the world as a set of discrete logically and ontologically autonomous elements. Widespread devastation of nature is a product of our modern consciousness dominated by the substance pluralism viewpoint. The findings of the study point out that people who had expanded their interpersonal self-boundaries beyond personal spheres are more connected with nature than who are less expanded. Solutions for many of our environmental problems and suggestions for promoting sustainable lifestyles are evident in this finding.

Temporal self-transcendence is the integration of one's past and future into the present. Earlier research evidence supports the current finding that individuals who think ahead and believe that our current actions determine future events be more environmentally friendly and follows sustainable behaviors (Enzler, 2013; Milfont & Gouveia, 2006; Strathman, Gleicher, Boninger, & Edwards, 1994). We also can link the findings to the individual differences in time perspective of short-term and long-term benefits (Zimbardo & Boyd, 2015). Many people often do things that they perceive to be good for them now, despite the potential for long-term damage (Hall & Fong, 2007). They also refrain from doing right behaviors even though they know what is right and what is wrong because of the temptations from the rewards that are immediately available (Berns, Laibson, & Loewenstein, 2007). It is relevant to quote 'Temporal self-regulation theory' and 'Expectancy-value approach' in this context. The temporal self-regulatory theory (Hall & Fong, 2015) holds the view that individual's capacity to regulate their behavior in agreement with long range interests is a personal characteristic that varies due to complex combinations of biological, cognitive, and social factors. Self-transcendence is a recent theoretical construct in the psychological research arena. Until now we do not have many pieces of evidence to connect self-transcendence trait with self-regulatory abilities. However, it is most appropriate to cite an allied study by Aaker and Lee (2001) in consumer behavior in this context. The study observed that individuals with the independent self-view are more pleasure seeking (immediate gratification) while individuals with the interdependent self-view are more pain avoiding (delayed gratification). According to the expectancy-value approach advocated by Rotter (1966), Bandura (1977, 1986), and Fishbein and Ajzen (1975), desire to reach any long-term benefits of individuals are determined by how much they value the outcome; and by the strength of their belief that the occurrence of this outcome is contingent on their present behavior. These values and beliefs occur from a mixture of social influences which includes family, peer groups, culture and so on. The current finding of temporal self-transcendence as a predictor

of connectedness to nature proposes that individuals who are more holistic and future-oriented in approach are protecting the environment more. Probably with this finding, we can argue that persons with more temporal self-transcendence are more matured that they can willfully delay sensory gratifications and appreciate that long term well being is more important than short-term gains .

V. CONCLUSION

We did the study to support the ideas of eco-psychologists Leopold (1949), Roszak (2001) and Fisher (2003) who argued that fostering ecological behaviors in society is possible only through expanding our sense of self. Self-transcendence is a pioneering idea that states the expansion of self beyond our personal boundaries. We can use this theoretical construct probably as the solution for many of our modern day problems. We contemplated that once we can establish a strong theoretical relationship between self-transcendence and connectedness to nature, it is possible to develop intervention programs to foster ecological friendly behaviors among ordinary folks. We indeed found supportive results for this theory in our study as we found that self-transcendence significantly predicted connectedness to nature.

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