

ENVIRONMENTAL EXPERIENCE AND ECOLOGICAL IDENTITY

by

Summer Allen

A Thesis

Submitted to the

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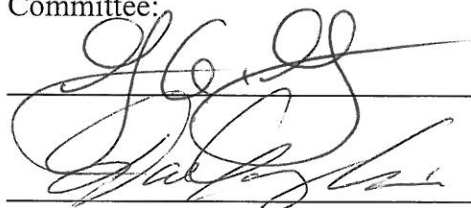
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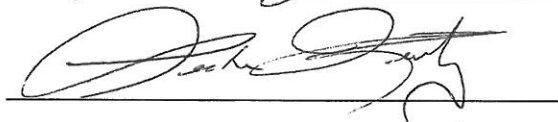
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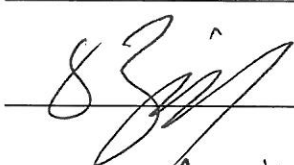
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Environmental Experience and Ecological Identity

A Thesis submitted in partial fulfillment of the requirements for the degree of Master of Arts at George Mason University

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ABSTRACT

ENVIRONMENTAL EXPERIENCE AND ECOLOGICAL IDENTITY

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This research explores the relationships among environmental experiences, pro-environmental values and ecological identity using a mixed-methods approach. After intensive interviews revealed categories of environmental experiences, a web survey was implemented using Clayton's (2003) environmental identity battery; Stern, Dietz and Guagnano's (1998) brief values instrument; measures of role identity prominence, salience and commitment from Stets and Biga (2009); and items created from the identified experience types. Results show the close relationships among environmental experiences, Biospherism values, and Self-Identification with Nature, but do not support hypothesized links between environmental experiences, values and management of the "environmentalist" role identity. Other interesting links and avenues of inquiry are exposed for future research in this neglected research area.

INTRODUCTION AND REVIEW OF LITERATURE

From the Enlightenment to current globalized neo-liberalism, dominance *of* nature rather than *by* nature has gradually become a global social fact - a worldview of nature as resource. We see, as a result, accelerated extraction of environmental resources to satisfy demand that is unencumbered by knowledge of the commodity chains that deliver goods, or by concern for the resultant environmental externalities. Studies by Hughes (2003) and others summarize the empirical evidence that human behavior, directly resulting from this spread of Western worldview and industrial capitalist methodologies, is a primary cause of global climate change and environmental degradation.

Unfortunately, in a 2010 presentation to the National Congress on Behavior Change for Sustainability, Stern (2010) noted that private sphere behaviors such as recycling have large intent quotients but relatively minor actual impact on environmental quality. Activism, on the other hand, has an ability to influence governmental and corporate policy and may be the most impactful activity. It is also an activity that requires a critical mass of public support to achieve that impact. To change policy or behavior, the activist relies on the power of mobilizing public opinion or resources to force accommodation from a government or corporate entity. One potential way to achieve and sustain that critical mass is through identity-based group formation and consequent

development of an environmental social movement similar to U.S. movements in support of race and gender equality.

Identity-based movement formation does not require that everyone be an activist, but the identification with the movement must be strong enough that the group can sustain its cohesion in the face of reactive pressures and drawn-out confrontation. This means that it is potentially more important to have a large group with a few strongly activated individuals (activists), than to have a small group of very involved activists with no “popular” support.

In this research, identity connected to environmental concern will be explored. Utilizing two perspectives - Values theory and Role Identity theory - this study will investigate the role of environmental experience in values and in three dimensions of environmental role identity - prominence, salience, and commitment.

Theoretical Perspective

Dependent Variables

To understand these theoretical lenses, an examination is first needed of an idea-stream with roots in the Scottish Moral Philosophers. From these roots, “symbolic interactionism” then developed through the likes of George Herbert Mead and John Dewey. Symbolic interactionism is the idea that “society and person are abstractions from ongoing social interaction, that “selves” and “society” have no reality apart from one another or from the interpersonal interactions from which they derive...” (Stryker, 1980, p. 2). Symbols - objects and language - that people use to communicate or communicate about have negotiated meaning. Theoretically, every pairwise grouping of

individuals comes to some understanding about what the symbols they have in common mean and it is possible for those meanings to be continually re-visited.

Sheldon Stryker (1980) suggested a modification to symbolic interactionism. Social structures, he said, were not open for this pairwise renegotiation, but carried the weight of society's agreed-upon meanings. Of course, these could change, but they required the consensus of large parts of society and generally took longer periods of time.

For this research, the idea of a stable, socially-agreed set of structures is important because it may lead directly to structured "roles" to which individuals might adhere. It also indicates that an individual might experience some negotiations regarding these roles with those with whom they engage – family and friends, most likely. If we are interested in understanding the prospects for an identity-based social movement or even for the creation of pro-environmental identities, understanding more about environmentally-associated roles is crucial.

Role Identity

An off-shoot of Stryker's work is Role Identity theory. He first used it as an example of his new reformation of symbolic interactionism, restating Mead's argument as, "society creates self which in turn organizes social behavior, and specifies that formula by asserting that "society"... impacts "self" in the form of differentially salient identities comprising self, and that the relative salience of identities impacts social behavior in the form of persons' role choices." (Stryker, 1980, foreword, para. 12). Peter Burke and his colleagues (cf. Burke & Tully, 1977) then developed this idea that society-developed structures might be applicable at the individual level of analysis further.

Role Identity uses Erik Erikson's (1968) "ego identity": "...the awareness of the fact that there is a self-sameness and continuity to the ego's synthesizing methods and a continuity of one's meaning for others" (p. 50) and suggests that there are socially-structured roles individuals adopt and within which they maintain their fit. Burke and Stets (2009) explicated empirically the mechanisms and processes used to do this fit maintenance. They further recognized that an individual holds multiple roles and also has mechanisms for managing them in relation to one another.

The mechanisms for managing multiple roles are captured in the three identified elements of a role - *prominence*, which is the place of the role in an individual's ego identity hierarchy of roles; *salience*, which is the relevance of a role to a given situation; and *commitment*, which is the number and depth of social ties an individual has created around the role (Stryker & Serpe, 1982).

Prominence is the facet of role identity that typically gets a "name". The higher the prominence of a role in an individual's hierarchy, the more likely they are to make statements like "I'm a [insert role name here]" across a range of situations. The mechanisms for choosing these roles are likely personality-dependent, but we speculate here that values play a role in those choices.

Salience is the aspect of role identity that is the most responsive to external events, as it is indicative of the individual's assessment of the relevance of the role to the current situation. For example, in the qualitative portion of this research, interviewees frequently reported modulating their self-identity in social encounters in response to the

expected receptiveness and interests of those with whom they were engaging. This means that even a highly prominent role may not always be expressed.

Commitment is well-entwined with prominence and salience. It captures the number and quality of social ties through which the role is negotiated and reinforced. The assumed relationship is that higher commitment underpins higher prominence and that higher levels of those elements will cause salience to remain high across situations.

Burke and Stets (2009) have compiled items used in the Role Identity literature that measure all of these three elements. There are several ways to measure each of these constructs, some direct and some indirect. Some have been particularly developed for use with college students and others for a more general adult sample. For the purposes of this research, given that it will be conducted largely as a web-based survey, direct measures of the concept of interest were preferred to ensure interpretability by respondents. The batteries chosen were clear in their phrasing, appropriate for a more general adult audience than undergraduates, and contain fewer items to limit the size of an already-large survey.

Ecological Identity

On a parallel path, Susan Clayton (2010), a conservation psychologist, developed a battery of items to measure the presence of an ecological identity (EID). Her work does not seek to understand the identity management process, but merely seeks to place individuals along a continuum of holding an ecological identity. The empirical work for which she developed this scale targeted a general public in which she desired to identify those individuals who possessed this identity of interest. Clayton (2003) defined the identity she is measuring as, "...the degree of similarity we perceive between ourselves

and other factors of the natural world, and whether we consider nature and nonhuman natural entities to have standing as valued factors of our social and moral community.” (p.8), which is in line with the definition used in this research. No literature could be found to link or compare these two constructs – EID and environmental role identity – but this research makes an assumption, which will be tested, that presence of an ecological identity (as evidenced by the EID score) is positively related to at least the prominence of the environmentalist role, if not the commitment and salience. Together, these identity measurements should allow us to ascertain the presence of a respondent’s ecological identity and to explore in more depth where experiences and values are engaged.

Independent Variables

Values

The three-element Stryker and Serpe framework (prominence, salience and commitment) described above leaves unanswered the question of how an individual chooses to adopt a specific role. For identity purposes, values are the most relevant of these. In fact, Hitlin (2003) suggested that “values are the primary phenomenon in the experience of personal identity” (p.122).

Various scholars since the 1970s (cf. Rokeach, 1973; Schwartz, 1992; Joas, 2000; and Rohan, 2000) have studied the importance of values and have sought to categorize the variety of values across individuals and across cultures, as well as the criteria required for labeling some construct a “value.” Schwartz (1994) defines values as “desirable trans-situational goals, varying in importance, that serve as guiding principles in the life of a person or other social entity.” (p. 21) which coincides with Erikson’s definition of the

“ego identity” as an enduring self-conception. Schwartz and colleagues (cf. Schwartz and Bilsky, 1987) further indicate that a “value” must meet five criteria: 1. they are concepts or beliefs; 2. they pertain to desirable end states or behaviors; 3. they transcend specific situations; 4. they guide selection or evaluation of behaviors or events; and 5. they are ordered by relative importance

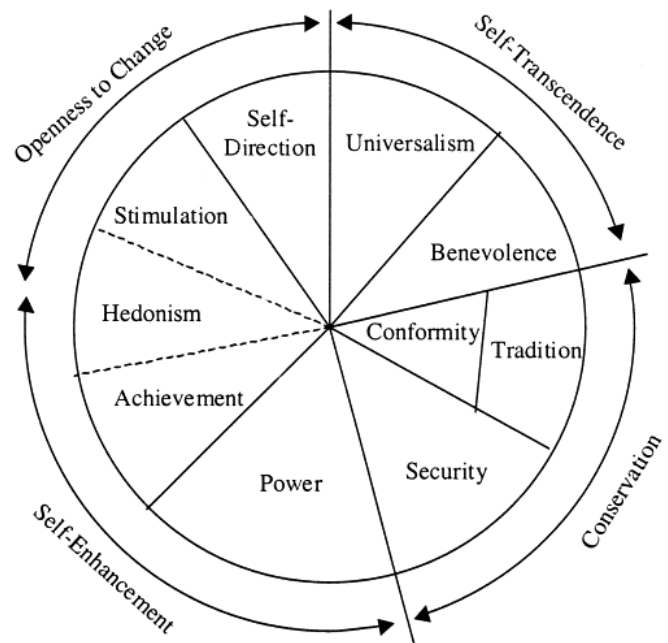


Figure 1: Schwartz's values continuum

(analogous to *prominence* in role identity). These same criteria can be seen in personal identities, lending credence to theoretical links between values and personal identity constructs (Hitlin, 2003, p.124).

Through decades of survey research with colleagues across Europe, Asia and Africa, Schwartz has developed and refined a continuum of cross-culturally validated individual values (Figure 1). They include Openness to Change, Self-Enhancement, Self-Transcendence, and Conservation dimensions. Each has two to three sub-types as shown. Schwartz has identified these dimensions as a continuum across which individuals flow as they mature. As might be intuitive, individuals who highly value a sub-type such as tradition and conformity are less likely to value hedonism and self-direction. Schwartz has also designed a 56-item instrument to measure these dimensions.

Recognizing that Schwartz's 56 items are too many for phone and internet survey work, Stern, Dietz and Guagnano (1998), through careful analysis and verification, reduced the scale to a 15 item battery with specific emphasis on identifying "pro-environmental" values - those that have a specific, significant positive or negative relationship to pro-environmental behavior. Their work altered the naming of dimensions slightly to identify "Self-Enhancement" as "Egoism" (i.e., preference for the self); "Self-Transcendence" for environmental contexts becomes both "Altruism" (i.e., preferencing others above self with no expectation of reward); and "Biospherism" (i.e., viewing the self as a part of a larger ecology). The other dimensions remain the same.

If the intent of this work is to identify points around which an identity-based environmental movement might be formed, a further question remains: How, then, are values engendered? Hitlin and Piliavin (2004) offered that values generally flow from a combination of four sources: 1. socialization; 2. familial education; 3. biological disposition; and 4. personal experience. Socialization is undoubtedly related to role identity maintenance, as could be familial education. Both describe the effect external social actors have on the perceptions and affect of individuals. Personal experience, though, is the most empirically accessible of these four sources. Thus, a typology of environmental experiences is needed.

Environmental Experience

In order to tie experiences to values generation or identity, it is first required that we acknowledge that experience is primarily an internal process. However, the stimuli for this internal process can be either another internal process (visualization, for example) or,

more often, an external event. The individual receives that stimuli and interprets it through various senses and cognitive filters to create an internal interpretation of that external event. As Chawla (1998a) explained, “These experiences may be characterized as exchanges between an external and internal environment: an external environment composed of the qualities of physical surroundings and social mediators of the physical world's meaning, and an internal environment of the child's needs, abilities, emotions, and interests.” (p. 14). For the purposes of this study, it is important to expose both the external stimuli, because that is what is observable and potentially common to a range of individuals, as well as the internal interpretation, because the interpretation is what will create meaning and form values and identity.

Following from Dewey (1938), environmental education researchers have conducted a wide variety of studies using dependent variables such as concern (Bogeholz, 2006), intention (Kellert, 1993), awareness (Palmer, et al., 1998), and emotional affinity (Kals, et al., 1999) for nature. Independent variables in all focused on reported environmental experiences. Only one of these studies tried specifically to develop a typology of dimensions of nature experiences (Bogeholz, 2006).

These studies exhibit a range of challenges for the present research, however. Issues include a continuing problem of definition of concepts measured and categories derived. For example, environmental sensitivity is never defined adequately and is consequently conceptualized differently from researcher to researcher. Differing dependent variables make comparison between studies difficult. Resulting experience

categories are also not defined well and are at a variety of levels of scale and dimension making them hard to replicate.

Leisure and recreation studies researchers have also examined the motivations for environmental experiences taking the form of outdoor recreation (cf. Manfredo, Driver and Tarrant, 1996). As a group, these researchers sought categories of environmental experiences to assess their relationships to the use and management of recreational areas. Manfredo, Driver and Tarrant (1996) and Rosendahl (2003) used these typologies to identify preferences for recreation activities.

The literature from leisure studies produced typologies of external events only. Because these are categories of events sought out by those with a predisposition to recreation, they have positive internal interpretations, but the studies do not specify which positive connotations get placed upon which event.

Resulting experience typologies from these literature bodies can be summarized as either restricted to description of external experiences or broadly descriptive of cognitive processes. Finger (1994) did identify a limited number of emotional experiences (fear and anxiety) in addition to external event descriptions, while Cross (2001) proposed place-relationship types for residences. However, none of the studies reviewed examined values, or related specific external events with internal interpretations. Thus the goal of the present research is to develop a typology of environmental experiences that clearly links external experience with internal interpretations. Together, these theoretical perspectives will allow the present research to

explore the relationships between environmental experiences, values held, and role identity.

QUALITATIVE INVESTIGATIONS

Mitchell Thomashow (1996) described an “ecological identity” that animates an environmental advocate. Shalom Schwartz (1992) articulated the foundational qualities of values as enduring motivational bases. It follows that holding values identified as being “pro-environmental” should be important for possessing an “ecological identity.” But how are pro-environmental values engendered? Since Hitlin and Piliavin (2004) maintained that the source of values include personal experience, an important question becomes: Which experience can be linked to pro-environmental values?

The present research defined “environmental experience” as any experience that involves a direct interaction of an individual and nature, be that a landscape, a specific location, an animal, or a plant specimen. These environmental experiences should contribute to the formation of pro-environmental values and to the awareness of consequences of environmental degradation.

In this chapter, the first part of a mixed method project is described. A mixed methods approach is appropriate here because of the ambiguity of the initial concepts and the lack of directly relevant literature. In order to understand or define “ecological identity” and “environmental experience”, it was first important to assess how these ideas are understood and discussed among the population of interest. For these purposes, an inductive, more personal approach was best as it allowed for exploration of the

information as it revealed itself and permitted deeper probing with participants when desired. For defining such potentially ambiguous concepts as are needed for this research, this approach was the appropriate starting point. To see the larger patterns among a sample, a deductive, quantifiable technique was needed as a follow-on activity. Surveys reveal the commonalities among the sample and that is important for generalizability.

Method

The qualitative portion described in this chapter was intended to capture the specific, memorable environmental experiences of a cohort of individuals who self-identify with an ecological identity. These intensive interviews allowed connection of details of the external event reported with the internal interpretations of the participant and creation of a typology of reactions experienced as important. Patterns were revealed about the ideas, values and behaviors of a group of people who have made environmental concern the touchstone of their life-course.

Data Needs

In order to extract types of environmental experiences that were formative to individuals with an ecological identity, particularly those that connect the external stimuli and internal interpretations of those stimuli, descriptive data from a sample of individuals possessing an ecological identity was required. The descriptions should *identify experiences* which an individual participant describes as being environmentally-related with as much specificity as possible. The descriptions should also *capture the participant's interpretations* of the described experience, to include affective and

cognitive responses. Finally, the descriptions should *include a participant's assessment of the importance of the experience* to his/her identity as an environmentally-concerned individual.

Intensive Interviews

The present study used a cohort of fifteen individuals who self-identified with a strong ecological identity. Since ecological identity is not always visibly apparent, the sample was drawn from four areas. George Mason University's (GMU) research interests database was used to contact, via email, individuals who listed an environmentally related interest. Snowball sampling led to referrals of students, family members, or other faculty members and, in all, the strategy yielded fourteen interviews.

An additional interview was drawn from the social network of an employee of the Office of Program Evaluations within the Environmental Protection Agency (EPA). The subject within this frame was also an employee of the EPA, but the EPA did not participate in or approve of this research.

During these semi-structured, intensive interviews, respondents were asked a series of questions designed to elicit their formative and most influential environmental experiences, the particular aspects of those experiences they found to be most influential, their current pro-environmental behaviors, and their description of their ecological identity. While conducting these interviews, the researcher paid close attention to discussion content, body language, and tone of interaction. Prior to the interviews, participants were shown and read an informed consent document as specified by the GMU Institutional Review Board. In each case, participants were informed that their

comments would likely be published, and that their identities would be concealed. All subjects agreed. Interviews were conducted at various sites, but in a few instances over the phone or via Skype™.

Using Grounded Theory (Strauss & Corbin, 1994) procedures, transcription and coding began during the data-gathering period. The interviews were transcribed, coded and analyzed for categories of environmental experiences, commonly occurring features of those landscapes or events that formed the experiences, and identification of any other interesting patterns in the data. After transcription, the researcher went back through the material to identify themes running through each instance. They were then set aside for at least a week and re-read to pull out any additional codes. This process was iterated several times. After all interviews were conducted and transcribed, analysis for themes that arched through all the instances was conducted. Identified themes and the typology of environmental experiences follow in the next sections.

Results

Cohort Description

Participants in this portion of the research ranged in age from 20 to 81 years old. The median age was 48.4 years old. 7 of participants were female, 13 participants hold a graduate degree with 11 of them holding the PhD. 11 participants have their degree in an environmental field, while 14 of the 15 are working in an environmentally-related field.

Typology of Environmental Experiences

Analysis of the interviews yields the typology described below.

Table 1: Preliminary typology of environmental experience

Type	Sub-Type	Examples
Family Mediated		camp/hike/boat (non-consumptive activities)
		puppet stories about nature/animals
		hunting/fishing (consumptive activities)
		watching nature movies
		lizard-catching
		watching for parent in a storm
Peer Companioned		summer camp
		water-fights
Aesthetic Appreciation	Sensing natural things	color of fall leaves
		wildflowers
		sound of fluttering leaves
		birds flying through a gorge
		mosquito buzzing in your ear
	Sensing landscapes	views from a mountain top
		how bodies of water are always changing (calm, rough, etc.)
		views of a river valley
Challenge/Limit-Testing	Physical	walking/rafting/getting out of a wild environment
		hiking/climbing/trekking
		surviving a waterspout
		sailing through a storm
		“pushy” diving
	Emotional	being cut-off in the backcountry wild
		might have to kill something
	Mental	overcoming physical ailments while in nature
		choosing the most "exciting" research location
Connective	Perspective-taking	thinking “those poor guys”
		realizing you caused a lizard to drop its tail
		having a familiar or totem
		tagging a bird
		gardening
	Personal connection w the land	being comfortable in a landscape
		living “closer to the land”
		“I’m home”
	Personal connection w animals	locking eyes w a coyote
		petting lizard bellies
		communicating w horses

Type	Sub-Type	Examples
Perceiving Degradation	Development	pet-keeping
		reading an animal’s facial expressions
		landscape change from memory
		landscape change from family stories
	Pollution	moving to an urban environment
		smell memory of sewage
		family playground not suitable for skin contact
		diving in dead coral
	Sensory	watching Gorillas in the Mist
		moving to environment where preferred activities are not available
seeing animal suffering		
Discovery	Exploring	look for wildlife in a foreign country
		map new territory
		hiking through a landscape
		watch the details of what’s going on in the woods
	Surprise	going off where you haven’t been before
		unscriptedness of being in the woods
		surrounded by giant trunks and a beam of light hits an unseen orchid
		stumbling upon an animal
	Sensory	hear a bird call in the distance
		smell the butterscotch pine
Epiphany		feeling that the whole place was alive
		Africa looks like the Great Plains
		amazement at the diversity/fragility
		becoming “aware”
Escapism	Actual	getting away from people/civilization/everyday
		being on top of a mountain by yourself
		camping/kayaking/hiking by yourself (non-consumptive activities)
	Imaginative	traveling to remote regions by yourself
		nature is the “real” world
		daydreaming of being in the woods/on a mountain
Fearful/Threatening		putting yourself in that photo
		being in the mountains
		being out on a ledge
		seeing a storm coming
Ecological Understanding		knowing the history of a place
		collecting plants and/or animals
		recognizing the interconnectedness of life forms

Type	Sub-Type	Examples
Competency Building		classes on nature in school
		researching mountain lions for a book
		learning to use a compass
		being a full participant in a trip
Immersive	Enclosed	camping by yourself
		being caught in a fire
		sitting under a tree
		being in the woods
		getting lost in the jungle
	Small cog-Big wheel	diving
		getting above the tree-line
		feeling equal w all creatures
	Loss of Self	overwhelmed by mountains
		being considered part of the landscape
		sitting still and becoming part of the scene

Family-Mediated - This type of experience is characterized by the teaching function that adults and older children perform within the family setting. Respondents primarily reported values and skills transmission accompanied by fear inoculation. The activities and external events described span the range from watching nature movies to consumptive activities like hunting and fishing. In all cases, the activities, by themselves, would be categorized otherwise, but it was the presence and guidance of the family member that was reported as the key feature.

Peer Companioned - Environmental experiences frequently occur in the presence of peers, respondents called out those that primarily occurred in adolescence. The salient features seem to be skill development and social reinforcement that the environmental activity is acceptable. Once respondents progressed past this age range, they no longer emphasized the importance of their peer companions.

Aesthetic Appreciation - Following from the field of aesthetics and the various categorizations possible, this experience type seems to divide into two sub-types. Both are characterized by an individual's artistic enjoyment, the difference lying in scale.

- Sensing Natural Things - This sub-type expresses an individual's recognition and appreciation for small-scale, immediate objects and events in nature. That appreciation may be based upon symmetry, color, harmony of sound, or the like.
- Sensing Landscapes - This sub-type encompasses respondents' appreciation of larger-scale natural scenes. All reported instances of this sub-type were visual.

Challenge/Limit-Setting - This category of environmental experience can be separated into three distinct sub-types.

- Physical - This sub-type closely resembles the literary conflict motif of "Man vs. Nature" in which an individual sets (or is set) against some natural obstacle.
- Emotional - This sub-type was rarely reported, but both instances involved the respondent's need to confront an emotion before undertaking a physical act in nature.
- Mental - This sub-type can be thought of as "hanging tough" through a physically difficult event.

Competency Building - Similar to the experiences reported in the "Activities with Peers" category, this experience type involves nature-relevant skill development, though without the social approval aspects.

Connective - This type of experience encompasses a respondent's ability to create a real or imagined relationship with some natural aspect. There are three sub-types.

- Perspective-Taking - This sub-type was reported exclusively with animals and is an empathetic, imagined placement of the respondent into the animal's "shoes."
- Personal Connection with the Land - This sub-type seems to express a connection between the respondent and a specific landscape, though that connection is described variously as "comfortable," "close" or "home." This category corresponds closely with Cross' (2001) "spiritual" category of place attachment.
- Personal Connection with Animals - This sub-type is a more reciprocal relationship than is seen in the Perspective-Taking sub-type. The connection occurs around some sort of perceived two-way communication between an individual animal and the respondent.

Discovery - Experiences of this type fall into three sub-types.

- Exploring - This sub-type describes the experiences of exploratory discovery.
- Surprise - This sub-type describes the experiences respondents described as engendering a surprised interpretation.
- Sensory - This sub-type describes the various experiences respondents described which display unexpected sensory factors.

Escapism - Experiences of this type fall into two sub-types. The primary interpretations behind both are of stress-relief and rejuvenation.

- Actual - In this sub-type, respondents physically leave an environment.
- Imaginative - In this sub-type, respondents visualize themselves in another environment.

Epiphany - This experience type is often characterized as an “A-ha” insight moments.

Fearful/Threatening - This experience type encapsulates explicitly fear-inducing events.

Immersive - This experience type is divided into three sub-types, all focus on experiences where respondents lose the sense of being in civilization.

- Enclosed - This sub-type is comprised of experiences in which the respondent feels surrounded but not subsumed into the environment. Reported instances are limited to plant-heavy environments (i.e., woods, the jungle) or being underwater.
- Small Cog-Big Wheel - This sub-type seems to occur primarily in larger, more expansive environments wherein a respondent is able to compare themselves and their size to the scale or complexity of a landscape.
- Loss of Self - In this sub-type, the respondents report being encompassed by their surroundings, implying a “Small Cog-Big Wheel” moment accompanied by feeling subsumed.

Ecological Understanding - All experiences in this type are founded on engendering or deepening cognitions about how nature works and is interconnected.

Perceiving Degradation - This experience type was reported as occurring in adolescence or later, and appears to be a values or expectations violation interpretation.

This type divides into a generic subtype and two more specific sub-types.

- Generic - Instances reported that fall within this “catch-all” degradation experience sub-type encompasses animal welfare and “violations” that are

actually the result of a respondent relocation from a preferred environment to a less desirable one.

- Development - This sub-type encompasses degradation experiences caused by development.
- Pollution - This sub-type describes degradation experiences caused by pollution.

QUANTITATIVE EXPLORATIONS

The overarching goal of the previous portion of research was to identify experiences that can be linked to pro-environmental values held by those individuals with an ecological identity. For the next phase of this project, a survey instrument was developed to examine the relationships among the experience types, pro-environmental values, and role identity process characteristics (salience, prominence and commitment) in a wider sample frame.

Understanding these elements and their connections can yield benefit in several different directions. First, greater understanding of the cognitions and values of a group of individuals who display qualities highly desirable to the pro-environment movement can yield insight to communities that seek to promote such things in others. Second, eliciting the external details of significant environmental experiences will allow them to be used in the study of the impact of specific physical environments – whether mountains are particularly affective for city-dwellers, for example. They will also more effectively link environmental education efforts to values-generation and identity formation.

Hypotheses

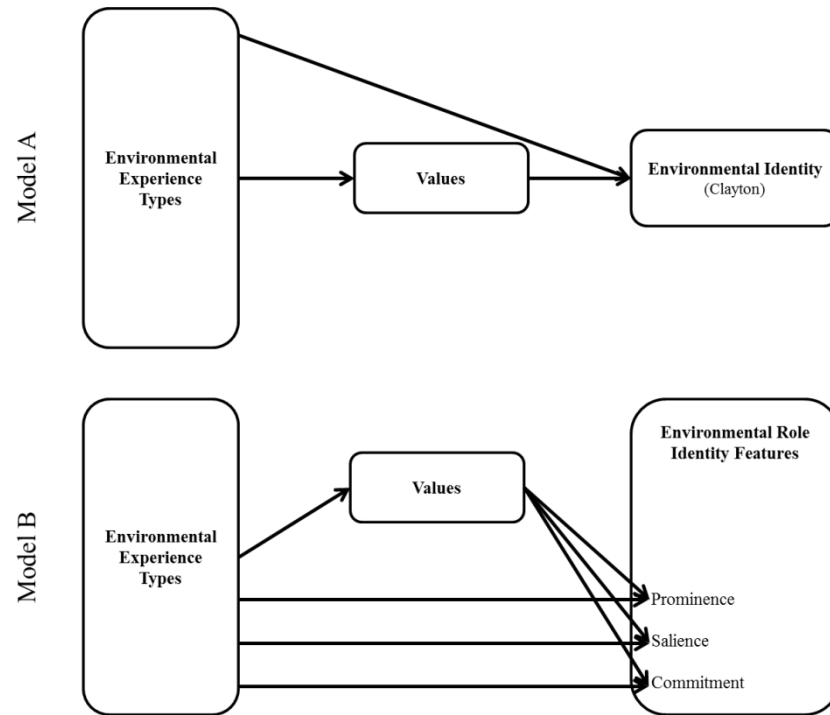


Figure 2: Two hypothesized models of relationships between experience, values and identity

This research planned to test the two models diagrammed above. Model A uses the Clayton measure of ecological identity (EID), while Model B uses the Role Identity factors as described by Stryker, et al. Significance was hypothesized in each model and they were to be compared. There is no literature comparing or connecting Clayton's scale and role identity features, so this research explored whether these two conceptions of ecological identity behave similarly. If they do, we can claim to expose some of the internal psychological processing of the ecological identity. If not, further exploration is

needed to understand how the identity as whole (EID) is related to the role identity process pieces.

Methods

Data Needs

In order to address the expressed hypotheses, data was needed from a broader, but still purposive, sample of individuals with an ecological identity. The data should first ascertain whether a respondent *possessed an ecological identity*. Then, the data should capture whether a participant has *internalized any of the experience types* developed in the qualitative portion of this study along with their assessment of *the importance of that experience* to their ecological identity. The data should also assess *the relative importance of Schwartz's value types* to a participant. The data should include measurement of the *three specific identity aspects* (prominence, salience and commitment) in an environmental context. Finally, *demographic information* was needed.

Data Collection

To collect the identified data, a survey was designed for delivery via the internet. DatStat was used as the development and delivery platform. Once pre-testing was complete, the survey link was distributed to the ENVIROSOC (environmental sociology) list-serv, the CONSERVPSYCH (conservation psychology) list-serv, and to the Fairfax County Master Naturalists email distribution list. Together, these lists represent around 3000 potential participants, though it is not known how many individuals overlap in membership.

Measurements

To assess the presence of a respondent's ecological identity, Clayton's (2011) reduced eleven-item EID scale was used. Four items were reversed to ensure respondents were not answering items by rote (i.e. yea-saying). A battery of twenty-nine items was also developed from the interview portion of this study to assess environmental experience types in this cohort (see Appendix A for full list of survey items).

Schwartz's values continuum was assessed via Stern, Dietz and Guagnano's (1998) reduced values scale. Items in this scale were ordered so as to intermix value types and prevent rote responses. Ecological identity prominence, salience and commitment (both numerical and depth aspects) were assessed using Stets and Biga's (2011) items. These scales from Stets & Biga meet the criteria referenced above as being direct measures, comprised of a very limited number of items, and appropriate for adults. The situations used for salience measurement were modified from Stets & Biga's study of undergraduates, however, to reflect a more mature respondent cohort and more current identity-production situations (such as social media platforms).

Procedures

Data Cleaning

Using SPSS, data were first cleaned, eliminating fourteen cases wherein respondents answered five or fewer of the 83 questions. The single open-ended response item assessing the country of high school graduation was also cleaned to consolidate multiple spellings of the countries indicated. Additionally, since each experience item was comprised of a yes/no "I have experienced this" option along with a Likert scale in

which the respondent indicated the importance of the experience item to their ecological identity, alternate variables were created which separated these two facets.

Indices Creation

Originally, four indices were planned. The first was to be the Ecological Identity Index (EID Index) from Clayton's eleven-item, Likert-scale battery. In her literature it is summative and results in a high score of 55. The other three were to follow procedures outlined in the relevant literature: Prominence to be measured with two items and summed for a high of nine points; salience to be measured by summing the Likert scores each respondent gave to the environmental role across the three items for a high score of 15; and commitment to be measured with six items which were also to be summed. Factor analysis results, however, did not confirm these indices within this sample, thus all regressions were executed using the derived factors as reported below.

Factor Analysis

Factor analysis on all items was conducted using both the principle axis factoring (PAF) and the primary component (PC) methods. PAF was used with the EID items as it yielded the most interpretable factors. The other batteries were factored using the PC method. Role Identity element items were factored together to assess the validity of the multiple constructs. Factor scores were saved for each respondent and Ordinary Least Squares regressions were then conducted according to revisions (due to factoring results as mentioned above) of the diagrams originally presented in the hypotheses section. The new diagrams follow:

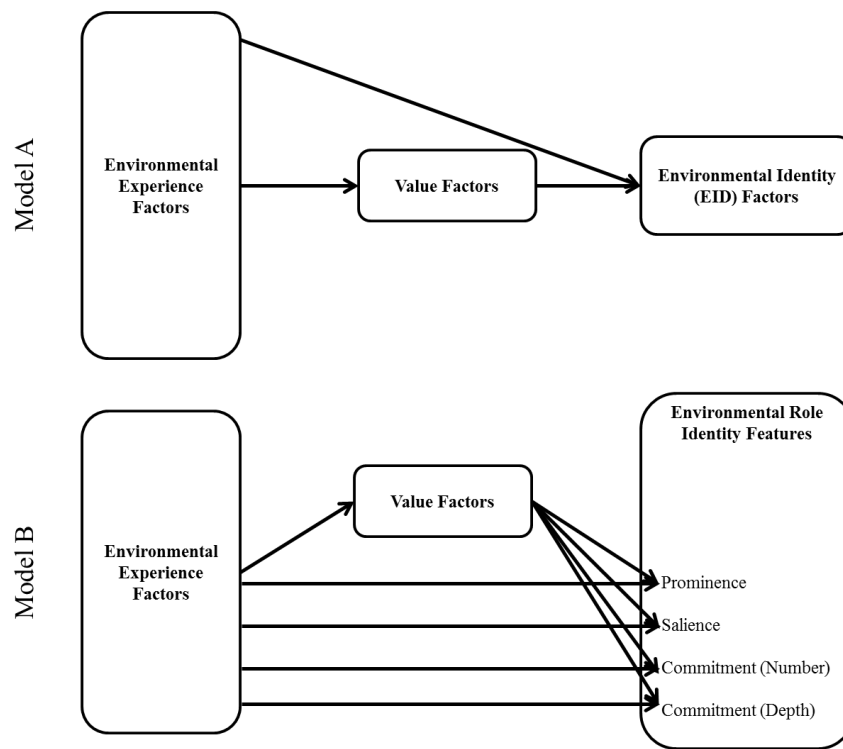


Figure 3: Revised hypotheses models of relationships between experience, values and identity factors

Correlations

Correlations were reviewed between all factors and the full table can be found in Appendix B. Factors resulting from factor analysis procedures above proved orthogonal while correlations between factored concepts (experiences vs. values vs. EID vs. Role Identity) were all below the .600 level and are considered not overly correlated. Several factor pairs emerged as statistically significant and are reported where appropriate after the relevant regression table.

Results

Descriptive Statistics

Of the 126 respondents, 116 provided demographic information. Of those 116, 55.2% were female, 44.8% were male; age ranged from 21 years to 76 years old, with a mean of 42.4 years, a median of 39 years, and a mode of 27 years old. 35.7% of respondents had a Masters or Professional degree, and another 43.5% had a PhD or advanced graduate work. In all, 68.3% of respondents indicated that their job is environmentally-related, 15.9% indicated that their job was not, and 7.9% indicated that they are not currently employed.

Respondents' country of high school graduation, used as a general marker for their primary cultural affiliation and educational system experienced, is reported in Table 2.

Table 2: Respondent country of high school graduation frequency

	Frequency	Valid %
Australia	2	2%
Canada	24	21%
Croatia	1	1%
France	1	1%
Germany	1	1%
India	2	2%
Netherlands	1	1%
Peru	1	1%
Spain	1	1%
UK	2	2%
USA	77	68%
Missing	13	
Total	126	

DatStat also reported that the average elapsed time for completing the survey was 13 minutes for the 83 questions to be answered.

Frequencies

The table below (Table 3) demonstrates the frequency with which each experience item was reported in this cohort and the mean and median response on a 1-5 Likert scale of importance to their ecological identity.

Table 3: Response frequency for experience type items

Experience Item	Freq	Mean Response	Median Response
Learned about natural science	117	3.83	4
Saw land taken over for development	115	4.05	4
Explored nature	114	4.33	5
Stood and looked in awe at a natural view	113	4.33	5
Did nature activities with my family while growing up	111	3.8	4
Stumbled upon an unexpected plant/animal/scene and were amazed	111	4.25	5
Escaped your stressful life by going out into nature	110	4.31	5
Witnessed the pollution of a natural area	109	4.03	4
Felt that you had never seen such a beautiful/amazing place	108	4.25	5
Had a pet	108	3.82	4.5
Saw the most exquisite flower/animal/leaf	107	3.75	4
Sensed something new or amazing in nature	107	4.23	5
Imagined yourself to be out in nature	106	3.53	3
Learned something about yourself while doing something physically hard in nature	104	3.97	4
Noticed the ecology of your garden	104	3.69	4
Felt completely immersed in a place	103	4.35	5
Communicated with an animal	102	3.97	4
Did things in nature with my teenage friends	100	3.59	4
Felt enclosed and protected in a natural place	100	3.88	4
Felt connected to the land	99	4.06	4
Suddenly understood something profound about nature or the natural place you were in	96	4.21	5
Were sick or injured or very tired and just had to suck it up and get on with it while in nature	95	3.17	3
Felt like a little cog on the giant wheel of nature	94	3.65	4
Imagined yourself in an animal's place	94	3.47	3
Saw an animal being mistreated	88	4.03	4
Nature threatened you or someone you loved	87	3.07	3
Learned how to survive in nature	82	3.63	4
Understood what an animal was thinking or feeling	81	3.56	4
Had to get over your emotions to do something in nature	64	3.33	3

Factor Analysis

In the following factor analyses, a cut-off score of .400 and eigenvalues of at least 1.000 are chosen for ease of interpretation.

Ecological Identity Items

Using Primary Axis Factoring, Clayton's EID scale yielded four factors in a rotated matrix with eigenvalues greater than 1 and a cut-off score of .400.

Table 4: Rotated primary axis factoring analysis of Clayton's ecological identity items

	Factors			
	1	2	3	4
I spend a lot of time in natural settings (woods, mountains, desert, lakes ocean)	.090	.661	.128	.000
If I had enough time or money, I would certainly devote some of it to working to protect the environment	.128	.046	.060	.804
When I am upset or stressed, I can feel better by spending some time outdoors "communing" with nature	.178	.717	.458	.095
Behaving responsibly toward the earth - living a sustainable lifestyle - is part of my moral code	.256	.082	.144	.154
Learning about the natural world should be an important part of every child's upbringing	.212	.130	.492	.163
I have never seen a work of art that is as beautiful as a work of nature, like a sunset or a mountain range	.280	.207	.420	.072
I feel that I receive sustenance from experiences with nature	.397	.530	.347	.338
I think of myself as a part of nature, not separate from it	.504	.127	-.064	.125
I feel that I have a lot in common with other species	.878	.036	.116	-.024
I would rather live in a small room or house with a nice view than a bigger room or house with a view of other buildings	-.010	.091	.541	.074
I would feel that an important part of my life was missing if I was not able to get out and enjoy nature from time to time	-.085	.181	.363	-.133
Eigenvalues	3.316	1.477	1.044	1.003

A correlation matrix reveals that these factors are orthogonal. The first factor encompassed two of the ten items with both loading well. This factor seems to explicitly represent ecological self-identity and closely mirrors Clayton's definition. The second factor contains three items, which capture the concept of outdoor experience as a coping mechanism. The third factor contains three items representing an aesthetic preference for nature, while the fourth factor contains the one willingness to sacrifice item. One item loaded well on two factors - "When I am upset..." loaded on both the second and third factors. Two items did not load well on any factor: "Behaving responsibly..." and "Missing an important part...", though they can conceptually fit within the factor in which they scored highest. In this research the following factor labels will be used:

- Factor 1 – Self-Identification with Nature
- Factor 2 – Nature as Coping Mechanism
- Factor 3 – Aesthetic Preference for Nature
- Factor 4 – Willingness to Sacrifice

Clayton reports that no factor analysis of her eleven-item scale has yet been published, though her own work has used it with reported good effect. She indicates that in two recent, broad samples of 200-300 respondents, she consistently gets a single dominant factor, with other factors whose eigenvalue is less than one (personal correspondence, Dec 22, 2012).

These results obviously do not correspond with Clayton's report. The most likely reasons for this are the sample characteristics. Clearly, this research was limited to a cohort who expressed high Self-Identification with the environment and who were more educated than the general zoo-going public – Clayton's (2011) sample frame. These traits could mean that the present respondents were better able to explicitly differentiate

their reasons for identifying with nature, or these could be largely the effect of advanced education, particularly in fields associated with environmental concern, or both.

Additionally, the items displaying the most ambiguity in this factoring appear to conflate concepts. For example, the “Behaving responsibly...” item addresses behavior, sustainability, and morality, all of which are separate and loaded terms, especially for highly educated respondents.

Role Identity Elements

In Table 5, a varimax-rotated factor analysis of the role identity items is reported. All factors had an eigenvalue above 1 and a cut-off score of .400 was used.

Table 5: Rotated principal component analysis of role identity element items

	Factor			
	1	2	3	4
How important is environmentalism to how you think about yourself?	.311	.399	.360	.004
How would you feel if someone said you had no right to call yourself a real environmentalist?	.405	.411	.026	.310
Have you joined any organizations related to your environmental concerns?	-.073	.201	.035	.785
Have you made any friends through activities related to your environmental concern?	.231	-.065	.129	.711
How good an environmentalist does your immediate family think you are?	.098	.035	.857	.114
How good an environmentalist does your best friend think you are?	.015	.129	.837	.055
How important is it to you that your friends view you as environmentally concerned?	.224	.924	.092	.063
How important is it to you that your family view you as environmentally concerned?	.199	.889	.099	.074
Environmental role - Situation 1 (concerned citizen, vegan, outdoor enthusiast, activist, educator, etc.)	.799	.158	.065	.205
Environmental role - Situation 2 (concerned citizen, vegan, outdoor enthusiast, activist, educator, etc.)	.786	.167	.168	-.105
Environmental role - Situation 3 (concerned citizen, vegan, outdoor enthusiast, activist, educator, etc.)	.827	.249	-.015	.107
Eigenvalues	3.784	1.428	1.130	1.111

A correlation matrix reveals that these factors, too, are orthogonal. In the first factor, all three salience measures loaded well. In the second factor, both prominence items loaded, as did the two of the four depth of commitment items that measure how much importance a respondent places on being viewed as environmentally-concerned. The third factor contains the two additional depth of commitment items. The final factor contained the two numerical commitment measures.

The factor analysis of these items generally confirms the literature and shows separation and high loadings between prominence, salience and commitment items. Commitment items separated into two factors, with the items that measure the number of social ties a respondent has formed around his/her ecological identity peeling off from the items measuring depth of social ties. This split between two factors seems reasonable given the separate facets being measured (quality versus quantity of social ties based upon the identity). More complicated, however, is the combination of the two depth of commitment items with the prominence items. In reviewing the specific items, there is significant similarity behind both of these commitment items (“How important is it to you that your family...”) and the second prominence item (“How would you feel if someone said you had no right...”); all three items are gauging emotional responses to others’ perceived judgments. Closer conceptual review causes the researcher to question the validity of the second prominence item. The first item directly questions the importance of an identity to the respondent while the second item does not clearly have bearing on the hierarchy of identities. The respondents’ answers are more likely to hinge on the identity of the questioner than on their own.

This point leads to the fact that the second prominence item also loaded on two factors, both the first and the second. Again, the question could be construed as being contingent on who was doing the questioning – a situational/salience issue. In all, though the separations are relatively clean, these results likely could be improved with some refinement of the prominence questions, or selection of alternate items from the Stets and

Biga list, though there does not appear to have been any empirical comparisons conducted between the various items on that list.

As a consequence of this factoring the following factors will be used in the regression models:

- Factor 1 – Salience
- Factor 2 – Prominence
- Factor 3 – Commitment – Depth
- Factor 4 – Commitment - Numerical

Values Items

In this analysis, a varimax-rotated PC method yields six factors with eigenvalues greater than 1 and a cut-off score of .400 was used.

Table 6: Rotated principal component analysis of value items

	Factor					
	1	2	3	4	5	6
Protecting the environment, preserving nature	.782	.205	.149	-.081	.081	-.260
A world at peace, free of war or conflict	.084	-.064	.818	-.105	.145	-.180
Honoring parents and elders, showing respect	.253	.809	-.028	.037	.037	.019
Authority, the right to lead or command	.013	.580	-.051	.290	.373	.279
A varied life, filled with challenge, novelty and change	.165	.109	-.075	.790	-.029	.003
Unity with nature, fitting into nature	.837	.135	-.026	.169	-.102	.063
Social justice, correcting injustice, care for the weak	-.015	-.002	.835	-.108	-.081	.191
Family security, safety for loved ones	.012	.787	.039	-.006	.082	-.016
Being influential, having an impact on people and events	.037	.210	.201	.136	-.003	.785
An exciting life, stimulating experiences	.081	.002	-.023	.834	.130	.111
Respecting the earth, harmony with other species	.876	-.003	-.057	.181	-.019	.221
Equality, equal opportunity for all	-.035	.070	.688	.171	-.310	.165
Self-discipline, self-restraint, resistance to temptation	.216	.522	-.030	.277	-.462	.189
Wealth, material possessions, money	-.007	.203	-.122	.106	.841	.079
Curious, interested in everything, exploring	-.053	.313	.128	.477	-.198	-.500
Eigenvalues	3.310	2.089	1.687	1.403	1.168	1.018

Again, a correlation matrix reveals that these factors are orthogonal. The first factor encompasses all three Biospheric values items. The second factor contains all three Tradition/Conservation value items plus the Authority item. The third factor contains all

three Altruism items. Factor four includes the Openness to Change variables, and factor five contains the Wealth item. The final factor contains the Power item.

Results of the factor analysis for this scale partially conform to the literature. In literature, only five factors are reported, versus the six indicated in this study. Results for Factor 1 - Biospherism, Factor 3 - Altruism, and Factor 4 - Openness to Change are clean and representative of the literature. Factor 2 contains the Tradition/Conservation items as expected. The clarity is lost, however, when the Egoism value items are dispersed rather than forming one factor. In this sample, the three Egoism items are dispersed as follows: “Authority, the right to lead or command” is included in the Tradition/Conservation factor. For this cohort, this may have been interpreted as structural authority (e.g. The university’s right to lead on environmental issues) versus the personalized authority interpreted by non-specialized samples. “Having wealth, material possessions, money” factored into its own factor, Factor 5, while “Being influential, having an impact on people and events” did likewise into Factor 6. To this cohort, being rich and being powerful are separate concepts.

For the following regression series, identified factors will be labeled as below.

Factor 1 - Biospherism
Factor 2 - Tradition/Conservation
Factor 3 - Altruism
Factor 4 - Openness to Change
Factor 5 - Wealth
Factor 6 – Power

Environmental Experience Items

Again, a varimax-rotated PC analysis yields five factors with an eigenvalue greater than 1 and a cut-off score of .400 as shown in Table 7.

Table 7: Rotated principal component analysis of environmental experience items

	Factor				
	1	2	3	4	5
Did nature activities with my family while growing up	.133	.218	-.037	.208	.710
Did things in nature with my teenage friends	.101	.049	.226	.091	.741
Saw an animal being mistreated	.036	.819	-.044	.237	.062
Witnessed the pollution of a natural area	.368	.439	-.141	.562	.218
Saw land taken over for development	.288	.514	-.021	.417	.357
Learned about natural science	.424	.132	.003	.192	.572
Felt completely immersed in a place	.408	.197	.072	.691	.260
Felt like a little cog on the giant wheel of nature	.134	.400	.261	.500	.030
Communicated with an animal	.112	.797	.227	.253	.157
Felt enclosed and protected in a natural place	.433	.090	.353	.537	.159
Nature threatened you or someone you loved	.105	.052	.281	.550	.220
Suddenly understood something profound about nature or the natural place you were in	.425	.207	.424	.453	.014
Sensed something new or amazing in nature	.705	.184	.132	.377	.149
Escaped your stressful life by going out into nature	.612	.296	.202	.158	.245
Stumbled upon an unexpected plant/animal/scene and were amazed	.790	.216	.090	.178	.186
Explored nature	.743	.109	.178	.169	.438
Learned how to survive in nature	.160	.059	.540	.107	.589
Had a pet	.201	.739	.168	.031	.246
Felt connected to the land	.440	.284	.304	.229	.255
Noticed the ecology of your garden	.665	.204	.081	-.086	.354
Imagined yourself in an animal's place	.330	.666	.455	-.065	-.105
Imagined yourself to be out in nature	.582	.241	.504	.243	-.001
Learned something about yourself while doing something physically hard in nature	.540	.194	.579	.199	.194
Had to get over your emotions to do something in nature	.231	.207	.559	.089	.042
Understood what an animal was thinking or feeling	.274	.611	.478	.035	.082
Were sick or injured or very tired and just had to suck it up and get on with it while in nature	.245	.097	.655	.305	.284
Stood and looked in awe at a natural view	.780	.094	.244	.342	.070
Felt that you had never seen such a beautiful/amazing place	.720	.051	.297	.335	-.007
Saw the most exquisite flower/animal/leaf	.775	.093	.312	.087	.048
Eigenvalues	12.695	2.243	1.753	1.335	1.155

For this analysis as well, a correlation matrix reveals that these factors are orthogonal and cleanly separated. Ten of the twenty-nine items loaded well on the first factor and include items identified in the interview portion of this study as indicative of Discovery (all items), Escapism (all items), Connectedness with the Land (both items), and all Aesthetic Appreciation items. The second factor contains six items including all five animal-related items. The third factor includes three items which are all the items identified as related to Challenge. The fourth factor comprises six items which include all Immersive items, Pollution as Degradation, and Epiphany. Factor five contains four items, all related to Learning.

The labels below will be used in the regression series.

Factor 1 - Nature Cognitions
 Factor 2 - Connection with Animals
 Factor 3 - Challenge
 Factor 4 - Powerful Nature
 Factor 5 – Learning

Revised Experience Typology

After considering the factor analysis reported above, a revised experience typology is presented in Table 8.

Table 8: Typology of environmental experience types after factor analysis

Type	Sub-type	Examples
Nature Cognitions	Connection w the land	gardening
		being comfortable in a landscape
		living “closer to the land”
		“I’m home”
	Aesthetics - Sensing natural things	color of fall leaves wildflowers

			sound of fluttering leaves
			birds flying through a gorge
			mosquito buzzing in your ear
			views from a mountain top
		Aesthetics - Sensing landscapes	how bodies of water are always changing (calm, rough, etc.)
			views of a river valley
		Exploring	look for wildlife in a foreign country
			map new territory
			hiking through a landscape
			watch the details of what's going on in the woods
		Surprise	going off where you haven't been before
			unscriptedness of being in the woods
			surrounded by giant trunks and a beam of light hits an unseen orchid
		Sensory Discovery	stumbling upon an animal
			hear a bird call in the distance
			smell the butterscotch pine
		Escape – Actual	feeling that the whole place was alive
			getting away from people/civilization/everyday
			being on top of a mountain by yourself
			camping/kayaking/hiking by yourself (non-consumptive activities)
		Escape – Imaginative	traveling to remote regions by yourself
			nature is the “real” world
			daydreaming of being in the woods/on a mountain
Connection w Animals	Perspective-taking		putting yourself in that photo
			thinking “those poor guys”
			realizing you caused a lizard to drop its tail
			having a familiar or totem
			tagging a bird
	Personal connection w animals		locking eyes w a coyote
			petting lizard bellies
			communicating w horses
	Development		pet-keeping
			reading an animal's facial expressions
Challenge	Physical		landscape change from memory
			landscape change from family stories
			moving to an urban environment
			watching Gorillas in the Mist
			seeing animal suffering
			walking/rafting/getting out of a wild environment
			hiking/climbing/trekking
			surviving a waterspout
			sailing through a storm

		“pushy” diving	
	Emotional	being cut-off in the backcountry wild might have to kill something	
	Mental	overcoming physical ailments while in nature choosing the most "exciting" research location	
Powerful Nature	Pollution	smell memory of sewage family playground not suitable for skin contact diving in dead coral	
	Epiphany	Africa looks like the Great Plains amazement at the diversity/fragility becoming “aware”	
	Fear	being in the mountains being out on a ledge seeing a storm coming	
	Enclosed	being caught in a fire sitting under a tree being in the woods getting lost in the jungle	
	Small Cog-Big wheel	diving getting above the tree-line feeling equal w all creatures overwhelmed by mountains	
	Loss of Self	being considered part of the landscape sitting still and becoming part of the scene	
	Learning	Family-Mediated	camp/hike/boat (non-consumptive activities) puppet stories about nature/animals hunting/fishing (consumptive activities) watching nature movies lizard-catching
		Peer Companioned	watching for parent in a storm summer camp water-fights
		Ecological Understanding	knowing the history of a place collecting plants and/or animals recognizing the interconnectedness of life forms classes on nature in school researching mountain lions for a book
		Competency Building	learning to use a compass being a full participant in a trip camping by yourself

Regressions

To begin, intermediate regressions are conducted before elaboration models test the entirety of a hypothesized model.

Experience and Values

In the following regression series, experience types were regressed against identified values factors as diagrammed in the hypothesized models. Dashed lines indicate a significant, negative relationship in all diagrams.

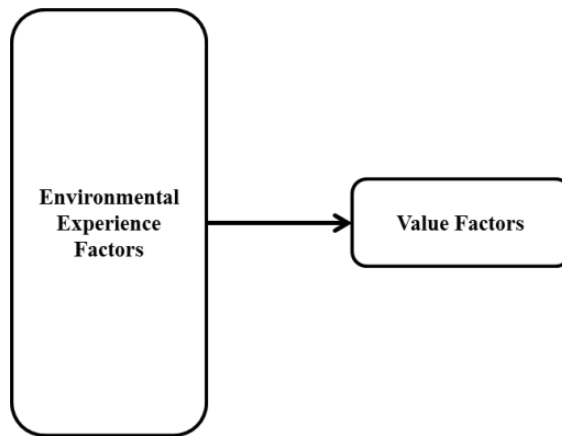


Figure 4: Hypothesized relationship between environmental experience types and values

Table 9: Estimated unstandardized OLS regression coefficients for values factors regressed on environmental experience type factors

	Biospherism	Tradition/Conservation	Altruism	Openness to Change	Wealth	Power
Constant	-0.086 (0.088)	-0.095 (0.092)	0.031 (0.100)	-0.059 (0.096)	0.008 (0.099)	0.003 (0.099)
Nature Cognition	.288** (0.108)	.382** (0.113)	-0.058 (0.122)	0.23 (0.117)	-0.015 (0.122)	-0.049 (0.122)
Connection with Animals	0.171 (0.090)	0.016 (0.093)	-0.107 (0.101)	0.031 (0.097)	0.011 (0.101)	-0.012 (0.101)
Challenge	.340** (0.088)	0.073 (0.092)	-0.063 (0.100)	.229** (0.096)	-0.147 (0.099)	0.082 (0.099)
Powerful Nature	0.123 (0.087)	0.122 (0.090)	-0.071 (0.098)	-0.059 (0.094)	0.004 (0.098)	0.096 (0.098)
Learning	-0.174 (0.097)	.376** (0.101)	-0.049 (0.110)	0.121 (0.106)	0.102 (0.110)	-0.148 (0.109)
Adjusted R ²	0.193	0.131	-0.029	0.054	-0.019	-0.013
F value	6.323**	4.341**	0.384	2.256	0.596	0.708
N of observations	126	126	126	126	126	126

* p < .05, ** p < .01, standard errors are given in parentheses

Bivariate Relationships

Biospherism and Nature Cognitions – With all other variables controlled, Nature Cognition experiences are significant and positive in their effect on holding Biospherism values. Given the predominance of items which load into the Nature Cognitions experience factor that are related to experiences in which an individual imagines or discovers themselves as part of nature, and also given the clarity with which the

Biospherism preference emerged in the qualitative portion of the research, the significant relationship between them is not surprising. Further research is needed to break down the nuances in the Nature Cognitions factor, especially given its additional significant relationship to Tradition/Conservation values, which the literature generally suggests is antithetical to pro-environmental behaviors.

Biospherism and Challenge – The relationship between Biospherism and Challenge, when all other experience variables are controlled for, is significant and positive and is conceptually more difficult to explain. The Challenge experiences may work to instill a sense of Nature as an “equal” or to form a sense of respect for the difficulties presented in the Challenge, which may then increase the respondent’s emotional and cognitive connections to the Biosphere.

Tradition/Conservation and Nature Cognitions – In this regression series, when all other variables are controlled for, Tradition/Conservation values are significantly and positively affected by experiencing Nature Cognitions. This relationship is conceptually confusing. Further qualitative examination is needed.

Tradition/Conservation and Learning - Tradition/Conservation is significantly and positively affected by Learning experience types when all other experience types are controlled for. The Tradition/Conservation measurement items convey self-discipline, respect, authority and tradition which fit nicely with the idea of an educational system (the milieu of most respondents in this cohort) as a means of conveying and instilling those traits toward the planet.

Openness to Change and Challenge – Controlling for all other experience variables, Openness to Change is affected significantly and positively by Challenge experience types. This is the only variable which is significant in the Openness to Change model and that is likely because Challenge experiences force, by definition, individuals to face new and difficult frontiers, and likely engender a receptiveness to that newness among this cohort.

Behavior of Independent Variables

Connections With Animals - It is surprising to the researcher that none of the values factors are affected by the Connections with Animals experience factor; in the qualitative portion of this research, that experience type appeared quite frequently along with Biospherism. Further research is needed to clarify this point. It may be due to the particular types of animal-related items used. Respondents may not have interpreted them as indicators of “co-inhabitant” relations, or, as will be discussed in the next section, saw an in-group/out-group distinction - being connected with nature – defined as the environment, but holding animals as a separate category from “nature”.

Models

Biospherism – The Biospherism model indicates the significant, positive influence exerted on holding Biospherism values by Nature Cognition and Challenge experience types when controlling for all environmental experience factors. 19.3% of the variance in holding Biospherism values is explained by these experiences. This is a moderately strong model, but leaves a lot of room for discovery of what builds a Biospheric value-orientation.

Tradition/Conservation – Tradition/Conservation is influenced positively and significantly by Nature Cognitions and Learning experience with 13% of the variance explained.

Openness to Change – The Openness to Change model, itself, is not significant, though the bivariate relationship with Challenge experiences is discussed above.

Altruism, Wealth and Power – The remaining models relating experiences to Altruism, Wealth and Power values are not significant when all experience variables are controlled for. That Altruism is not connecting to any of the experience factors, nor are Wealth and Power, is not surprising given the information gleaned in the interview portion. Altruism is a human-centered value, not relevant to environmental experiences. Stern, Dietz & Guagnano (1998) note that wealth and power are antithetical to pro-environmental behavior and so are also not likely to be relevant to environmental experiences.

Experience and EID

In the following regression series, experience types were regressed against the factors derived from the EID scale.

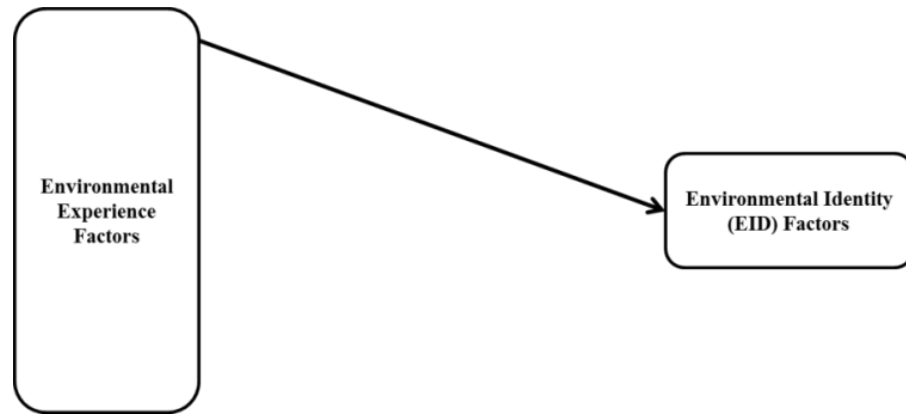


Figure 5: Hypothesized relationship between environmental experience factors and EID factors

Table 10: Estimated unstandardized OLS regression coefficients for the ecological role identity factors regressed on environmental experience factors

	Self-Id with Nature	Nature to Cope	Aesthetic Preference	Willingness to Sacrifice
Constant	-.043 (.078)	-.012 (.087)	-.010 (.092)	.006 (.092)
Nature Cognition	.368** (.081)	.163 (.090)	.265** (.096)	.060 (.096)
Connection with Animals	.067 (.079)	.264** (.087)	-.021 (.093)	-.144 (.093)
Challenge	.363** (.076)	.173* (.085)	.032 (.090)	.166 (.090)
Powerful Nature	.286** (.080)	-.046 (.089)	-.013 (.094)	.021 (.095)
Learning	.053 (.078)	-.189* (.087)	-.037 (.093)	-.107 (.093)
Adjusted R ²	.303	.136	.029	.022
F value	11.001**	4.624**	1.695	1.525
N of observations	116	116	116	116

*p < .05, ** p < .01, standard errors are given in parentheses

Bivariate Relationships

Self-Identification and Nature Cognitions - As will be seen later in Table 11, Self-Identification (Self-ID) and Biospherism are highly related. The previous table (Table 9) showed a moderately strong relationship, when all other factors were controlled, between Biospherism and Nature Cognitions. This demonstration in Table 10 of a significant and positive relationship between Self-ID and Nature Cognitions is thus logical.

Aesthetic Preference and Nature Cognitions - Among experience types, when all are controlled for, Nature Cognitions are the only experiences that are significant against Aesthetic Preference. This is explained by the commonality of items between the two factors, as both contain explicit aesthetic queries.

Nature as Coping Mechanism and Connections with Animals - The calming effect of pet-ownership is likely relating, when all other experience factors are controlled for, with the calming effect that nature has on respondents who hold this EID facet. The relationship is significant and positive.

Nature as Coping Mechanism and Challenge - The significant and positive relationship between Nature to Cope and Challenge experience types, when all other factors are held constant, is an interesting commentary on what respondents use as coping mechanisms for stress or strong emotions. It seems from these relationships that they may be replacing those stressful work or family concerns with stresses that they feel more able to immediately and successfully address - physical or mental obstacles in nature.

Nature as Coping Mechanism and Learning - Also of interest is the significant, negative effect of Learning on Nature as a Coping Mechanism when all other factors are

held constant. This is likely related to the qualitative comments from Subject 9, which discuss the effect becoming educated in environmental matters has on the sense of the “magic” of nature: “...all this classifying and naming that we do, it does kind of take away the magic of it.” And that “magic” is probably a significant part of the draw for many people. Considering the significant factors in the Nature to Cope model, the magic reduction function of Learning may be transforming the nature experience from calming or re-directing stress to more instrumental cognitions of the experience.

Behavior of Independent Variables

Connections with Animals - Of particular interest is the lack of a significant connection between the Self-ID identity factor and the Connection with Animals experience factor. One of the two items in the Self-ID factor specifically queries identification with animals, yet that is not reflected. It seems likely that this cohort is drawing a distinction between identification and connection, similar to an in-group/out-group distinction.

Models

Self-Identification with Nature - Self-Identification with Nature is significant and positively influenced by Nature Cognitions, Challenge and Powerful Nature experience types. This is a strong model and the adjusted R^2 is quite high at 30.3% of variance explained. Given the close association between the Self-ID concept and ecological identity, and the strong presence of ecological identity among this cohort, it is surprising that all of the experience types gleaned from the qualitative portion of this research would not connect significantly to this factor.

Nature as Coping Mechanism - Nature as a Coping Mechanism was also significantly influenced by three experience types. Connection with Animals exerted a positive effect, as did Challenge experiences, while Learning exerted a negative effect. With an overall adjusted R^2 of .136, this model was also significant. As discussed in the bivariate relationships section above, this coping that is done in or through nature seems to be a calming, stress-redirecting activity.

Willingness to Sacrifice - Given the lack of significance to this model and the fact that no variable was bivariately related, Willingness to Sacrifice does not appear to be related in any way to environmental experiences for this cohort.

Values and EID

The following regressions investigate the relationships between values factors and ecological identity factors.

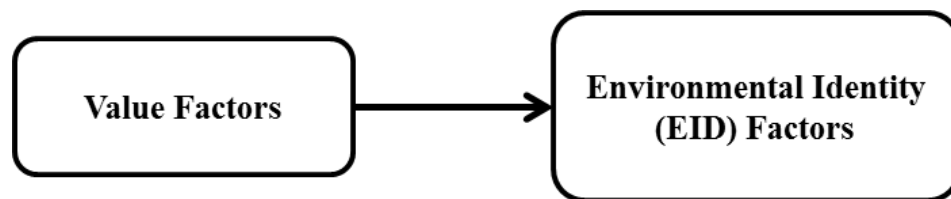


Figure 6: Hypothesized relationship between values and EID factors

Table 11: Estimated unstandardized OLS regression coefficients for the ecological identity factors regressed on values factors

	Self-Id with Nature	Nature to Cope	Aesthetic Preference	Willingness to Sacrifice
Constant	.017 (.081)	.018 (.094)	.066 (.081)	-.054 (.093)
Biospherism	.408** (.080)	.373** (.092)	.088 (.081)	.204** (.092)
Tradition/Conservation	.343** (.081)	-.022 (.094)	.041 (.082)	.025 (.094)
Altruism	-.185* (.080)	.113 (.093)	-.019 (.081)	.094 (.092)
Openness to Change	.140 (.080)	.026 (.093)	-.114 (.081)	.025 (.092)
Wealth	-.065 (.079)	-.083 (.092)	-.086 (.080)	-.334** (.091)
Power	.003 (.082)	.015 (.095)	-.057 (.082)	-.016 (.094)
Adjusted R ²	.316	0.111	-.008	.118
F value	9.004**	3.159**	.863	3.308**
N of observations	105	105	105	105

*p < .05, ** p < .01, standard errors are given in parentheses

Bivariate Relationships

Self-Identification with Nature and Biospherism - The relationship is significant and positive between these two variables. Biospherism effects Self-ID strongly as, for this cohort, the two concepts seem almost identical. The correlation between these two variables (as reported in Appendix B) is statistically significant to the p<.01 level at .425.

Nature as Coping Mechanism and Biospherism - Nature as a Coping Mechanism is effected by Biospherism in a significant and positive manner and is likely indicating the reciprocal relationships that a Biospheric value-orientation suggests. If an individual

views themselves as inextricably linked to nature, as part of the biosphere, then it would make sense that the biosphere is providing emotional “sustenance” to the individual. This variable combination is also statistically significant in their correlation at the $p < .01$ level at .376.

Willingness to Sacrifice and Biospherism - Willingness to Sacrifice, effected significantly and positively by Biospherism, is a similar relationship, potentially, indicating the recognition of those with Biospheric values that what is given by nature must be balanced by what is given back.

Self-Identification with Nature and Tradition/Conservation - In this significant and positive relationship, when all other factors are controlled for, respondents are likely interpreting “conservation” very closely to environmental responsibility. The idea that maintenance of existing benefits or processes, for this cohort who are strongly ecologically identified, could easily relate to ecological benefits.

Self-Identification with Nature and Altruism - The significant, negative results we see when all other factors are controlled may be a reflection of the distinction this group makes between nature and humans. Altruism implies concern for other humans, a concern that was not present in the interviews, and therefore may be regarded by this cohort as oppositional to Biospherism and/or being part of nature.

Willingness to Sacrifice and Wealth - The significant, negative relationship seen between Willingness to Sacrifice and Wealth when all other variables are held constant is intuitive as those interested in accruing capital are also less likely to be willing to relinquish it.

Behavior of Independent Variables

Biospherism - Biospherism is significant and positive on every model in this regression series except Aesthetic Preference where it is not significant at all.

Biospherism implies connectedness to the world that Aesthetic Preference does not require. It is the one concept among the EID factors that is purely a one-directional relationship. Nature does not receive benefit from an individual's taste preferences, and demands no reciprocity.

Models

Self-Identification with Nature - In this series, Self-ID is significantly influenced by three values in this model, with Biospherism and Tradition/Conservation being positively related and Altruism being a negative influence, all others held constant. This is a strong model of Self-ID with 31.6% of the variance explained. The Biospherism and Altruism relationships are consistent with the Stern, Dietz & Guagnano findings on pro-environmental behavior, suggesting a link between Self-ID and pro-environmental behaviors. See the Future Research section of this document for elaboration of how this link might work. Tradition/Conservation as previously discussed is likely interpreted by this cohort as pro-environmental responsibility and leadership (from the authority item).

Nature as a Coping Mechanism - Nature as a Coping Mechanism is only significantly effected by Biospherism values and then in a positive manner with 11.1% of the variance explained by this model.

Willingness to Sacrifice - Finally, Willingness to Sacrifice is effected by the significant, positive influence exerted by Biospherism values and significantly,

negatively affected by holding of Wealth values. The model is slightly stronger than the Nature as Coping Mechanism model with an adjusted R^2 of .118.

Aesthetic Preference - While this researcher finds it difficult to believe that only Nature Cognition environmental experiences contribute to the formation of respondents' aesthetic preferences for nature, it is reasonable to imagine that value-orientation is not significantly linked to aesthetics, as is reflected in this regression.

Model A

Examination of all the data for Model A yields the following significant relationships.

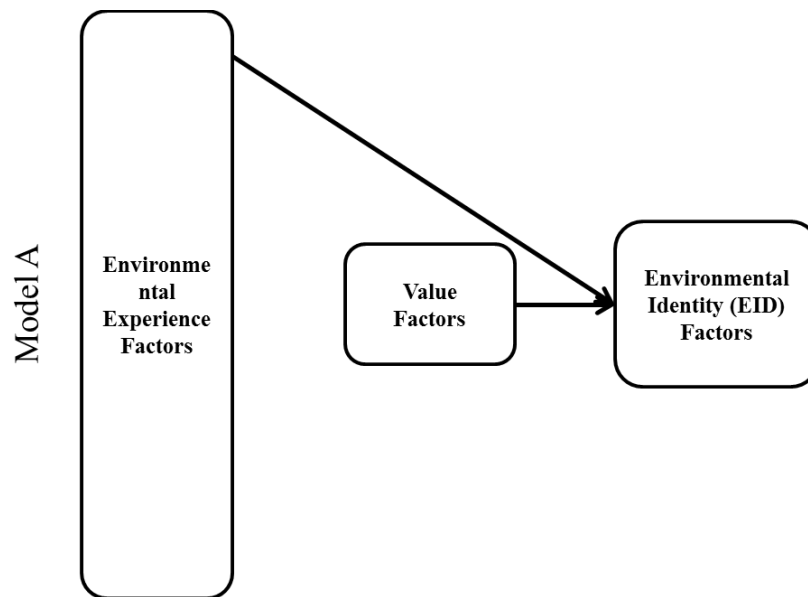


Figure 7: Tested relationships in Model A

Table 12: Elaboration model for EID factors

	Self-Id with Nature		Nature to Cope		Aesthetic Preference		Willingness to Sacrifice	
Constant	-.150* (.072)	-.189* (.075)	-.037 (.096)	-.063 (.095)	.078 (.088)	.069 (.089)	-.068 (.098)	-.078 (.100)
Biospherism	.212** (.077)	- -	.230* (.103)	- -	.073 (.095)	- -	.124 (.106)	- -
Tradition/Conservation	.212** (.073)	- -	-.001 (.098)	- -	.065 (.090)	- -	.002 (.100)	- -
Altruism	-.125 (.067)	- -	.137 (.089)	- -	-.024 (.083)	- -	.093 (.092)	- -
Openness to Change	.032 (.071)	- -	-.027 (.094)	- -	-.100 (.087)	- -	-.028 (.097)	- -
Wealth	-.035 (.067)	- -	-.051 (.090)	- -	-.079 (.083)	- -	-.290** (.092)	- -
Power	-.006 (.070)	- -	-.005 (.093)	- -	-.073 (.086)	- -	-.043 (.095)	- -
Nature Cognition	.502** (.096)	.661** (.092)	.156 (.128)	.207 (.116)	.025 (.118)	.059 (.105)	.076 (.131)	.104 (.122)
Connection with Animals	.165* (.073)	.216** (.075)	.267* (.097)	.297* (.095)	-.042 (.090)	-.031 (.086)	-.141 (.100)	-.136 (.100)
Challenge	.251** (.079)	.356** (.073)	.157 (.105)	.235* (.093)	-.040 (.097)	-.027 (.084)	.216* (.107)	.292** (.098)
Powerful Nature	.364** (.073)	.422** (.075)	-.073 (.097)	-.045 (.096)	.020 (.090)	.034 (.087)	.036 (.100)	.046 (.100)
Learning	.211* (.084)	.262** (.081)	-.127 (.112)	-.179 (.103)	-.126 (.103)	-.118 (.093)	-.098 (.115)	-.151 (.108)
Adjusted R ²	.528	.468	.189	.171	-.031	-.016	.140	.080
F value	11.562**	19.285**	3.206**	5.289**	.718	.664	2.534**	2.807*
N of observations	105	105	105	105	105	105	105	105

* p < .05, ** p < .01, standard errors are given in parentheses

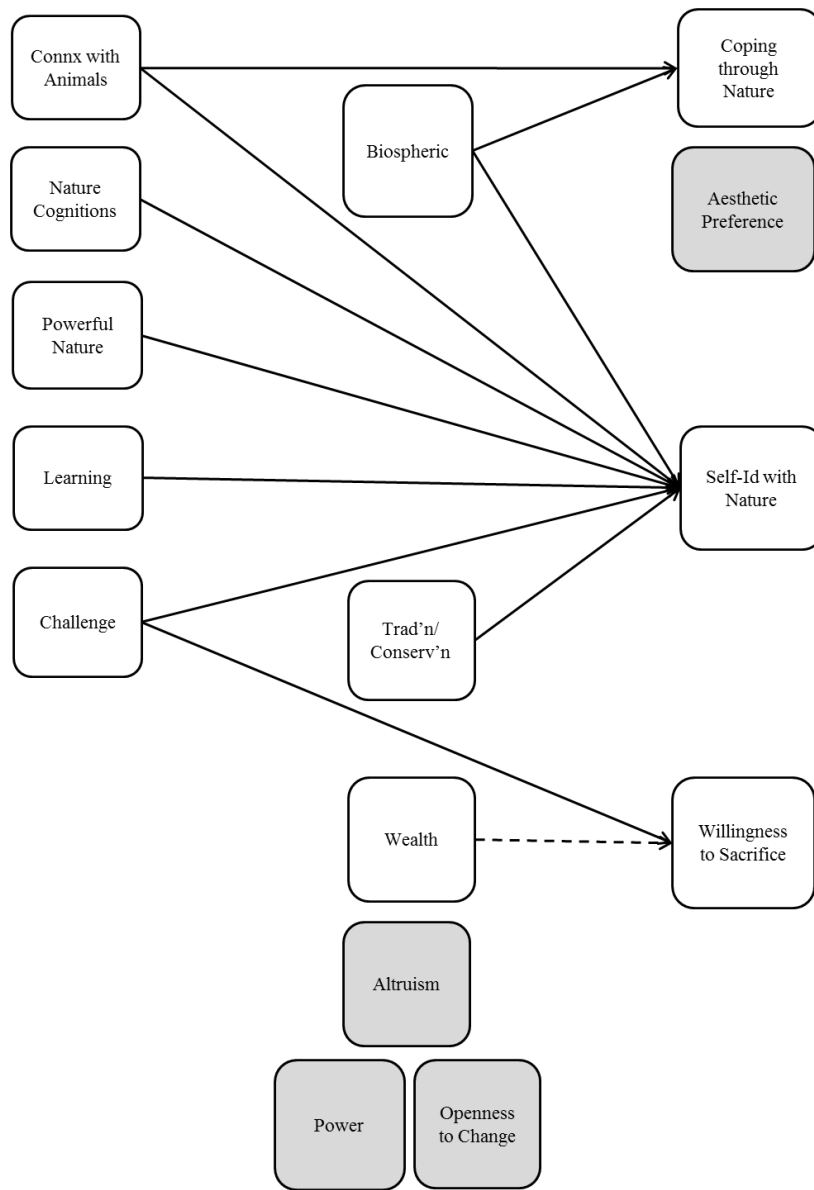


Figure 8: Significant relationships in Model A

Grayed boxes in Figure 14 indicate factors with no significant bivariate relationships.

In an elaboration of the entire Model A (experience ->values->EID), the relationships are largely as expected from the intermediate regressions. Experiences retain their direct effect on Self-Identification with Nature, Biospherism and Tradition/Conservation values exert the same, and intervening effects are likely being seen with Biospherism and Tradition/Conservation.

Bivariate Relationships

Self-Identification with Nature and Nature Cognitions - As discussed in Table 10.

Self-Identification with Nature and Challenge - As discussed in Table 10.

Self-Identification with Nature and Powerful Nature - As discussed in Table 10.

Self-Identification with Nature and Biospherism - As discussed in Table 11.

Self-Identification with Nature and Tradition/Conservation - As discussed in

Table 11.

Nature as Coping Mechanism and Connections with Animals - As discussed in

Table 10.

Nature as Coping Mechanism and Biospherism - As discussed in Table 11.

Willingness to Sacrifice and Wealth - As discussed in Table 11.

Self-Identification with Nature and Connections with Animals and Learning - Not seen in the intermediate regression series, when all experience and values variables are elaborated and controlled for together, Self-ID becomes significantly and positively affected by Connections with Animals and Learning experiences. The appearance of these variables as significant likely indicates correlation and further investigation shows that Biospherism and Tradition/Conservation are both statistically significantly correlated

with the Learning experience factor at -.288 and .258 respectively. See Appendix B for the full correlation matrix.

Loss of Significance of Nature as Coping Mechanism and Challenge and

Learning - Seen in the intermediate regressions, these relationships lose significance when values and experience factors are controlled for simultaneously. This is indicating the greater explanatory power of the values factors for this model of Nature as a Coping Mechanism. The coefficient for Challenge does change dramatically between steps, however, so there is the possibility of intervention between Challenge and Biospherism. Path modeling is needed to fully examine these relationships.

Models

Self-Identification with Nature - The strong explanatory power in the Self-Identification with Nature model can be seen here with values and experiences describing well the ecological identity. The adjusted R^2 is .528. Every experience factor is significant and positive when values factors are controlled for, (though see discussion of Learning correlation above) as are holding Biospherism and Tradition/Conservation values controlling for experiences. Given the results of previous regressions, it is likely that Nature Cognitions and Challenge are both contributing to the Self-Identification with Nature and engendering Biospherism values simultaneously. Those then cause an individual to seek out related experiences, creating a reinforcing loop between concepts. Adding the values factors in a stepwise manner to the Self-Identification with Nature regression on experience factors adds 6% more explanation of the variance in the Self-ID

model. This also indicates that it is experiences which are explaining the majority of the variance – 46.8%.

Nature as Coping Mechanism - The Nature as Coping Mechanism model is significant and moderately explanatory with adjusted R^2 at .189. Connection with Animals remains strongly significant and positive when values factors are added to the model, indicating a direct effect. Challenge is lost, however, when values are added to the model and Biospherism becomes significant. (See discussion of possible intervention above.) The addition of values factors adds 1.8% to the explanation of variance in this model.

Willingness to Sacrifice - This model is significant with an adjusted R^2 of .140. The Willingness to Sacrifice model demonstrates that the Challenge experience factor retains its direct effect on Willingness to Sacrifice even when values factors are controlled for. Wealth shows up as negative and significant again, and adds an additional 6% of explanation of variance.

Aesthetic Preference - The model of Aesthetic Preference is not significant, nor are there any significant bivariate relationships. This further demonstrates that the Aesthetic Preference factor is distant conceptually from the others being measured.

Experience and Role Identity

In the following regression series, identity elements (prominence, salience and commitment) are regressed on environmental experience factors as identified in the factor analysis.

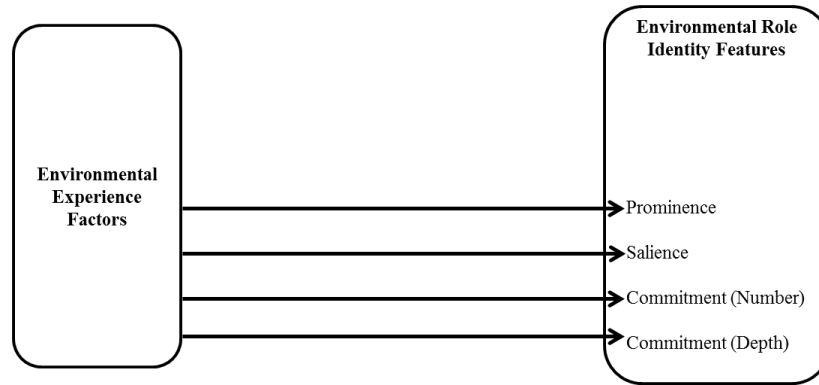


Figure 9: Hypothesized relationship between environmental experience types and four factors of role identity

Table 13: Estimated unstandardized OLS regression coefficients for ecological role identity factors regressed on environmental experience factors

	Salience	Prominence	Commitment (Depth of Social Ties)	Commitment (Quantity of Social Ties)
Constant	-.069 (.095)	-.039 (.100)	-.021 (.098)	-.070 (.098)
Nature Cognition	.191 (.116)	.209 (.121)	.045 (.119)	.230 (.119)
Connection with Animals	.185 (.096)	-.034 (.100)	.197* (.098)	.091 (.098)
Challenge	.213* (.103)	.084 (.108)	.091 (.106)	.077 (.106)
Powerful Nature	.155 (.096)	.056 (.101)	-.108 (.099)	.129 (.099)
Learning	-.169 (.109)	-.080 (.115)	-.147 (.112)	.260 (.113)
Adjusted R ²	.092	.003	.042	.039
F value	3.174*	1.058	1.938	1.866
N of observations	108	108	108	108

*p < .05, ** p < .01, standard errors are given in parentheses

Bivariate Relationships

Commitment-Depth and Connections with Animals - The significant and positive relationship between Connection with Animals and Commitment – Depth when all other variables are controlled for likely points to the affective side of relationship-building. Especially given modern conceptions of humans as “parents” or care-takers of animals, the emotional connection with other species reflected in this experience factor may be mirrored in the depth of social ties (i.e. human relationships) in the same way that parents of human children bond over their parenting experiences.

Salience and Challenge - Challenge is the lone experience factor that significantly effects Salience, a finding that is puzzling. The relationship is significant and positive. Challenge, as interpreted in this research, is an experience of overcoming or coming to terms with nature. Salience is the likelihood of using an identity across a range of situations. It is possible that in coming to terms with nature, this cohort is experiencing an internalization of that equality or new definition of their relationship to nature that arose from the challenge and that that new view of their place in nature then permeates their decision-making about the applicability of their ecological identity in a wider range of situations.

Models

Salience - In Table 13, only the Salience model is significantly explained, with an adjusted R^2 of .092. Clearly, environmental experiences are not influencing respondents' judgment about the relevance of an environmental role identity to a situation.

Commitment-Depth, Prominence and Commitment-Numerical – There are significant, positive relationships as reported above, but no significant model. Other factors are more relevant to Commitment (both types) and Prominence than are environmental experiences.

Values and Role Identity

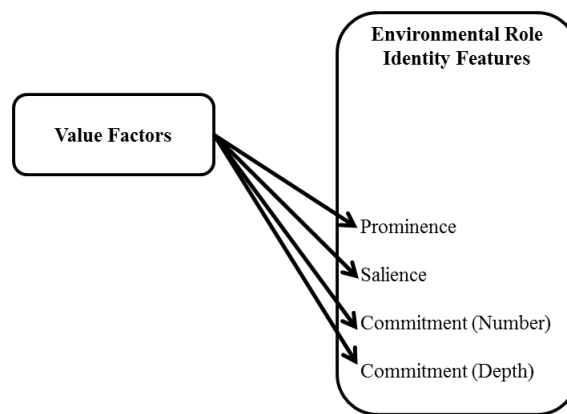


Figure 10: Hypothesized relationship between values and four factors of role identity

Table 14: Estimated unstandardized OLS regression coefficients for ecological identity prominence, commitment and salience factors regressed on values factors

	Salience	Prominence	Commitment (Depth of Social Ties)	Commitment (Quantity of Social Ties)
Constant	-.003 (.094)	-.010 (.093)	-.003 (.095)	-.001 (.093)
Biospherism	.172 (.095)	.264** (.095)	.205* (.097)	.159 (.095)
Tradition/Conservation	.026 (.096)	-.070 (.095)	.023 (.097)	.340** (.095)
Altruism	-.095 (.093)	.115 (.093)	.040 (.094)	.002 (.092)
Openness to Change	.033 (.094)	.017 (.094)	-.052 (.095)	-.024 (.093)
Wealth	-.275** (.094)	-.032 (.094)	-.213* (.096)	.019 (.093)
Power	.139 (.093)	.199* (.093)	.000 (.094)	.093 (.092)
Adjusted R ²	.081	.071	.039	.099
F value	2.552*	2.345*	1.707	2.913*
N of observations	106	106	106	106

* p < .05, ** p < .01, standard errors are given in parentheses

Bivariate Relationships

Prominence and Commitment-Depth and Biospherism - Biospherism is related to the two role identity concepts that were conflated from the literature in the factor analysis – Prominence and Commitment. Given the ambiguity between these discussed in the factor analysis section above, this pair of relationships is not surprising. Both are significant and positive when all other variables are controlled for. Given also the strong ecological identity that this cohort demonstrates and the attendant Biospherism value-orientation, the connection to those role identity features that relate most directly to the

ego identity “content” is logical. Prominence is about self-conception in relation to other identities within an individual’s own mind, and depth of commitment requires, as the name implies, more than a superficial connection to the social groups one joins based on that identity.

Commitment-Numerical and Tradition/Conservation - The link between the number of social ties a respondent makes around their environmental role identity and holding traditional/conservative values is not obvious. It could possibly reflect the “authority” inclusion in this value by this cohort in which case the significant, positive relationship when all other values are controlled for would be indicating that the respondents choosing leadership roles within these social groups to express their valuation of their authority in environmental matters.

Salience and Commitment-Depth and Wealth - Wealth is negatively significant against Salience and Commitment – Depth, when all other values factors are controlled. These results would appear to indicate that the more an individual values Wealth, the less likely they are to self-identify as an environmentalist or to see environmentalism as pertinent to a situation. This clearly reflects a Western philosophical tradition of nature as resource.

Prominence and Power - Related to the Commitment-Numerical-Tradition/Conservation discussion above, the significant, positive relationship seen when all other variables are held constant might show that those who value being influential are reinforcing that through elevation of their environmental role identity in their prominence

hierarchy. This interpretation would be bolstered, though, if the cohort had factored the authority items with the Power items.

Models

Salience - In this regression series, Salience is only significantly affected by Wealth values, and then in a negative direction. The adjusted R^2 is .081 indicating a rather weak explanatory power in comparison with the other models in this project.

Prominence - Prominence is significant and positively affected by holding Biospherism and Power values, though the adjusted R^2 is at .071.

Commitment-Numerical - The Commitment-Numerical model demonstrated the significant, positive effect that holding Tradition/Conservation values exerts and the model explains 9.9% of the variance seen in this cohort. The Prominence model suggests that where Biospherism values are held more strongly, the more highly “environmentalist” places in an individual’s hierarchy. This is reflected in the interviews, as well.

Model B

Examination of the regressions for Model B yields the following relationships.

Grayed boxes in Figure 15 indicate no significant bivariate relationships.

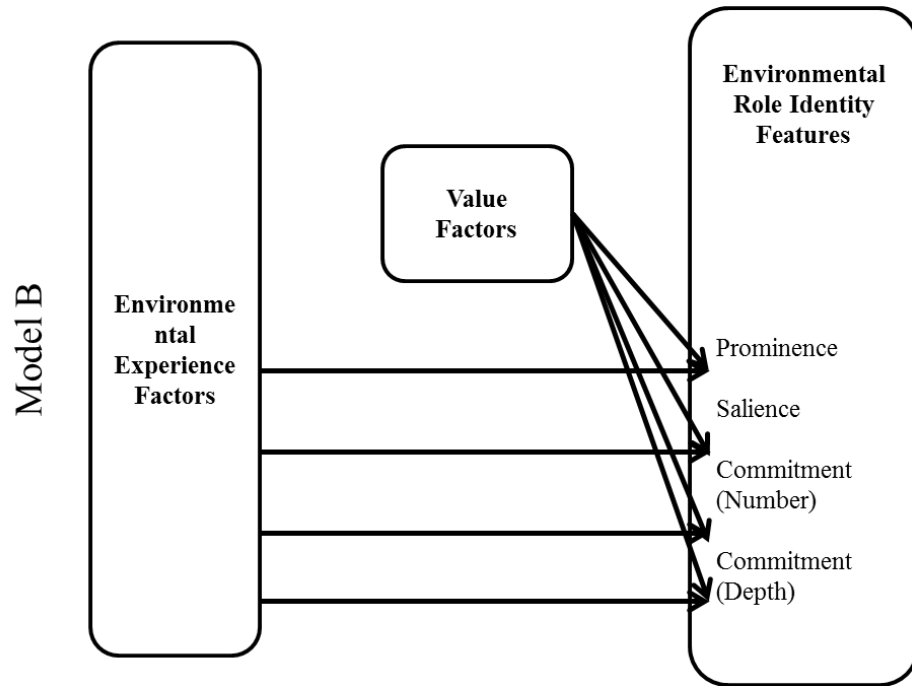


Figure 11: Tested relationships in Model B

Table 15: Elaboration model for role identity factors

	Salience		Prominence		Commitment (Depth of Social Ties)		Commitment (Quantity of Social Ties)	
Constant	-.068 (.098)	-.072 (.098)	-.050 (.100)	-.067 (.101)	-.003 (.099)	-.022 (.098)	-.038 (.099)	-.085 (.100)
Biospherism	.046 (.106)	- (.106)	.231* (.108)	- (.108)	.162 (.107)	- (.107)	.164 (.107)	- (.107)
Tradition/Conservation	.010 (.104)	- (.104)	-.133 (.106)	- (.106)	.089 (.104)	- (.104)	.274** (.105)	- (.105)
Altruism	-.071 (.092)	- (.092)	.115 (.094)	- (.094)	.043 (.093)	- (.093)	.016 (.093)	- (.093)
Openness to Change	.007 (.098)	- (.098)	-.016 (.100)	- (.100)	-.046 (.098)	- (.098)	-.055 (.099)	- (.099)
Wealth	-.246* (.095)	- (.095)	-.032 (.097)	- (.097)	-.210* (.096)	- (.096)	.004 (.097)	- (.097)
Power	.106 (.093)	- (.093)	.200* (.095)	- (.095)	-.008 (.094)	- (.094)	.113 (.094)	- (.094)
Nature Cognition	.195 (.131)	.202 (.119)	.227 (.134)	.222 (.123)	-.053 (.132)	.008 (.120)	.105 (.133)	.247* (.122)
Connection with Animals	.178 (.099)	.181 (.098)	-.042 (.101)	-.012 (.101)	.204* (.100)	.221* (.098)	.069 (.100)	.097 (.100)
Challenge	.122 (.117)	.210** (.105)	.025 (.119)	.100 (.109)	.011 (.117)	.108 (.106)	-.005 (.118)	.081 (.108)
Powerful Nature	.118 (.099)	.153 (.097)	.016 (.100)	.046 (.100)	-.145 (.099)	-.105 (.098)	.065 (.100)	.124 (.100)
Learning	-.111 (.119)	-.162 (.111)	.048 (.121)	-.072 (.115)	-.139 (.120)	-.171 (.112)	.238 (.120)	.271* (.114)
Adjusted R ²	.110	.089	.058	.005	.082	.059	.093	.044
F value	2.186*	3.043*	1.586	1.101	1.853	2.327*	1.974*	1.959
N of observations	106	106	106	106	106	106	106	106

* p < .05, ** p < .01, standard errors are given in parentheses

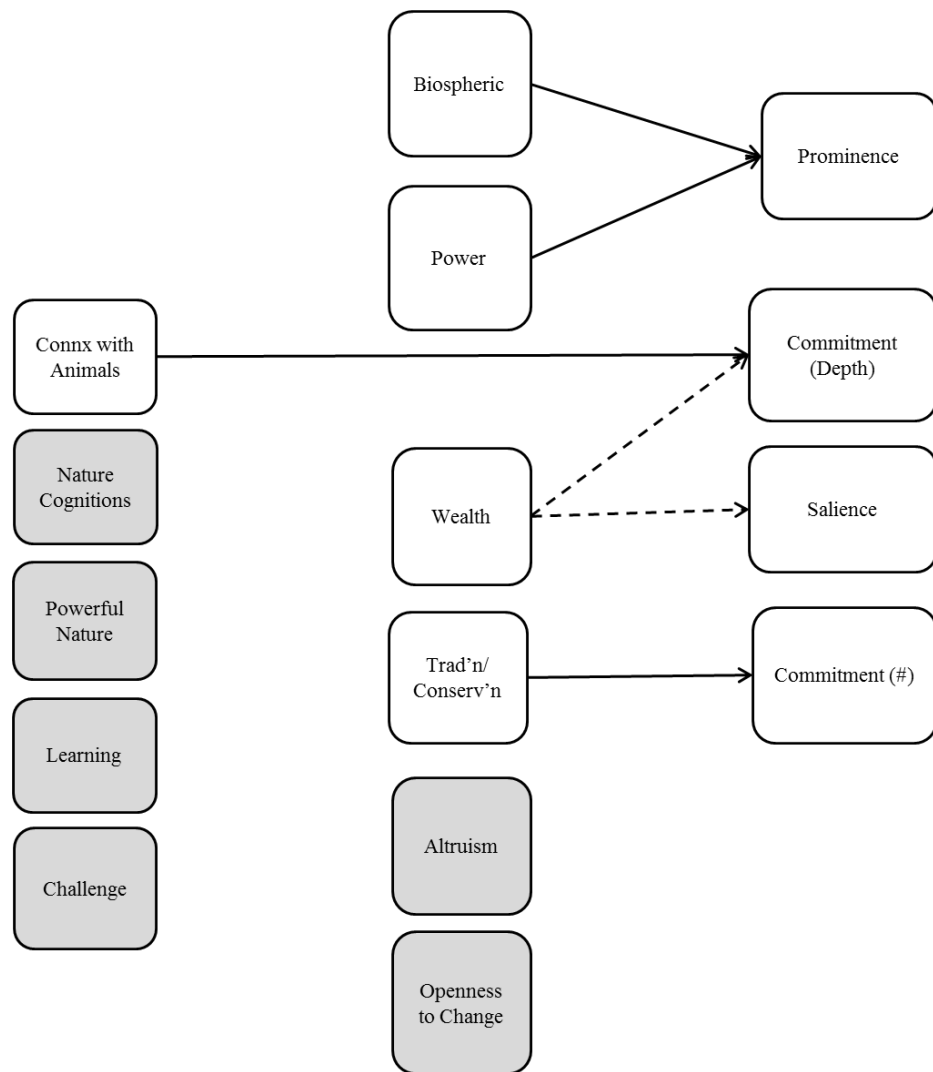


Figure 12: Significant relationships in Model B

Bivariate Relationships

Salience and Wealth - As discussed in Table 14.

Prominence and Biospherism - As discussed in Table 14.

Prominence and Power - As discussed in Table 14.

Commitment-Depth and Wealth - As discussed in Table 14.

Commitment-Depth and Connections with Animals - As discussed in Table 13.

Commitment-Numerical and Tradition/Conservation - As discussed in Table 14.

Loss of Significance of Salience and Challenge – Compared with the intermediate regressions, in this elaboration model, the addition of values factors into the model renders Challenge insignificant against Salience. This could be to an intervening effect from the Wealth value factor, though the logic is not clear. Path analysis is needed in order to clarify this relationship.

Loss of Significance of Commitment-Depth and Biospherism - This finding is likely a reflection of the correlation between these two variables, which is statistically significant at .204.

Models

Salience - In this elaboration model, the significant relationships are sparse. When examining the Salience model, Challenge experiences, when other experience factors are controlled for, are significant, but the introduction of values factors to the model removes that significance and Wealth becomes the only significant factor, possibly because of the intervention discussed above. The adjusted R^2 is .110.

Commitment-Numerical - Besides Salience, the only other significant model in this elaboration series, the Commitment – Numerical model is effected by Tradition/Conservation in a significant and positive manner and the adjusted R^2 is .093.

Conclusions

Model Equivalency

Clearly, Models A and B are not equivalent. As the results of the regression models developed it became clear that the Role Identity features are not merely a “subset” of the EID. It is more likely that the EID factors represent the *content* of the identity – how the individual is actually thinking about him/herself in relation to the world and the Role Identity factors represent the *process* by which that identity is expressed and managed. The elaboration models suggest that particular experiences have little bearing on this process of role identity management though the values that may be formed or reinforced by those experiences do help guide an individual in negotiating their environmental identity expression. Instead experiences affect the content of the identity, even more than the values held. Further study is needed to see if a re-ordering of these factors to reflect an Experience ->Content->Values->Role progression would yield a more significant model.

Overall, there are several major take-aways from this work:

A Refined Measure of Ecological Identity

For the purposes of measuring an “ecological identity,” it is sufficient to use only those items factoring into the EID “Self-Identification with Nature” factor. Not only do those items explicitly and directly measure the concept of interest, the factor analysis of Clayton’s items demonstrated their orthogonality to the other factors discovered. It is certainly true that the other factors contained within the scale are facets of environmentalism that may lead an individual to appreciate and value nature, but they are not explicitly measuring the concept of identification of the self with nature – having an

ecological identity, in other words. Given the relationships seen in this work between Self-Identification with Nature and Biospherism, and the links seen in Model B between Biospherism and Prominence, explicit measurement of this concept should provide one of the cleaner paths into the environmental role identity management process.

Clayton reported a single factor in her work with the general public, but this cohort behaved dramatically differently. It yielded four factors - Self-Identification with Nature, Nature as a Coping Mechanism, Willingness to Sacrifice, and Aesthetic Preference for Nature - one of which (Aesthetic Preference) behaved in a manner starkly different from the others. The emergence of these factors in a highly-educated and environmentally concerned sample is logical, but work is needed to see if these factors replicate in other studies and how far across social groups these factors go before they lose their separation. Understanding the range of social characteristics that correlate with these facets of environmental-orientation could prove to be a useful measure for assessment of popular concern for the environment, potentially augmenting more traditional public opinion survey items.

Understanding the existence of the other facets is also valuable and presents avenues for continuing study. The Aesthetic Preference factor, particularly, should be explored. The modern culture industry has become quite adept at guiding aesthetic tastes in the general population and this may be an opportunity for environmental groups.

Very Few Links between Experiences and Role Identity

In the literature review, it was speculated that choice of role is partially values-driven. That doesn't seem to be the case in this cohort. When controlling for values,

there is only one relationship between experience factors and environmental role identity factors – Commitment-Depth and Connection with Animals. Perhaps the most important finding of this research, this indicates that experiences and values help an individual to have an ecological identity, but do not make meaningful contributions to managing the placement and expression of that role. This means that something else brings out the expression of the environmentalist role. A point for further research, Stern, et al (1999) postulated that Ascription of Responsibility and Awareness of Consequences lead to Norm Activation in their Value-Belief-Norm theory. This seems a promising starting point for discovery of that “something else”.

All Environmental Experiences Relate to an Ecological Identity

When controlling for values, all experience type factors positively contribute to an ecological identity. This finding is somewhat surprising in that it indicates that there is no “bad” type of environmental experience to have. Even the dangerous or fear-inducing (Powerful Nature and Challenge types) are positively related to Self-Identification with Nature and thus to an ecological identity. Nature Cognitions are particularly impactful in their positive relationship, strongly driving the model.

Additionally, the pro-environmental values discussed by Stern, Dietz and Guagnano are partially informed by environmental experiences, though to a much lesser degree than this researcher expected. In fact, the links between these experiences and values as seen in Table 9 are rather sparse.

Differences from Stern, Dietz & Guagnano's Findings and from Schwartz

Of the previously identified values related to pro-environmental behaviors, only Biospheric values are significant for this cohort. This does not mean that Stern, Dietz and Guagnano are incorrect about correlations with actual behavior for this cohort, but it does indicate that a deeper understanding of the social characteristics of any “target” group is needed in order to accurately predict which value-orientations might be present or which messaging strategies might work best. Further work to explore the nuances of these motivations by social groups is needed.

Additionally, when controlling for experiences and other values, Tradition/Conservation values behave against expectations and are positively related to both holding an ecological identity and forming social ties around an environmental role. Examination of the items under the Tradition/Conservation values factor shows that this factor contains the ideas of self-discipline, security, respect, and the right to lead (authority). In the context of this cohort, these can easily be interpreted as pro-environmental. While this value is not considered by Stern, Dietz and Guagnano to be related to pro-environmental behavior, it is likely that a further survey of this cohort would reveal a connection. This brings to bear the question of variability in interpretation of survey items between cohorts and within the general population. Perhaps a modified values instrument is needed specifically for ecologically-identified respondents in the future.

If You Want to Be Rich, You Probably Aren't an Environmentalist

When controlling for experiences, valuing Wealth is negatively related to sacrificing for nature or considering one's environmental role to be relevant across a

range of situations. There is little surprise in this finding. Schwartz showed that self-enhancement values are directly oppositional to Biospheric and Altruistic values (Figure 1) and that is confirmed.

Conceptual Nuances Still to Be Explored

Throughout the regressions, Biospherism, Tradition/Conservation, Nature Cognition experience and Challenge experiences have been interwoven and correlated. The correlation matrix in Appendix B illustrates this well. As mentioned in the bivariate relationship discussions above, explaining the conceptual links between Biospherism and Challenge, and between Tradition/Conservation and Challenge is very difficult and was not done adequately here. Linguistically, we separate these concepts, but statistically we struggle to do the same. Further information and refinement of these concepts would be beneficial for future research.

Implications

For an Identity-Based Environmental Movement

If the need for a broad identity-based group with a few strongly-activated activists is presumed, this research gives insights into the types of experiences and values that are associated with a group that skirts the boundary between activist and supportive populace. To be part of this group, one should hold Biospherism values pre-eminent and have experienced Nature Cognition and Challenge type moments, nor should one value Wealth.

This research also shows that sharing common environmental experiences or values does not cause this cohort to express themselves more actively or publicly as an environmentalist. Clearly then, these are not the correct emphases for fostering an

activist in an identity-based environmental movement. With that said, shared experiences and values as enduring concepts that motivate and form the foundations for an ecological identity are obviously necessary, though not sufficient, for a movement based on this ecological identity.

For Environmental Education

The experience items frequency table for this cohort of educated, environmentally-concerned respondents provides a useful indicator set for environmental educators as to what types of experiences are correlated with this type of individual. Broadly speaking, the most frequently reported experiences involve education about natural science, personal exploration and discovery of nature, and aesthetic appreciation. These are not likely to surprise the environmental education community, though most literature reviewed for this project did not mention the aesthetic aspects of nature. Results also indicate the power of observing environmental degradation.

The regression series further revealed that Challenging experiences and Nature Cognitions (e.g. imagining oneself in nature) may be the experience types that most directly link to holding an ecological identity, especially if those experiences are supportive of Biospherism values maintenance or generation. These experiences are not likely to cause individuals to become more strongly activated, of course, but they might ensure that the individual possesses a strong ecological identification that can then be the basis for other educational efforts such as building a sense of responsibility or awareness of consequences, thus creating that popular support that activism requires for efficacy.

Also, as environmental educators work to develop more targeted interventions or measure the efficacy of their efforts to raise environmental concern, special attention should be paid to these experience type and arrange of them – even challenging ones – should be integrated into curricula.

FUTURE RESEARCH

In all, this research has shed light on the external events reported as important by a cohort of environmentally-concerned respondents, how those respondents internally interpreted those events, how those experiences relate to the values respondents held, and how strongly (or not) those experiences are related to an ecological Role Identity. This research also revealed the value dimensions held by this cohort and how that differs from a more general public, and how values are linked (or not) to an ecological Role Identity. The results were only partially expected and provide more nuanced information for interested academic communities, environmental movement organizations, and environmental educators, as well as providing avenues for further research.

Overcoming the Limitations to the Current Research Methods

In the interest of examining the seeds of ecological identity, this research used a purposive sample for both parts. This presents limitations in generalizability to the broader public. The experience items, in particular, potentially suffer from the necessary brevity of description in a web-based survey. There was no opportunity for respondents to contribute their own experience types to further the typology. Future studies might use a vignette-style survey to convey the affect inherent in the original experiences reported in the qualitative work. Data collection mechanisms could also be constructed to allow for addition of experiences by the respondents. It is highly likely that the full range of

environmental experiences is not captured here, and other samples, perhaps also purposive, would add to the robustness of this line of research. Also, the role of aesthetic experiences was not well-articulated in this research and is another potential avenue of taste-based ecological identity formation.

Again due to the web-survey format chosen, a range of Role Identity element items were not included, instead the researcher chose a battery for each element as indicated in Chapter Three. A comparison of the available Role Identity items compiled in Burke and Stets (2009) would be a useful enterprise, especially given the ambiguity seen in factoring the prominence items in this research.

Future Research

Throughout this project information and ideas emerged that did not have a direct place in answering the proposed questions. Instead, those ideas are presented in this final chapter.

Emergent Themes

A more general review of interview materials yielded interesting patterns in this cohort's ideas and cognitions. All of these themes are potential avenues for further exploration and all link sociological theory with the opportunity for empirical research.

Major Themes

Table 16: Major Themes found in qualitative interviews

Major Themes	Interviews Containing
Rationality and Domination	10
Liminality	15
Life-Course	15

Rationality and Domination - Lewis Coser (1977), in *Masters of Sociological Thought*, explained Max Weber's principle sociological focus as being "...on the subjective meanings that human actors attach to their actions in their mutual orientations..." (p. 217). To Weber, as described in his work *Economy and Society* (1978), there are four ways that individuals attach meaning to their interactions with other social entities (individuals and groups, both known and unknown) – affectual, traditional, value-rational, and purposeful-rational. *Wertrational* or "value-rational" Weber described as, "...determined by a conscious belief in the value for its own sake of some ethical, aesthetic, religious, or other form of behavior, independently of its prospects for success;"(p.25). Coser (1977) restated this as "...characterized by striving for a substantive goal, which in itself may not be rational...but which is nonetheless pursued with rational means." (p. 217). The idea is that rationality, in this case science, is used in the service of an individual's value. In the interviews analyzed that value is clearly environmental protection. This contrasts with Weber's notion of *zweckrational* or "purposeful rationality" which is when reasoning is used in both the selection of goals and the selection of process.

In the post-Enlightenment social climate which privileges scientific reasoning, this "more objective" *zweckrational*-ity is viewed as the pure ideal, and is the expectation for "true" scientists. In contrast, eight of the nine interviewees who are environmental scientists in this study spoke of "protection" as the motive for their work. The internal dissonance this value-orientation created within them as they violate their community's

norms of instrumental rationality was clearly displayed to the researcher, though not explicitly commented upon by the participants.

Additionally, these eight had some sense that the act of “scientizing” nature through their research aids in its de-mystification but were ambivalent about the benefits of this. Max Horkheimer and Theodor Adorno (2007) in their *Dialectic of Enlightenment* suggested that this de-spiritualization aids domination of nature and fellow men by scientific reason. “Myth turns into enlightenment, and nature into mere objectivity. Men pay for the increase of their power with alienation from that over which they exercise their power.” (Merchant, 2008, p. 62).

Interview subject 9 put it another way:

S9 - And it's funny though, interesting that in the Bible, not that I'm a religious person, but this fundamental power that God gave to Adam and Eve to name things. It's almost like what you're saying about with your uncle? You know that, like, all this classifying and naming that we do, it does kind of take away the magic of it.

Liminality – Victor Turner, in his anthropological work on ritual, discussed the idea of “liminality.” The concept is of a social space that an individual or society must pass through to transition from one stage or status to another. This liminal period during the ritual experience is considered a dangerous and scary time for all concerned because the transition-er is no longer constrained by the expectations of one social role and is not yet contained by the new. In his article, “Liminal to Liminoid, in Play, Flow and Ritual: an Essay in Comparative Symbolology,” Turner (1983) explains the liberative nature of liminality.

The novices are, in fact, temporarily undefined, beyond the normative social structure. This weakens them, since they have no rights over others. But it also liberates them from structural obligations. It places them too in a close connection with asocial powers of life and death. (p. 59)

This ambiguity presents potential opportunity for unpredictability or challenge to the system, but also serves to reinforce the willful nature of the transition. The transitioner must actively choose to pass through the liminal space, though s/he needs guidance.

In the course of these fifteen interviews, several participants discussed actively seeking environmentally-immersive activities as a way of getting to the “real” world. The implication being that the socially and physically constructed world of metropolitan DC is distinct and separate from their notions of reality. Camping, for instance, then becomes an event that reaffirms their connection to “truth” and self and their sense of belonging to a more important construct – the “society” of nature, perhaps even the “asocial powers of life and death” to revisit Turner. One interpretation of this coincides with the observed dissonance between public and private identities (discussed under minor themes). It is that their various life-course experiences have been a building series of “liminoid” events - which Turner describes as a transition but not of such significance as a liminal event – that have essentially “stranded” these individuals in a state of between-ness – “liminality” in other words. They see the expectations and identities on both sides, but have not, for various reasons, been able to transition wholly into their “reality.” The repeated nature activities then become affirmations and more “liminoid” experiences as they strive toward that actual transition. In terms of the ecological identity development, these

liminoid events clearly serve both a reinforcing function of existing identity and likely also serve to increase commitment levels. The search for “truth” and “real” may indicate that individuals have self-expectations of higher prominence levels, as well.

Life-Course - There seems to be a common life-course progression for this cohort. It begins with family-mediated environmental experiences. These introduce the child to nature activities, generally without fear, and instill pro-environmental values. In adolescence, each reported engaging in peer-oriented activities which reinforced the social acceptance of the values and activities while increasing self-reliance and competence. A particularly clear example was related by Subject 2:

R - So you said it was Camp Widjiwagen?

S2 - I was 13.

R - How did you get to Widjiwagen?

S2 - I was forced to go by [my] father. I cried at the bus stop going, my friend Erin [redacted] and I cried at the bus stop, we did not want to go we were so angry, but we were crying at the end we did not want to leave.

R - So what happened? What did you do at Widjiwagen?

S2 - I think the difference was doing those things with people my age my peer group, being involved in a different way as opposed to I am the child coming along on this trip, you plan it and bring me along you know I'll gather sticks for the fire-pit and that's about it, versus being that kind of full participant in it and so that made it fun and then from that from liking it got me into the more wild places, even later the landscapes themselves started impressing me.

Then comes self-selected educational topics which confirm and “back up” the existing values and validations with intellectual knowledge. Finally, these all lead to a lifetime orientation and ecological identity.

This progression is in line with the environmental education literature which heavily features the work of John Dewey and his emphasis on a complementary

combination of education (knowledge) and experience. It also supports the importance of adult mentoring during childhood discussed in the same literature.

Minor Themes

Table 17: Minor Themes found in qualitative interviews

Minor Themes	Interviews Containing
Divergence of Role and Self Identities	6
Inter-connectedness	8
Nature as religion	5
Pragmatism	6

Divergence of Role and Self Identities - Following from the dissonance caused by their value-oriented rationality, only four interviewees (27%) were basically congruent in their self's ecological identity and the way they presented themselves to others. This flows from a general perception that untainted (instrumental, to revisit Weber) scientific reason is required for credibility and social acceptance in their field, even though almost all of them are motivated by a desire for environmental protection. An excellent example of this dissonance can be seen in Subject 9's commentary.

S9 - I think I'm a little schizophrenic about it that in my private mind – like I teach environmental policy so I could hear myself talking to my students in what I think is – what I'm hoping is a very balanced kind of way. And the class will vary – sometimes you have a lot of people that are – have been kind of brainwashed on like economics side, right? So, I try to get them to look at the other side of it and often you get people that are very strong environmentalists and I'll try to get them to see the other side kind of thing.

So, in the public face I think I'm like that but in my own heart of hearts I'm – I don't even know what you call it. Like, I don't even have a name for it but it would be – I think in the public's view it'd be a pretty extreme kind of thing.

This dichotomy causes fairly significant discomfort for several participants. Also noticed, the more divergent the internal and external personae, the less likely they were to report participation in activism or public-sphere support behaviors.

Inter-connectedness - To again use language from the Frankfurt School, these individuals were identifying that man's internal nature (physical being, instincts, and emotions) are intrinsically tied to external nature. As such, domination of our internal nature by scientific reason cuts us off from external nature and allows the progression of domination, overexploitation, and degradation. Eight of fifteen interviewees spoke of the importance of recognizing and relishing these connections. Subject 8 eloquently described his feelings.

S8 - I guess the thing that was really profound to me was the sense that the whole place was alive, that these trees, the way they were responding to the wind and the water, and the surface of the pond and the light. It was just like so dynamic and so alive that I just felt connected, I mean I felt connected to a living planet, a living place even, I wasn't thinking of planet I was thinking living place, just I'm alive, here I am with this child, here I am in this place that's alive. It was just sort of kind of a numinous moment of connection.

Nature as Religion – Another less common perspective seen in these interviews that is closely related to the “Inter-connectedness” theme is that nature is the participants' religion. Further probing of this idea yielded discussion of spirituality, especially around the importance of all living things and the importance of doing no harm. Reading more

deeply into their comments, this seems to mean that nature – or the care for and connection to it – provides the guiding moral and behavioral structures for these individuals. Subject 3 described this well.

S3 - I don't think of the environmental aspects as one particular role, it kind of permeates all of my roles. So as a father, it's about passing it on to the next generation, and as a nurse it permeates the role in terms of trying to be conscious of what we're wasting and reusing what we could reuse. So it permeates everything I do from leisure to work.

R - Do you think it's a strong permeation?

S3 - Oh yeah. Some people have religion, I've got environmentalism. If I had to vote for a party to pick a president that would be my primary, you know if I had a one issue voter that would be my vote. I would be willing to put up all kinds with issues I didn't agree with if they were right on the environment.

Pragmatism – Pragmatism, here, means the acceptance that change is the norm in the natural environment. As individuals familiar with ecological science and evolution, most interviewees expressed that environmental change is the norm, not the exception. However, for most this was accompanied and possibly contradicted by comments about “preserving” the wild and existing biodiversity. More acutely, in two instances, interviewees were obviously consoling themselves with this idea - change is natural; not stopping it is no failure.

In another form of pragmatism, interviewees discussed the reality that humans must live within existing social constructs. This means that growth and production won't be stopped and people will continue to need jobs. Those who used “sustainability,” which were surprisingly few, meant the balance point between a utilitarian/exploitative

approach as might be expected under unmitigated capitalism, and a preservative/restorative approach that seeks maintenance of a “pristine” nature.

Emergent Model

Finally, in thinking more broadly, it is possible to imagine that engagement in activities aimed at directly influencing environmental policy, as well as in activities that impact local environmental quality, stem from the same place, namely, values-based identity operating through norm-activation. Figure 13 illustrates this concept.

There are many analytic leaps in this formulation. The links between Values theory and Role Identity theory are only now being explored. Identity has only recently been brought into consideration when discussing environmental behavior. The work of Omi and Winant (1994) on racial formation and projects has not been connected with Anthony Marx’s (1998) work on racial identity in the literature, nor has the Omi/Winant conceptual framework been extended into environmental sociology.

Exploration of this conceptual model is a lifetime’s work, but has the potential to yield deeper understanding of how humans relate to nature and one another. Understanding, more explicitly, the mechanisms for engendering more environmentally responsible behavior is a critical task and can only spring from awareness of causes and concerns.

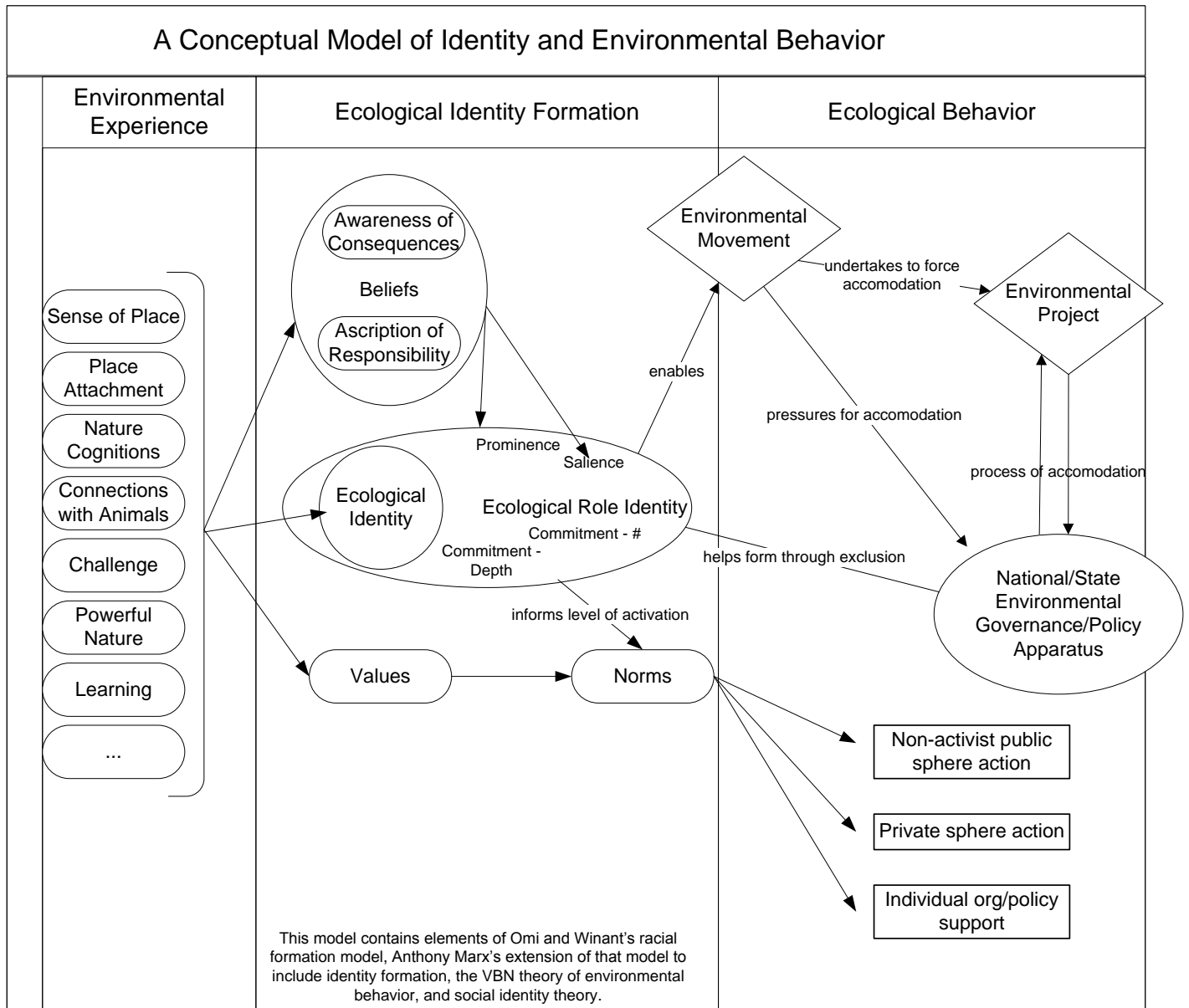


Figure 13: Conceptual model of experience, identity and behavior

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APPENDIX A

Survey Items Used

Demographics

1. Are you: Male/Female
2. In what year were you born?
3. In what country did you graduate high school (or the equivalent)?
4. How many years of education have you had (with high school graduation counted as 12 yrs)?
5. Is your job environmentally related?

Environmental Experiences

Please tell us how important the following experiences have been to you.

1	2	3	4	5
Not at all Important				Very Important
1.	Doing nature activities with my family when I was growing up.			
2.	Doing things in nature with my teenage friends.			
3.	Seeing an animal being mistreated.			
4.	Witnessing the pollution of a natural area.			
5.	Seeing land taken over for development.			
6.	Learning about natural science.			
7.	Feeling completely immersed in a landscape.			
8.	Feeling like a little cog on the giant wheel of nature.			
9.	Feeling enclosed and protected in a natural place.			
10.	Nature threatened the life of me/my loved ones.			
11.	Suddenly understanding something profound about nature/a natural place.			
12.	Hearing, seeing or smelling something new or amazing in nature.			
13.	Escaping my stressful life by going into nature.			
14.	Imagining myself out in nature.			
15.	Stumbling upon an unexpected plant/animal/scene and being amazed.			
16.	Exploring in nature.			
17.	Learning how to survive in nature.			
18.	Communicating with an animal.			
19.	Having a pet.			

20. Feeling connected to the land.
21. Noticing the ecology of my garden.
22. Imagining I was a specific animal.
23. Understanding what an animal was thinking/feeling.
24. Learning something about myself while doing something physically hard in nature.
25. Getting over my emotions so I could do something in nature.
26. Being sick, injured or very tired and just having to suck it up and get on with it while in nature.
27. Standing and looking in awe at a landscape.
28. Feeling I had never seen such a beautiful/amazing place.
29. Seeing the most exquisite flower/animal/leaf.

Ecological Identity Presence

Please indicate the extent to which each of the following statements describes you by using the appropriate number from the scale below.

- | | | | | |
|------------|---|---|---|------|
| 1 | 2 | 3 | 4 | 5 |
| Not at all | | | | Very |
1. I spend a lot of time in natural settings (woods, mountains, desert, lakes, ocean).
 2. I think of myself as a part of nature, not separate from it. (Reversed)
 3. If I had enough time or money, I would certainly devote some of it to working to protect the environment.
 4. When I am upset or stressed, I can feel better by spending some time outdoors "communing with nature."
 5. I feel that I have a lot in common with other species. (Reversed)
 6. Behaving responsibly toward the earth - living a sustainable lifestyle - is part of my moral code.
 7. Learning about the natural world should be an important part of every child's upbringing.
 8. I would rather live in a small room or house with a nice view than a bigger room or house with a view of other buildings. (Reversed)
 9. I would feel that an important part of my life was missing if I was not able to get out and enjoy nature from time to time. (Reversed)
 10. I have never seen a work of art that is as beautiful as a work of nature, like a sunset or a mountain range.
 11. I feel that I receive spiritual sustenance from experiences with nature.

Environmental Values

Please tell us how important each of these ideas is to you.

1	2	3	4	5
Not at all				Very
Important				Important

1. Protecting the environment, preserving nature.
2. A world at peace, free of war and conflict.
3. Honoring parents and elders, showing respect.
4. Authority, the right to lead or command.
5. A varied life, filled with challenge, novelty and change.
6. Unity with nature, fitting into nature.
7. Social justice, correcting injustice, care for the weak.
8. Family security, safety for loved ones.
9. Influential, having an impact on people and events.
10. An exciting life, stimulating experiences.
11. Respecting the earth, harmony with other species.
12. Equality, equal opportunity for all.
13. Self-discipline, self-restraint, resistance to temptation.
14. Wealth, material possessions, money.
15. Curious, interested in everything, exploring.

Ecological Identity Commitment

Please answer the following questions:

1	2	3	4	5
Not at all				Very

1. How important is it to you that your friends view you as environmentally concerned?
2. How important is it to you that your family view you as environmentally concerned?

1	2	3	4	5
Below Average				Excellent

1. How good an environmentalist does your immediate family think you are?
2. How good an environmentalist does your best friend think you are?

Please answer Yes or No to the following:

1. Have you joined any organizations related to your environmental role?
2. Have you made any friends through activities related to your environmental role?

Ecological Identity Prominence

Please answer the following questions:

1	2	3	4	5
Not Upset			Upset	

1. How would you feel if someone said you had no right to call yourself a real environmentalist?

1	2	3	4
Not at all		Very	

1. How important is environmentalism to how you think about yourself?

Ecological Identity Salience

For each situation described below, indicate in order (1-5) which roles you would use to describe yourself.

Parent/Child of Someone
Friend of Someone
Environmentalism
Your Profession
Your Religious Affiliation

1. Meeting someone new at a neighborhood block party
2. Filling out a profile for a general social media site such as Facebook
3. Meeting someone new while on vacation.

APPENDIX B

Table 18: Correlations of all factors

	Self-ID	NtC	AP	WtS	Sal	Prom	Comm-#	Comm-#	B	T/C	A	OtC	W	P	NC	Cx	Ch	PN	L
Self-ID		0	0	0	.252*	-0.06	.206*	0.142	.425***	.353***	-0.18	0.137	-0.06	-0	.336***	0.048	.375***	.254***	-0
NtC			0	0	.214*	.327**	0.154	0.006	.376***	-0.01	0.117	0.025	-0.09	0.02	0.173	.269**	.183*	-0.06	-.215*
AP				0	0.16	0.148	-0.062	.211*	0.109	0.054	-0.02	-0.14	-0.11	-0.07	.262***	-0.03	0.035	-0.02	-0.06
WtS					0.15	.247*	0.16	0.057	.210*	0.026	0.099	0.019	-.340***	-0.02	0.075	-0.14	0.168	0.028	-0.11
Sal						0	0	0	0.165	0.05	-0.1	0.018	-.272**	0.148	0.157	0.181	0.148	0.111	-.193*
Prom							0	0	.255***	-0.05	0.111	0.003	-0.03	.198*	.194*	-0.05	0.048	0.041	-0.1
Comm-D								0	.204*	0.042	0.044	-0.07	-.215*	0.002	0.047	.227*	0.073	-0.13	-0.15
Comm-#									0.178	.340**	0	-0.01	0.005	0.093	0.108	0.016	0.104	0.085	0.182
B										0	0	0	0	0	.246**	0.142	.299***	0.079	-.228*
T/C											0	0	0	0	.202*	-0.09	0.094	0.068	.258***
A												0	0	0	-0.01	-0.09	-0.06	-0.05	-0.02
OtC													0	0	0.155	-0.01	.231*	-0.1	0.079
W														0	-0.04	0.001	-0.13	0.004	0.083
P															-0.01	0.002	0.063	0.105	-0.12
NC																0	0	0	0
Cx																	0	0	0
Ch																		0	0
PN																			0
L																			

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

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