



Significant Life Experiences that Connect Children with Nature: A Research Review and Applications to a Family Nature Club

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Abstract

In past research on significant life experiences (SLE) that influence environmental values and behaviors, a triad of experiences frequently emerge: free play and exploration in nature in childhood or youth, influential role models who communicate nature's value, and opportunities to learn how to take action on nature's behalf. This Chapter opens with a review of past SLE research and theories of child development that predict these repeated findings. It also reports on an

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evaluation of family nature clubs (FNCs) – community-based organizations that regularly bring families together to enjoy nature together, creating conditions for families to share all three of these experiences that have been associated with care for the natural world. This study of more than 330 FNC leaders and participants found both quantitative and qualitative support for the effects of these formative experiences. Statistically significant survey results are complemented by ethnographic observations and interviews that offer insight into what happens during these experiences that makes them important and lasting in memory. The consistency between this study's results, previous SLE research, and relevant concepts in the psychology of child development is discussed.

Keywords

Significant life experiences research · Childhood time in nature · Family nature clubs

Introduction

What childhood experiences lead some people to feel a bond of connection with the natural world and understand that they are part of the interdependent web of life? What early experiences encourage lifelong expressions of care for other parts of the natural world? Efforts to answer these questions have come to be called “significant life experience” (SLE) research: the study of experiences that promote the development of values and behaviors consistent with awareness of and appreciation for nature (Tanner, 1980). The first part of this Chapter reviews studies that have sought to answer these questions. The second part of this Chapter adds new content to this literature from a study of family nature club leaders and participants from six countries.

Family nature clubs (FNCs) bring families with growing children together at regularly scheduled times to explore natural areas in their local surroundings. The design of FNCs can vary widely, but they all offer events that occur outdoors, are geared toward full family participation, and are intended to develop positive connections with nature through direct experience. The majority of the FNCs included in this research were registered with the Children and Nature Network, an international organization that promotes FNCs (www.childrenandnature.org). This research was able to relate parents' perceptions of significant experiences, as captured through surveys and interviews, to researcher observations of what actually occurred during experiences in nature via the case study of a new family nature club created specifically for this purpose. This Chapter is the first to connect FNCs to research about SLEs.

This Chapter also seeks to connect SLE research to well-studied aspects of child development that may help explain recurring results. Significant experiences in nature appear to embody basic processes of development, including the development of agency and a sense of competence, social modeling when children look to role models to determine how they should act, joint attention when two or more people knowingly focus their attention on the same object or event, empathy, sympathy, and

an environmental identity when people's relationship with their environment becomes an important part of their sense of self. This Chapter considers how its findings about FNCs correspond to these developmental processes. The conclusion discusses parallels between past SLE research and the new study presented here.

Review of Significant Life Experiences Research

Defining a New Field of Research

Engagement with nature through direct experience has many immediate positive benefits for children (Chawla, 2007, 2015); and from a life span perspective, it is the most frequent experience associated with later action on nature's behalf. It is only one of a sequence of experiences, however, that motivate later interests in nature and caring environmental behaviors, whether they are expressed through environmental career choices or volunteer activities (James, Bixler, & Vadala, 2010). Efforts to identify key events in this process, or significant life experiences (SLE), began in 1980 with a seminal paper by an environmental studies professor, Tom Tanner, who noted the need to understand the kinds of learning experiences that produce "an active and informed citizenry" who will work to maintain "a varied, beautiful, and resource-rich planet" (Tanner, 1980, p. 20).

The investigation of formative childhood experiences that encourage people to feel connection and care for the natural world began with retrospective studies. Through interviews (Chawla, 1999; Peterson, 1982; Peterson & Hungerford, 1981) and written narratives (Palmer, 1993; Tanner, 1980), people were asked what motivated them to choose careers in conservation work or environmental education or why they became engaged in actions to preserve or protect the natural environment. Findings from Peterson's (1982) qualitative study were integrated into quantitative surveys that examined statistical associations between childhood experiences and environmental values and behaviors in adulthood (Marcinkowski, 1988; Sia, Hungerford, & Tomera, 1985/86; Sivek & Hungerford, 1989/1990).

The second SLE study, by Peterson (1982; Peterson & Hungerford, 1981), had the goal of identifying life experiences associated with "environmental sensitivity." According to the Tbilisi Declaration drafted by international leaders in environmental education in 1977, one of five major objectives of environmental education is "to help social groups and individuals acquire an awareness and sensitivity to the total environment and its allied problems" (UNESCO, 1980). In an often cited paper, Hungerford and Volk (1990) listed environmental sensitivity as the major "entry-level" variable in their model of life pathways in the development of responsible environmental citizenship. Whether SLE research should focus on the outcome of action for the environment, or antecedents of action like environmental awareness and sensitivity, was an early controversy (Chawla, 2001; Payne, 1999; Tanner, 1998). In practice, studies have investigated diverse outcomes that include environmental sensitivity, awareness, attitudes, values, interest, concern, and career choices as well as committed activism. Environmentally active subjects have included

volunteers at marine centers, natural history enthusiasts, farmers who maintain wildlife habitat, teachers of environmental education and geography, members of environmental organizations, political activists, and people in the general population who take relatively simple steps like recycling and voting for green candidates (Chawla & Derr, 2012).

Previous Literature Reviews

A series of reviews of SLE research have traced the field's methods, measures, and findings over the years. In a review of early studies and a subsequent investigation of life paths into environmentalism, Chawla (1998a, 1999) noted that people mentioned multiple experiences that included both direct engagement with nature and learning how to interpret nature in positive ways. In seven qualitative studies based on interviews and open-ended narratives, she found that people referred most often to time outdoors in natural areas, often through childhood play and exploration, but other common responses were witnessing habitat destruction, teachers or education, youth groups, and books. She also made recommendations for strengthening future research, including working with more diverse social and ethnic groups and a broader range of environmental issues, and including less environmentally active comparison groups (Chawla, 1998b, 1999). Since she wrote, the field has moved in these directions. Beyond its origins in the United States, studies now include samples from Canada, El Salvador, the United Kingdom, Ireland, Norway, Germany, Switzerland, Lithuania, Slovenia, Greece, South Africa, Uganda, China, Sri Lanka, Taiwan, Hong Kong, Japan, and Australia (see studies reviewed in Chawla and Derr (2012) and, more recently, studies by Catling, Greenwood, Martin, and Owens (2010) and Li and Chen (2015)).

Marcinkowski (2001) reviewed applications of a survey created by Sia (1984) to distinguish the life experiences of more versus less environmentally active people. Sia's index of "environmental sensitivity," based on Peterson's (1982) study, asked people whether they were involved in hunting, fishing, and hiking as children or adults and whether they were influenced by parents, teachers, or books. (Hunting and fishing are often a way of life in rural areas, and many rural people learn outdoor skills and the ecology of natural habitats through these practices.) When Sia (1984) collected surveys from members of Sierra Club chapters and participants in an elder hostel, people who reported many responsible environmental behaviors versus few scored significantly higher for environmental sensitivity as well as knowledge of environmental action strategies and self-perceived action skills. When Sivek and Hungerford (1989/1990) used the same survey with members of fishing, hunting, and trapping associations in Wisconsin, these three variables, again, were most strongly associated with behavior scores. When Marcinkowski (1988) used an extended version of the survey with members of the US Sierra Club and Audubon Society, behavior scores were most strongly explained by knowledge of environmental action strategies. Together, these studies indicate that significant childhood experiences may increase the likelihood that people will take action for the

environment as adults, but action is also influenced by whether people know what they can do and believe they can act effectively.

Sward and Marcinkowski (2001) reviewed research on SLEs associated with measures of environmental sensitivity, concern, and action, with an emphasis on studies published from 1980 to 1998, but with attention to relevant studies prior to 1980. They covered many of the same studies as Chawla (1998a) and found similar results: people often identified direct experiences of nature, role models such as family members and teachers, and involvement in outdoor-oriented youth organizations or camping. When they examined studies of people who chose careers in natural science or environmental education, they found the consistent importance of outdoor experiences. Like Chawla (1998a), they noted the need for future studies to include comparison groups who are not environmentally sensitive or active.

Two more recent reviews have covered both the SLE literature and evaluations of environmental education programs. Wells and Lekies (2012) found that the results of Tanner's (1980) initial study have been repeatedly confirmed by subsequent descriptive studies, including the importance of time in nature, influential individuals, books, and seeing the loss of valued natural places. They noted that the greatest commonality across all studies is "the importance of time spent outdoors in natural habitats during youth" (p. 206). They observed that studies in this field typically focus on people in environmental careers or activism, so results may not be generalizable to other groups or the population at large. Relatedly, because descriptive studies like Tanner's rely on self-report, they are limited by the potential inaccuracy of memory. "Is it the case," Wells and Lekies (2012, p. 207) asked, "that certain childhood experiences lead people to be dedicated to the environment? Or, rather, do individuals construct coherent stories of their life experiences leading up to their ultimate environmental careers or activism?" An autobiographical approach may generate hypotheses, but it cannot establish causal connections.

Turning to quantitative surveys, Wells and Lekies (2012) observed that these studies support a connection between childhood nature experiences and later pro-environmental attitudes and behaviors. Reviewing seven studies that involved large, general population samples from the United States, Germany, and Scotland, they found that people who reported spending time in nature in childhood were more likely to express favorable attitudes to trees and natural areas, perform actions like recycling and environmental cleanups, support nature protection, prefer natural areas for recreation, understand biodiversity, and express ecocentric beliefs. Although these studies lend validity to descriptive studies, they also rely on memory. To make causal claims possible, Wells and Lekies recommended longitudinal designs.

In a review that covered 39 publications related to significant life experiences, Chawla and Derr (2012) noted that whether studies involved interviews, questionnaires with open-ended narratives, or surveys of large samples, the most common antecedent of valuing and caring for nature was time in nature in childhood and youth. Other frequent results were participation in environmental or nature-based organizations, influential people or books, and the loss of valued natural areas. In two studies, one in Japan and one in the United States, that compared people who demonstrated interest and care for nature with others who did not, positive contact

with nature in childhood was the distinguishing factor (Furihata, Ishizaka, Hatakeyama, Hitsumoto, & Ito, 2007; James et al., 2010). A unique study observed elementary school children in upstate New York as they engaged in intense creative play and fort building in a natural area that adjoined their school and then, unexpectedly, as they witnessed it being bulldozed and coped with its loss (Blizard & Schuster, 2004). The children expressed strong emotions of attachment to their natural play area and sadness and anger over its loss. This longitudinal case study illuminated the importance of both nature play and the loss of valued habitat.

As another means of insight into experiences that shape children's environmental values, attitudes, and actions, Wells and Lekies (2012) and Chawla and Derr (2012) also reviewed studies that evaluated outcomes from environmental education programs. They drew similar conclusions. Programs are most likely to increase concern for nature and pro-environmental behaviors when students are actively engaged in hands-on activities that include direct experiences of nature, they address meaningful local issues, they do their own investigation and information gathering, and they have extended or repeated exposure to a program. These characteristics of impactful programs may help explain why nature-based programs often emerge as a significant life experience.

New Directions for Significant Life Experiences Research

SLE studies that have been published since 2010 and not included in previous reviews confirm preceding results but also explore this subject with new groups and new methods. A paper by Place (2016) brings the field full circle to its beginnings. Tanner (1980) was motivated to initiate the study of SLEs after reading biographies and autobiographies of prominent conservationists. When Place (2016) examined histories and personal writings of five prominent conservationists in the United States, the three strong strands that ran through their early lives were childhood exploration of nature, a parent or grandparent who taught them to notice and appreciate nature, and books about natural history and outdoor adventure.

Extending the study of formative experiences that motivate environmental career choices to a new career area, Catling et al. (2010) found that geography teachers identified time in nature, influential parents and teachers, an enjoyment of maps in childhood, and, later in life, fieldwork as the main experiences that excited them to pursue geography. Extending SLE research to China, Li and Chen (2015) found that environmentally active citizens were most likely to write about time in nature – primarily in childhood, organizations, environmental destruction, education, and role models. In a follow-up survey, a large sample of Chinese college students identified participation in environmental organizations, nature experiences, and their college education as most important.

A new subject of study is the background of people who are taking action against climate change. Pearse, Goodman, and Rosewarne (2010) investigated the lives of adult climate activists in Australia, Fisher (2015) interviewed international youth

climate activists, and Howell and Allen (2016) surveyed people involved in climate change writing, education, and mitigation. Although positive engagement with nature was an important influence for some respondents, other experiences were more common: direct contact with environmental problems and their social consequences, learning at work or in organizations, education, influential people, and media. Howell and Allen (2016) observed that for climate activists, social justice themes are more important than nature connection.

Fisher (2015) noted that the international growth of environmental youth groups has provided new opportunities for significant experiences, as several young activists talked about the sense of inclusion and empowerment that they gained from being part of the climate movement. In previous studies by Sivek (2002) and Arnold, Cohen, and Warner (2009), youth found the identity and relationship that they felt at environmental gatherings to be significantly motivating and sustaining. Empowerment from working with others was also important in Ceaser's (2015) study of environmental justice activists. When Colvin Williams and Chawla (2015) interviewed adults who had participated in nature center or wilderness programs as children or teens, salient memories included direct encounters with nature, inspiring guides, and their sense of pride in belonging to their group. Colvin Williams and Chawla related free exploration and guided learning in nature to the development of an ecological identity formed through a personal history of connection with nature (Clayton, 2003; Thomashow, 1995), and the sense of group belonging to an emerging social environmental identity, as people came to identify themselves with others who actively work on the environment's behalf (Kempton & Holland, 2003). The work by Ceaser (2015) and Fisher (2015) suggests that the second type of identity may be primary for climate justice and environmental justice activists.

Two recent studies open promising new paths for longitudinal designs. In a small qualitative study, a preschool class was observed as the children visited a river in a state park in the United States each week over the course of a year (McClain & Vandermaas-Peeler, 2016). The children's understanding of the natural world developed through a combination of their own direct exploration and inquiry along with teachers' questioning, and teachers promoted children's appreciation for nature and stewardship behaviors. A larger longitudinal study measured the environmental attitudes and behaviors of 118 young people at ages 6 and 18 and surveyed their mothers when their children were 6 about their children's outdoor play habits in their upstate New York towns and their own environmental attitudes and behaviors, political values, and level of education (Evans, Otto, & Kaiser, 2018). They found that 18-year-olds reported more pro-environmental behaviors and attitudes when they spent more time outdoors at 6, and their mothers expressed more pro-environmental attitudes and behaviors and more liberal political values. Future longitudinal studies can build on the strengths of these two approaches by combining children's and parents' responses to standardized survey measures with observations of children's interactions with the natural world at repeated points in time.

Pivotal Processes in Child Development

Although SLE research identifies experiences associated with appreciation and care for nature in later life, it sheds limited light on why these experiences have lasting influence. It has not yet predicted outcomes based on well-established processes of child development and child-environment relationships and then observed whether the predicted results occur. This Chapter seeks to build a foundation for research of this kind by proposing that key experiences identified in past studies are not surprising: they represent basic processes of learning agency in the world, learning what to notice and value, and developing a self-identity related to the environment. This section proposes processes of child development that may underlie existing findings.

Agency and a Sense of Competence

Theories of agency suggest why people frequently remember childhood play in nature as a meaningful experience, as the natural world is rich in opportunities for children to develop agency and a sense of competence. In a classic paper, White (1959) identified a strong intrinsic motivation in humans and other animals to exercise autonomous agency and experience competence in engaging with the environment. Intrinsic motivation and agency are also core parts of the self-determination theory of Ryan and Deci (2000). Defining intrinsic motivation as “the inherent tendency to seek out novelty and challenges, to extend and exercise one’s capacities, to explore, and to learn,” they noted that relating to the environment in this way fosters feelings of vitality, competence, and self-esteem, which contribute to a general sense of well-being (Ryan & Deci, 2000, p. 70). They observed that intrinsic motivation and agency are facilitated by environments that offer optimal challenges: not only repetition of what a child can already do but opportunities to take the next attainable step. Other important elements of supportive environments are feedback that offers clear evidence of achievement and people who give positive evaluations and encouragement.

Synthesizing a large body of research regarding the development of a sense of self-efficacy, or people’s belief in their ability to achieve personally valued goals, Bandura (1997) came to similar conclusions. Above all, people experience this healthy sense of efficacy or competence when they enjoy mastery experiences and demonstrate to themselves and others that they can be successful. When they achieve significant goals by working with others, then a sense of self-efficacy combines with a sense of collective efficacy, with feelings that we did this together and I contributed my part. Other supports for self-efficacy are coaching and encouragement from others, reassurance that feeling stressed or anxious in undertaking daunting challenges is normal rather than a sign of inadequacy, and seeing others with whom one identifies achieve desired aims (Bandura, 1997).

The ecological approach to perception and action of James Gibson (1979) also emphasizes the importance of agency, with close attention to relationships between

an organism and its environment. According to Gibson's theory of affordances, the opportunities for experience and action that an environment offers depend equally upon the physical features of a place and the capabilities of an organism. A tree affords climbing for a child, for example, only if its lowest branches are within her reach and she has the strength to pull herself up. Therefore, as children explore the environment, they simultaneously learn about the characteristics of the world and their own capabilities.

Viewed through the lens of these perspectives, the natural world is filled with opportunities for engrossing and exhilarating experiences of agency that sustain intrinsic motivation (Chawla, 2007). In Ryan and Deci's (2000, p. 70) words, it is full of "novelty and challenges, to extend one's capacities, to explore, and to learn." As children play in nature, they can select optimal challenges for themselves – and each success is a mastery experience. As they dam a stream or build a fort, the environment provides clear feedback about their abilities, and when they accomplish goals together, they experience a sense of collective as well as personal efficacy. Given the centrality of intrinsic motivation and autonomous agency for healthy functioning, vitality, and wellbeing, it is not surprising that childhood play in nature emerges as a significant experience.

Social Modeling and Apprenticeship

When people in SLE studies identify influential adults in their childhood, they commonly describe them as role models of appreciation and care for nature, who notice and talk about plants, animals, and places and introduce the child to stewardship practices. These stories suggest processes of social modeling, joint attention, perspective taking, direct instruction, and practice in helping skills that have been associated with the development of prosocial and, by extension, pro-environmental behaviors. By watching what others do, engaging with others in joint attention to things and events in the world, and acquiring skills through apprenticeships, children learn what others around them consider important in the natural world, how to respond, and how to engage with nature with competence and care.

According to the social learning theory of Bandura (1986), people learn by observing others as much as through their own exploration, and this extends to learning emotional responses and socially approved ways of interacting with people, animals, and objects. A child is more likely to pay close attention and reproduce what another person does if this person has pleasing characteristics and she is doing something functionally important that gains benefits and if the child finds imitation rewarding. Rewards can be intrinsic, through the pleasure of the action itself and the sense of competence and achievement it engenders, or they can be material gain or social approval. The role models identified in SLE research have influential characteristics. As family members, teachers, or mentors, they spent extended time with the child or youth, who had many opportunities to observe them, and they commonly engaged in rewarding actions and expressed emotional warmth and approval.

In the body of SLE research, people often describe episodes of joint attention with role models. Joint attention happens when two or more people notice the same thing with a mutual understanding that they are sharing this experience, and it is central to

learning what other people consider worth noticing and how to respond (Carpenter & Liebal, 2011). It is not only one-directional, with a child learning from others. At its best, it happens when an adult or friend directs a child's attention to an object in nature as something worth stopping to watch and appreciate, *and* when others enjoy something that a child points out, affirming the value of the child's interests.

Joint attention and social modeling combine when children participate in apprenticeships and learn a set of skills through shared activities under the guidance of someone more experienced (Rogoff, 1990). Through this involvement, children gradually develop competence to take responsibility for this activity themselves, at the same time as they learn the activity's meaning and value in their culture. Many significant experiences that people remember involve apprenticeships in the environment under the guidance of family, teachers, or other adults, such as farming, gardening, camping, fishing, and bird watching (Bixler, James, & Vadala, 2011; Chawla, 1999). Through these activities, young people develop competence in the natural world.

Sympathy and Stewardship

Empathy is an innate tendency to apprehend the feelings of another creature by experiencing similar feelings, such as when a baby exhibits distress when someone nearby cries (Hoffman, 2000). As young children begin to distinguish the feelings of another from their own, adults need to help them extend their innate capacity for empathy to sympathy, which combines awareness of others' feelings with concern for their situation, and to encourage the disposition to help (Eisenberg, 1992). Adults do this by demonstrating caring behaviors themselves, showing that they value expressions of kindness, giving their child instruction and practice in helping skills, and encouraging social perspective taking when they ask their child to imagine standing in another's place (Eisenberg, 1992). Without this guidance, children may act detached or seek to escape the scene when they witness another's suffering or need (Eisenberg & Eggum, 2008).

Similar processes appear to foster the development of empathy, sympathy, and care for non-human animals and elements of the natural world (Chawla, 2009). When young children imitate animals' gestures, facial expressions, and vocalization with similar body movements and emotions of their own, Myers and Saunders (Myers Jr. & Saunders, 2002) hesitate to use the term "empathy" for children's responses – given the difficulty of interpreting animal behavior accurately – but they propose the related concept of "cofeeling." Gebhard, Nevers, and Billmann-Mahecha (2003) found that young children also tend to attribute emotions to trees. Several researchers have proposed that when adults encourage children's perceptions of similarity between themselves and other living things, they create a basis for active care for nature and a belief that the natural world has moral standing (Chawla, 2009; Gebhard et al., 2003; Kahn, 1999; Melson, 2001; Myers 2007; Myers & Saunders, 2002).

Environmental Identity

Whether a person develops an identity as someone who is part of nature, deeply connected to it, and committed to conserving and protecting it, is another important

environmental orientation. One facet of this orientation is what Thomashow (1995) and Clayton (2003) call an ecological or environmental identity. As they define it, an ecological identity involves people's feelings, values, and understanding regarding their relationship to the Earth and all living things, and it reflects their personal history of engagement with nature and often their emotional attachment to a particular place. They note that people who report feeling connected to nature typically have an extensive history of nature experiences.

Although people who express an ecological identity tend to report taking personal actions for the environment (Clayton, 2003), Kempton and Holland (2003) claim that sustained and organized action for the environment requires a social environmental identity, when people integrate membership in an environmental group into their self-identity. This may be a general self-definition, such as "environmentalist," "naturalist," or "animal lover," or identification with a specific group such as Friends of the Earth or the Sierra Club. Through group activities, the cultural world of environmental action becomes more salient, people identify themselves as actors in this world, and they gain practical knowledge about how to act effectively. Kempton and Holland's (2003) emphasis on a social environmental identity for sustained environmental action is consistent with the importance of environmental and nature-based organizations in many SLE studies (Chawla, 1999; Ceaser, 2015; Colvin Williams & Chawla, 2015; Fisher, 2015; James et al., 2010), including studies with adolescents and youth (Arnold et al., 2009; Sivek, 2002). These studies indicate that a social environmental identity, as well as an ecological identity associated with direct engagement and connection with nature, can begin to develop in childhood.

Significant Life Experience Research in the Context of Family Nature Clubs

The second part of this Chapter shares an evaluation of FNCs that apply SLE results by making three formative experiences available to children and their parents: time in nature, role models of nature appreciation, and membership in a nature-based organization (referred to as the youth nature triad for ease of reference moving forward). Taking many forms depending on their context, FNCs are community-based organizations that regularly bring families together to enjoy the benefits of time spent in nature (D'Amore, 2016). Some FNCs are small, while others are quite large; some meet at the same place each week, while others make a point of going to a new place for each gathering; some are focused on education, while others are focused on free play; some are run by a parent volunteer, while others are part of a larger organization's mission (D'Amore, 2015). FNCs can be adapted to diverse community interests and conditions.

FNCs are part of a growing movement to reconnect people with the natural world (D'Amore, 2015). The Children & Nature Network (C&NN) is a leader in this international movement and promotes FNCs as a form of self-replicating social change that can help to scale up family and community engagement with the natural

environment. At this time, there are over 275 FNCs registered with C&NN, the majority of which are in the United States.

A long-term longitudinal study would be required to assess how participation in an FNC as a child impacts environmental behavior as an adult. However, FNC participation has the potential for a number of near-term effects, including changes in time spent in nature and household environmental behavior as well as a sense of connection to nature, individual and family wellbeing, sense of community, and social engagement. From 2014 to 2015, one of this chapter's authors conducted a study to understand FNCs and the near-term effects of participation in these organizations (D'Amore, 2015). Her sample drew from FNC leaders and adult participants in six countries, primarily in the United States and Canada. Other countries included New Zealand, Peru, Germany, and England. All study participants were asked to complete an in-depth survey, and the FNC leaders were invited to also complete an interview based on the most significant change (MSC) technique (Dart & Davies, 2003). In her community of Columbia, Maryland, she created the FNC named Columbia Families in Nature (CFIN) as a case study for this research. After each family's first CFIN event, they were invited to take an initial survey. The researcher also recorded direct observations of family participation in each event. After attending six events, CFIN parents were sent a post-survey that included questions about their club experiences. The parents that complete the post-survey were invited to participate in an in-depth interview based on the MSC technique. As a comparison group, parents who expressed interest in CFIN but never attended were sent a shorter version of the pre-survey given to other parents after attending their first event. This combination of quantitative and qualitative methods, shown in Table 1, facilitated the exploration of FNCs from multiple triangulated perspectives. For the surveys and full descriptions of the samples and methods, see D'Amore (2015).

Quantitative survey analysis was done using Excel for descriptive statistics and t-tests and Python for regression analysis. The significance threshold was set at .05. Qualitative data from interviews and open-ended survey questions were analyzed using an open coding process to identify common themes (Patton, 2002). This Chapter reports on portions of this study relevant to SLE research. The data and analyses that this section presents cover participants' experiences in nature in childhood and youth, family time spent in nature, sense of connection with nature, and pro-environmental behavior.

Youth Nature Experience Triad

The surveys administered to FNC leaders and adult participants included three statements drawn from the "youth nature experience triad" found in past SLE research: (1) playing outside in nature was an important part of my childhood; (2) as a child, there was at least one adult (parent, grandparent, etc.) that spent time with me outside and helped teach me an appreciation for nature; and (3) during my youth, I participated in an organization that had a nature and/or environmental

Table 1 Study methods and samples

	Participants	Methods
Overview of FNCs	FNC adult participants <i>N</i> = 170	28-item survey
	FNC leaders <i>N</i> = 52	28-item survey
	FNC leaders <i>N</i> = 20/52	Most significant change interview
	FNC leaders and adult participants <i>N</i> = 190	Effects validation survey
Case study of CFIN	Club parents <i>N</i> = 81	24-item pre-survey
	Club parents <i>N</i> = 29/81	18-item post-survey
	Club parents <i>N</i> = 28/29	Most significant change interview
	Parents in comparison group <i>N</i> = 45	20-item comparison group survey
	Participant observer of 133 club families at 31 outings	Informal conversations, field notes, reflexive journal, photographs, archive of club history

focus. Participants were asked to score each statement along a five-point scale from strongly agree to strongly disagree. A total of 337 study participants completed this section of their surveys (Table 2).

FNC leaders were most likely to state that playing outside was an important part of their childhood (95%) and that they had a role model for nature appreciation (68%). FNC participants also indicated that playing outside was an important part of their childhood (83% for the FNC sample, 80% for CFIN pre-survey respondents); and slightly more than half stated that they had a role model for nature appreciation (56% for the FNC sample and 59% for CFIN pre-survey respondents.) The response rate for involvement in a nature-focused organization was similar for FNC leaders (46%), FNC participants overall (46%), and CFIN pre-survey respondents (41%).

Group responses were compared using a two-tailed, type-three t-test (Maxim, 1999). FNC leaders ($n = 52$) were significantly more likely to agree with the statement that “playing outside in nature was an important part of my childhood” than FNC participants including CFIN pre-survey respondents ($n = 242$, $p = 0.001$) or the control group of parents ($n = 43$) who expressed an interest in CFIN but never attended ($p = 0.0035$). There was no significant difference between the participant and control groups ($p = 0.307$). There were no statistically significant differences between these groups’ responses with regard to having an adult who spent time outdoors and taught appreciation for nature when they were young. For the prompt “during my youth, I participated in an organization that had a nature and/or environmental focus,” FNC leaders were significantly more likely to agree than FNC participants (the FNC overview sample as well as those in CFIN ($p = 0.0226$)).

Table 2 Youth nature experience triad response comparisons ($n = 337$)

	FNC leaders	FNC participants	CFIN post-participants	CFIN pre-participants	CFIN comparison
Respondents	52	162	28	80	43
Playing outside	^a 95% ^b 3.73	^a 83% ^b 3.36	^a 68% ^b 2.96	^a 80% ^b 3.26	^a 82% ^b 3.14
Adult role model	^a 68% ^b 2.83	^a 56% ^b 2.48	^a 50% ^b 2.25	^a 59% ^b 2.55	^a 58% ^b 2.49
Nature organization	^a 46% ^b 2.27	^a 46% ^b 2.19	^a 64% ^b 2.46	^a 41% ^b 2.24	^a 56% ^b 2.40

^aPercentage is derived from adding “generally agree” and “strongly agree” responses

^bThe average weight is a zero-to-four scale with four indicating a stronger agreement response

The youth nature experiences of the entire study population were analyzed as an independent variable that may influence other response variables. Linear regression was used to test the relationship between the responding parent’s youth nature experience triad and current family time spent in nature, sense of connection to nature, and environmental behaviors. For this analysis, all survey respondents (FNC leaders, FNC participants, CFIN pre-survey respondents, and CFIN nonparticipants) were aggregated. For current family time spent in nature, there was a positive, but not statistically significant, relationship with youth nature experiences ($n = 318$; $p = 0.077$). There were statistically significant relationships between youth nature experiences and an individual’s sense of connection to nature ($n = 306$; $p < 0.001$) and level of environmental action ($n = 314$; $p = 0.03$). Mayer and Frantz’s (2004) five-item connectedness to nature scale was used to measure sense of connection, and Canada’s household and environmental green index (Statistics Canada, 2009) was used, in part, to measure household actions, such as recycling, turning off lights, and buying organic or local foods. Although current family time in nature did not have a statistically significant positive relationship with club leaders’ and parents’ nature experiences in youth, it trended this way ($n = 318$; $p = 0.077$).

Family Time in Nature

A total of 353 people completed survey questions about how frequently, and for how long, their families spent time in nature together (FNC leaders and participants, respondents to the CFIN pre- and post-surveys, and the CFIN comparison group). FNC leaders went out in nature with their families most frequently, with 33% saying they went out daily and 31% saying they went out two to three times per week. For the other groups, their most common frequency was two to three times per week (32–38%). CFIN nonparticipants reported the lowest frequency of family time in nature, with 47% saying they went out once a week or less. The study group that spent the greatest quantity of time in nature was also FNC leaders, with 28% spending more than 8 h of family time in nature per week and another 46% spending between 3 and 7 h. Other participants were most likely to say they spent 3–7 h in

nature in a week (38% of FNC participants, 53% of CFIN pre-survey respondents, and 50% of post-survey respondents). CFIN nonparticipants had the lowest quantity of family time in nature of all the groups, with 63% indicating that they spent 2 h or less in nature each week. The quantity of time spent in nature by club leaders and participants is remarkable when it is compared to estimates that the average child in the United States engages in 7 min or less of unstructured outdoor play each day, which equates to less than an hour a week (Juster & Thomas, 2004; Rideout, 2010).

Ordinary linear regression was used to determine relationships between current family time spent in nature, connection to nature, and environmental action. For this purpose, respondents consisted of FNC leaders and participants, CFIN post-survey respondents in order to reflect the effects of club participation, and the comparison group. There was a statistically significant positive relationship between family time in nature and sense of connection to nature ($n = 249$; $p = 0.007$) as well as environmental action ($n = 256$; $p = 0.021$).

Taken together, the quantitative survey data show that people who lead, join, or even express an interest in joining an FNC frequently report that playing outside in nature was important to them as a child – and this is especially true of club leaders. More than half of the survey respondents also stated that they had adult role models in nature – with this, again, most characteristic of club leaders; and 41% to 56% reported that they participated in an environmental or nature-based organization in youth. People who were more likely to report these experiences in childhood and youth were also more likely to report a sense of connection to nature and pro-environmental household behaviors in adulthood. Although the relationship between these experiences and current family time in nature was not statistically significant, it was positive and approached significance. Club leaders spent the most weekly time in nature with their families and parents in the comparison group the least amount of time. The more family time in nature that respondents reported, the more they were also likely to report feeling a sense of connection to nature and performing pro-environmental behaviors.

Qualitative Survey and Interview Data

In addition to quantitative questions, all the surveys included narrative prompts designed to solicit descriptions of club experiences and their personal meaning and effects. 145 people responded to the question, “What has been particularly meaningful for you and your family with regards to your participation in a family nature club?” Each response was reviewed and coded for emerging categories of effects, with most responses indicating multiple effects. Table 3 presents the 13 most common effects in their order of frequency. Although the question allowed people to share negative as well as positive effects, all reported effects were positive.

It is striking that many of the effects that parents identified related to the experience that SLE research most commonly associates with environmental interest and action in adulthood: free play and exploration in nature. The value of time in

Table 3 Analysis of narrative responses regarding effects of FNC participation. ($n = 145$, with some people giving multiple responses)

Description of effect	Responses per effect
1. Sense of community (shared values, like-minded people, friendships)	31
2. Spending time outdoors and learning about new places	28
3. Fun/interest/friendships (variety, novelty, adventure, other kids/parents)	27
4. The opportunity to learn something new	27
5. The opportunity to get to know new people	22
6. An enhanced sense of connection with/comfort in nature	20
7. Opportunities for free play (independence, creativity, exploration)	16
8. A greater sense of connection with family	15
9. The passion, knowledge, guidance of the leaders	12
10. Norming/increased confidence/improved child behavior	10
11. Sense of accomplishment/wonder/break from the norm	9
12. Taking care of environment/nature	5
13. Sense of safety/presence of other adults	4

nature is suggested by themes shared by study participants such as “spending time outdoors and learning about new places”; “fun, interest, and friendships”; “the opportunity to learn something new”; “an enhanced sense of connection with/comfort in nature”; “opportunities for free play”; and “sense of accomplishment/wonder/break from the norm.” Together, these responses account for 127 out of the 226 responses listed in Table 3 or 56%. Parents did not specify whether they were referring to effects that they observed in their children or themselves. Based on direct observations of the researcher, most likely, their responses reflect both.

Parents did not specifically write about opportunities to serve as role models of appreciation for their children – another part of the youth nature experience triad, but by registering their family in the club and enjoying experiences in nature along with their children, they stepped into this role. When Chawla (2007) analyzed what environmentalists remembered influential family members in their childhood doing, parents and other family members were most commonly remembered as giving attention to elements of nature, with evident fascination and appreciation, or simply sharing pleasure at getting out into nature. These are the types of behaviors that the FNCs encourage in parents. For many parents, being in nature together also brought “a greater sense of connection with family.”

It is also striking that what parents wrote about most often was the “sense of community” that they developed in their club. This benefit is also implicit in “the opportunity to get to know new people,” the friendships in “fun/interest/friendships,” and the “sense of safety/presence of other adults.” Whereas time in nature on club outings was intended to provide the history of personal engagement with nature and relationship to the earth that are associated with the development of an environmental identity, for many parents, their club also provided the group identity that is important to an emerging social environmental identity (Kempton & Holland,

2003). This came as part of joining a nature-based organization with their children, the third part of the “triad.” Comments about “the passion, knowledge, and guidance of the leaders” and “taking care of nature” showed appreciation for the clubs’ leadership and structured stewardship activities.

In the narratives that Table 3 summarizes, many parents described processes of development that have been implicit in past SLE research: experiences of agency and competence, social modeling and apprenticeships, stewardship, and a sense of environmental identity. For example, parents shared that significant effects of their FNC participation included:

- “My children and I are gaining so much by being so involved in our natural world. We have grown emotionally, socially, spiritually, intellectually and I have watched my children’s self-confidence and focus increase and anxiety and stress decrease.” (P#130)
- “My daughter has an innate interest for the flora and fauna present in nature. Participating in nature club activities reinforces her strong bond with nature.” (P#22)
- “Not being a particularly ‘outdoorsy’ person myself, doing activities with the nature club really helped me to observe other parents interactions and setting limits in nature and it helped me ‘loosen up’ a bit! Also, it helped me gain confidence to do more with my kids on my own outside of the club.” (P#41)
- “We have all learned incredible amounts of information about our local ecology and have made many connections within the community who share our same conservation goals. It is empowering and inspiring for everyone in our family but especially for our children. It gives them hope and incentives to change the world instead of the hopelessness that comes with watching news and nature shows reporting only doomsday predictions.” (P#156)
- “Having the opportunities to go out as a family (vs being split up as would happen in scouts, say) and enjoy the company of other like-minded families and to learn about nature. The boys learn so much from other children and engage in activities that they wouldn’t if it was just our family.” (P#158)

CFIN parents also described these processes in their interviews about the most significant changes that they and their children experienced during club outings, and D’Amore was able to observe these processes as the CFIN leader and participant observer and record them in her field notes. The following section shares some of this material from the CFIN case study. It illustrates each developmental process through quotations from the survey narratives written by CFIN parents, their comments during outings, and their significant change interviews.

Columbia Families in Nature Case Study

For the purposes of her research, in March of 2014, D’Amore began offering Columbia Families in Nature (CFIN) outings to her community in central Maryland, along with her husband and two young children. On at least two Sunday afternoons, a month of CFIN outings were offered at nearby natural areas. By connecting

families with nature, the primary goals of CFIN were to foster greater connection with nature and the community, increase environmental awareness and action, support the wellbeing of participants, and help strengthen family relationships.

31 CFIN outings were held in 2014 at a variety of natural areas, including public parks, farms, gardens, wildlife sanctuaries, and community open space trails, with few repeat visits. The foci of each 2-h outing were also diverse, ranging from free exploration and play to active hikes to structured, conservation-focused events, such as tree planting and garden creation. A total of 133 distinct families participated in these 31 CFIN outings, with an average of 15 families attending at one time. (Another 52 families registered to participate in CFIN, but never attended an event, forming this study's control group.) As the leader for CFIN, co-author D'Amore was able to make close observations of participants' experiences during these events and compare these observations, as well as participants' feedback via narrative surveys and interviews, with the pivotal processes in child development suggested by existing SLE findings.

Agency and a Sense of Competence

For many families, CFIN offered their first experience walking through a meadow, wading in a stream or river, foraging for wild edible plants, exerting themselves on a hike, planting native species, or camping. On the other end of the spectrum, some families were seasoned explorers, with parents who had taught in Outward Bound and had already brought their young children backpacking. Observations during outings as well as parents' written and verbal feedback indicated that club participation provided children, parents, and families as a whole many opportunities to feel agency and competence. General feedback such as "our family has developed new confidence in exploring nature," "we have learned that we can do more outside than I thought we were capable of," and "we have gone to great places that we would not have ventured to on our own" were common themes.

According to the self-determination theory of Ryan and Deci (2000, p. 70), a person experiences feelings of vitality, competence, and self-esteem when he or she has autonomy "to seek out novelty and challenges, to extend and exercise one's capacities, to explore, and to learn." According to Bandura (1997), the most potent way to develop a sense of efficacy is to undertake a meaningful challenge and experience success. Parents observed that children enthusiastically enjoyed the novelty and challenges that nature play afforded. For example, one CFIN mother shared:

I have never let my son play in a creek or river or anything like that before. I wouldn't have known if it was allowed, or safe, or what to do. So, for us this outing was a big deal, and he LOVED it! He seemed so happy and content and excited and interested and didn't want to leave. We've been talking about where else we can go to play in natural water this summer, it is his new favorite thing, so much more interesting than a pool, with all the rocks and sticks and critters to look for.

Another mother observed about her daughter: “I can see the things she enjoys doing, not just walking but stopping and looking, throwing sticks and climbing on rocks. She likes to do it with other kids and now she gets that going out in nature can be fun.”

As parents witnessed their children’s achievements, they felt more comfortable with allowing the autonomy that self-determination and mastery experiences require: “It is kind of awesome to see what he can do when he is outside. I think that it has done a lot for his confidence in new situations and to a certain extent mine as well. Certainly, he has shown me he can do stuff that I didn’t know guys his age could do.” A mother said about her daughter, “She definitely wants to be outside more, and I feel more comfortable with letting her be outside more by herself because now I know she knows how to handle herself outside.” Some CFIN parents had significant nature-based experiences prior to having children, whereas others had few. Based on the researcher’s observations, the opportunity for intergenerational outdoor exploration and learning helped parents across this spectrum witness and encourage their children’s independent relationship with nature.

Nature outings engaged parents as well as their children in new experiences of agency and competence:

You can see on some of the more ambitious hikes people feel like they have never quite done something like this before. I think that is an amazing thing because you find out that the journey isn’t just going out there, it is also the internal journey. You are moving the map of your own self at the same time as you are moving on the map. And I have seen folks definitely finding that. When you can see them get to the top of that thing and they are kind of glowing a bit. They have dug a little deeper, both in terms of their comfort zone of where they are willing to go outside and what they are willing to subject themselves to. Those are great lessons.

As another parent said, “The way back was tough, but we worked together as a family and are proud that we were able to do it!” As parents observed their children’s abilities and had mastery experiences of their own, they began to take their children into nature more often outside of the club: “Getting out to CFIN outings helps me be able to go out to more places with [my son] more often and for longer because now I have more knowledge of where to go and what to do.”

Social Modeling and Apprenticeships

Opportunities for shared attention, social modeling, and learning were built into all the CFIN events (D’Amore & Chawla, 2017). Parents were encouraged to slow down and explore with their children. The leaders and occasional guest guides modeled desired behaviors, such as being respectful of plants and animals, being curious, having fun, helping one another, and picking up trash. Most events included educational opportunities such as a scavenger hunt of things to look for during exploration, taking out a field guide to identify a plant or animal, or a guest speaker who shared wisdom about a topic like animals or edible plants.

Parents expressed appreciation for both the attention to details of nature that the club leader and guest guides encouraged as well as the sense of safety that they provided:

I spend a lot of time out in nature with my kids, getting exercise and letting them play. But there is something about going out on these CFIN outings where we see nature with deeper eyes than we do when we are just out by ourselves. Maybe it is because I am not alone with my kids and solely responsible for them, maybe it is because the leader makes a point of drawing our attention to neat things, like the praying mantis egg cases today. Either way, we all come away feeling more grounded and connected to nature than we do during a lot of other outdoor time.

Many parents made similar remarks. One parent noted that instead of just going outside for exercise and fresh air, her family learned about “really engaging with the environment and learning about different things and different seasons of the year.” She explained, “Because you can kind of just bypass everything in nature when you are just going for a walk and you’re like, ‘Oh, it’s pretty out,’ but you don’t really see the details. Now we do more.” Another parent noted: “We used to walk down to the river, look at it and walk back up. Now we actually take the time to look at the different plants and pick up these little shells. Now we are actually involved.”

As families learned to notice and understand elements of nature from the club leader or guide, they began to share what they learned with each other and from child to child. This was some of the richest organic learning that took place during CFIN events. “It was great to learn a bit more about some of the native plants today. We learned about wineberry, raspberry, and blackberry and can tell the stems apart now. My daughter watched the trout lily for ages and can point out May apple now.” Children also began to teach each other. A mother said about her daughter, I “enjoyed watching her explain to a friend the difference between a thorny plant and another plant that could be touched without getting pricked.”

In addition to directing participants to notice details of nature, the club leader served as a role model for more confident and permissive parenting in nature:

Going out on different outings with you has helped us to get out and explore things differently than we necessarily would have and we have also explored different areas that we haven’t ever been to before. She also likes being outside and dirty more than she used to before. I have to catch myself sometimes because I will start to say, “Oh, be careful you’re going to get dirty,” but then I remind myself it is okay for her to get dirty.

Parents also learned new parenting norms by observing other families: “It is just nice to be out with other families and see people interact with their kids and how they encourage them in different activities. Now I give her more leeway.”

On some outings, the club leader and invited guides involved families in apprenticeship activities that combined joint attention, social modeling, and instruction to demonstrate how to care for places they visited. Activities included learning to distinguish native and nonnative plants, pulling invasive weeds, planting trees, and

planting butterfly habitat. Because these activities were deliberately intended to cultivate stewardship skills, they are covered in the following section.

Sympathy and Stewardship

One of the primary goals of CFIN was to increase the environmental awareness and action of participants. This included fostering a sense of sympathy and stewardship toward nature. All CFIN events sought to impart sympathy for other living things. Participants were taught to consider when it was appropriate to leave the trail and explore and when fragile plants would be damaged by such wanderings. The appropriateness of picking plants was discussed: “If you can count more than 100 of something it is ok to pick one, but do not pick things that are not as plentiful,” and when participants did pick something, “do not rip plants out by the roots, it hurts them like it would hurt to pull your hair out.” Any animals found during exploration were noticed with care and protected from harm. When environmental damage was evident, the potential cause and remedy were discussed.

Many CFIN outings involved families in stewardship actions that were designed to teach skills such as tree planting, planting native plants, and removing invasive weeds. These activities had the elements of apprenticeships, as they involved the club leader or an invited expert who explained the importance of the project and how to perform it effectively and then guided families in their work. In most families, parents as well as children were learning new skills, and this work appeared to increase their connection to the places where they labored: “Planting trees was a totally new experience for the kids as well as us and it was hard work. We enjoyed working together on this positive project. I took a few before and after pictures and think we will come back each year and follow the tree’s growth.”

These activities were intended to help families feel empowered rather than helpless when they learned about environmental problems. For example, after a visit to a nature center where a guide explained the life cycle of monarch butterflies and monarch caterpillars’ dependence on milkweed plants, families engaged in planting milkweed and other native plants. A parent explained that this changed what she and her child noticed in their surroundings at the same time as it showed them the positive role that they could play:

To have an awareness now of native versus invasive plants and animals is also amazing, because before we started doing the hikes with you I had no idea about that stuff. Now I am so aware of it. When I walk around and I see the plants that we have and the ones the neighbours have, so many are not native and we are going to set up a garden that is good for butterflies soon. The kids are really excited about the milkweed and the monarch butterfly and helping them.

Another parent noted her family’s growing sense of confidence in their action capabilities: “The being outside part is important and good, but we are also really appreciating the knowledge that we are gaining. But at the same time we are appreciating a bit more that we don’t have to be experts to get our hands dirty and

do something – we are feeling braver.” On one outing, families shared what they had learned by gathering at a member’s house to prepare a butterfly garden together.

Several families talked about integrating what they learned into their household life: “Participating in CFIN has stimulated us to do more around our own home, to take care of our yard and the piece of land that we can care for. Especially since we went to the native planting event at the lake we are really aware of this. Instead of just picking plants that are pretty we want to think about what is local, and what is beneficial for animals and the planet.” Another parent noted: “In the spring we were talking about trying to get some weeds up and our daughter is so aware of stuff now she said, ‘We can’t use pesticides because of the earth worms in the ground.’” A mother shared that she and her husband deliberately tried to make connections between the beautiful woods and water bodies that they visited and daily actions: “Then we can tell them this is why we turn our faucets off when we are brushing our teeth, this is why we recycle our mail once they can start to make that connection.”

Environmental Identity

CFIN strove to cultivate families’ environmental identity by offering opportunities for them to develop a personal history of engagement with nature and an emotional attachment to natural areas in their region. Parents’ remarks suggested that emotional attachments were forming through stewardship activities: “It was interesting to see how excited our daughter was to get involved in planting the native species. Then when we went to throw the seed bursts into the fields, she was going on and on about how people don’t notice how beautiful nature is and how much of a gift it is!” At the same time, emerging social environmental identities as members of the club appeared to be meaningful for many. Just as FNC parents overall identified a sense of community as a major effect of club participation, many CFIN parents believed that doing stewardship activities together contributed to their sense of community. A parent noted, “My son likes being a volunteer with the group, being outside and enjoying nature while helping the community.” Parents expressed this sense of belonging for themselves as well: “I appreciate belonging to a solid group of people with like interests regarding nature, people who are definitely interested in preserving and caring for nature.”

One parent connected an environmental identity as a sense of connection with nature to this social environmental identity with particular eloquence:

I feel like I am starting to notice how much we benefit from feeling part of something bigger. That this is our planet, this is our community, we coexist with all of these species. It teaches you a lot about life, about yourself, and about the life cycle. There are so many lessons you can teach the kids with nature. The more we are outside the more we realize this importance of taking care of the environment. You can learn so much from just being outside and seeing that we are coexisting and we all need to take care of each other. One thing I have really found is that I need that community connection and that environment connection. I need to feel like we are a part of something bigger.

Her statement showed that she understood CFIN’s linked goals of fostering greater connection with nature and with the Columbia community.

Conclusion

Since Tanner (1980) initiated the field of SLE research, generally consistent findings have emerged. People who express connection with and concern for nature and who act to protect it, across a broad range of actions, commonly have childhood experiences of play and exploration in nature, influential role models and books, and participation in nature-based or environmental organizations, and they often witness the destruction of a valued natural area. The salience of different experiences varies study to study, with the exception that time in nature in childhood is a consistent thread across almost all studies. These findings reflect what basic research in child development would predict.

Connecting with the natural world affords children opportunities to fulfill their intrinsic motivation to explore and master challenges, with abundant attractions for all senses. Given the centrality of experiences of autonomous agency for human vitality and well-being and a sense of competence and self-esteem (Bandura, 1997; Ryan & Deci, 2000), it is not surprising that play in nature leaves vivid memories and lasting effects. Research on joint attention, social modeling, and apprenticeships suggests how adults may influence children in lasting ways as they demonstrate appreciation and care for nature, encourage sympathy for other living things, and teach conservation skills. Together, personal engagement with nature and identification with other people who take action to care for nature, often through membership in organizations, contribute to the formation of an environmental identity. The results of SLE research are generally consistent across studies and consistent with child development theory.

FNCs are designed to embody results of SLE research in the form of a “triad” of childhood nature experiences: regular time in natural areas, role models, and participation in a nature-based organization. The research on FNCs summarized in this Chapter demonstrates yet another way in which this “triad” of early experiences influences environmental action. Nature club leaders almost universally reported that play in nature was important to them in childhood, and this experience was shared by most parents who participated in clubs or even expressed an interest in enrolling. The majority of leaders and parent members also had an adult who taught them appreciation for nature in childhood, and about half or more belonged to an organization with an environmental focus in their youth. This evaluation of FNCs also shows that people with these experiences in childhood and youth were more likely to feel a sense of connection with nature and engage in pro-environmental behaviors as adults. This chapter extends SLE research into a new area of environmental action: in this case, leading and joining FNCs.

Many environmental organizations bring children out in nature under the guidance of adult role models and engage in conservation activities, but few involve whole families. Park interpreters see families, but they typically see any individual family only once. FNCs are unique in encouraging parents to join with their children in nature, serve as role models of appreciation for what they find together, and feel comfortable in their skills to explore nature and demonstrate stewardship. This study suggests that nature clubs often attract people who have already had positive

experiences in nature in their own childhood; but once they are together, club leaders and parents build a foundation for the next generation to form its own connection with nature and know how to act to protect the natural world.

In the past, SLE studies identified childhood play in nature as a solitary activity or something enjoyed with a few playmates. In FNCs, it becomes a collective social experience: potentially a foundation for a social environmental identity (Kempton & Holland, 2003) as well as an ecological identity (Thomashow, 1995). A new direction for SLE research in the future can be longitudinal studies to track the influence of FNC participation on children's developing environmental identities and behaviors. This Chapter also suggests that SLE research will be strengthened if it draws on basic theory and findings in the psychology of child development to understand why recurring experiences that it documents have a formative influence.

Cross-References

- ▶ [Conceptualizing Parent\(ing\) Childhoodnature Through Significant Life Experience](#)

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