

# **EXPLORING AGE COHORT DIFFERENCES IN CHILDHOOD NATURE EXPERIENCES AND CONNECTION TO NATURE**

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## **Abstract**

Concern has been raised that children are spending less time outdoors and consequently are not developing a positive relationship with the natural world. More information is needed whether these perceptions are indeed accurate and what the implications may be. This study examined differences in childhood nature play and recreational experiences among three age cohorts (18-24, 25-34, and 35 and over) using a sample of undergraduate students from a large Midwestern university. The youngest cohort reported the lowest levels of free play experiences but more visits to zoos and aquariums, canoeing/kayaking, and swimming in pools. Differences in nature connectedness by cohort were less clear. Almost all outdoor activities were significantly related to nature connectedness. Parks and other programs should provide a variety of direct experiences for children and engage older generations as mentors. Additional research is needed to understand changes in outdoor participation across the life span and over time.

## **1.0 Introduction**

Past research has indicated that experience outdoors during childhood is a factor in forming a connection to nature that carries into adulthood (Chawla & Derr, 2012; Ewert, Place, & Sibthorp, 2005; Wells & Lekies, 2006). In recent years, educators and others have proposed that children's relationship with nature is changing, and that their experiences in the outdoors are less frequent and less rich than that of their parents or grandparents (Clements, 2004; Skår & Krough, 2009). If these perceptions are consistent with reality, we may be faced with present and future generations that have low connections to nature and little understanding of how their actions contribute to the health or demise of the planet.

The purpose of this study is to gain an understanding of how childhood nature experiences and adult feelings of connectedness to nature may differ by age cohort. Additionally, the study examined the relationship between outdoor experiences and connection to nature. Cohorts are important for describing how groups of individuals with shared historical, social, and cultural contexts are affected by a variety of experiences throughout the life course (Riegel, 1972).

Each cohort has its own distinct life experiences that foster patterns that are typical among the group. Although there have been few studies investigating environmental attitudes or

experiences among age cohorts, evidence suggests increases in adult-directed, structured activities and widespread use of electronic media has decreased time outside for younger generations (Clements, 2004; Skår & Krough, 2009).

## **2.0 Methods**

Data for this study were obtained from a larger study of childhood experiences in nature and adult environmentalism conducted by the lead author in 2012. An on-line survey was sent to a random sample of 10,000 students out of a total of approximately 43,000 students who had registered for courses during the previous academic term on the university's main campus. Participants were asked to answer questions about the extent of their outdoor free play and recreational behavior while growing up, as well as their feelings of connection to nature. Nine free play activities reflecting urban play, nature play, and yard play (Bixler, Floyd, & Hammitt, 2002), and 12 consumptive, appreciative and other outdoor recreational activities were included, such as playing in mud or dirt, playing in the woods, climbing trees, fishing, canoeing/kayaking, and visiting zoos and aquariums.

Responses were on a 4-point scale ranging from never to often. Responses of 1 (never), 2 (rarely), and 3 (sometimes) were grouped together to indicate lower frequency of participation. Responses of 4 (often) indicated a higher frequency of participation. Connection to nature consisted of 5 items measured with a 5-point Likert scale ranging from strongly disagree to strongly agree (Davis, Green, & Reed, 2009).

Approximately 1200 students responded to the survey and those that provided information on age were included in the sample ( $N=1135$ ). Ages of participants ranged from 18 to 57 with an average age of 23.41. The three cohorts were 18-24 ( $N=927$ ; born 1988-1994), 25-34 ( $N=121$ ; born 1978-1987), and 35 and over ( $N=87$ ; born 1977 or earlier).

## **3.0 Results**

Data were analyzed using SPSS 20.0. Results are presented for each of the analyses of this study.

### **3.1 Participation in outdoor free play and recreational activities**

The respondents indicated they were engaged in a variety of free play activities, with playing in the yard or a friend's yard as having the highest rates of participation (77% and 62% indicating often, respectively), followed by playing in the woods (44%), climbing trees (37%), playing in a pond, river, or lake (37%), playing in the mud or dirt (35%), playing in an alley or on a street (26%), and playing in a farm field or pasture (20%). Less than 10% reported they often played in empty lots. For outdoor recreational activities, the highest participation rates were for bicycling (64%) and swimming in a pool (61%).

Approximately one-quarter to one-third reported they often participated in swimming in natural bodies of water, visiting zoos and aquariums, camping, and gardening. Less frequent were visiting undeveloped natural areas in and out of state, hiking/backpacking, fishing, and canoeing/kayaking. Only 5% reported they often went hunting. See Tables 1 and 2 for more details.

Table 1  
Level of Childhood Participation in Free Play Activities

Activity	Lower Participation %	Higher Participation %
Playing in My Yard	23	77
Playing in Friend's Yard	38	62
Playing in the Woods	56	44
Climbing Trees	63	37
Playing around a Pond, Lake, or River	63	37
Playing in the Mud or Dirt	65	35
Playing in an Alley or on a Street	74	26
Playing in a Farm Field or Pasture	80	20
Playing in an Empty Lot	91	9

*Note.* A lower level of participation was indicated by the responses of never, rarely, and sometimes to the question "How often did you play outside while growing up?" A higher level of participation was indicated by the response of often.

Table 2  
Level of Childhood Participation in Recreational Activities

Activity	Lower Participation %	Higher Participation %
Bicycling	36	64
Swimming in a Pool	39	61
Swimming in a Lake, River, Pond, or Ocean	65	35
Visiting Zoos or Aquariums	71	29
Camping	74	26
Gardening	76	24
Visiting Undeveloped Natural Areas in State	78	22
Hiking/Backpacking	81	19
Fishing	83	17
Canoeing/Kayaking	90	10
Visiting Undeveloped Natural Areas out of State	91	9
Hunting	95	5

*Note.* A lower level of participation was indicated by the responses of never, rarely, and sometimes to the question "How often did you participate in the following recreational activities while growing up?" A higher level of participation was indicated by the response of often.

Chi-Square analyses indicated age cohort differences in several activities: playing in ponds, rivers and lakes; playing in mud or dirt; climbing trees; playing in farm fields; and fishing, with significant differences ( $p < .05$ ) between the youngest and the middle cohort, and between the youngest and the oldest cohort. Higher participation levels were found for the older cohorts. The youngest cohort, however, reported visiting zoos and aquariums, canoeing/kayaking, and swimming in pools at a higher rate than the oldest cohort. Additionally, the middle cohort

reported visiting zoos and aquariums and canoeing/kayaking at a higher rate than the oldest cohort. Most differences remained significant after the Bonferroni correction was applied to minimize the chances of a Type I error due to multiple tests ( $p < .016$ ). See Table 3.

Table 3

Levels of Participation in Free Play and Recreational Activities by Age Cohort (Percent Indicating Higher Levels of Participation)

Activity	Age 18-24	Age 25-34	Age 35 and Over
Climbing trees	35	47 <sup>a</sup>	47 <sup>b</sup>
Playing around a pond, lake, or river	35	48 <sup>a</sup>	51 <sup>b</sup>
Playing in mud	33	48 <sup>a</sup>	44 <sup>b</sup>
Playing in a farm field	19	24	31 <sup>b</sup>
Swimming in a pool	63	58	49 <sup>b</sup>
Visiting zoos and aquariums	30	29	16 <sup>b,c</sup>
Fishing	15	21	24 <sup>b</sup>
Canoeing/kayaking	10	11	2 <sup>b,c</sup>

*Note.* <sup>a</sup>Difference between ages 18-24 and 25-34; <sup>b</sup>difference between ages 18-24 and 35 and over; <sup>c</sup> difference between ages 25-34 and 35 and over  
 $p < .05$ ; when Bonferroni correction is applied ( $p < .016$ ), all but fishing and differences for zoos/aquariums and canoeing/kayaking between ages 25-34 and 35 remain significant.

### 3.2 Connection to nature

The respondents reported a moderately high feeling of connection to nature, indicated by a mean of 19.21 ( $SD = 3.93$ ) on a scale ranging from 5 to 25. The oldest cohort had the highest connection to nature scores, followed by the middle cohort, and then the youngest. One-way analysis of variance indicated a significant difference among the cohorts,  $F(2,1118) = 3.72$ ,  $p < .05$ . However, post-hoc analyses did not indicate significant differences among the groups; differences between the youngest and oldest cohorts approached significant at  $p < .07$ . See Table 4.

Table 4

Connection to Nature

Age Cohort	Mean Score	Standard Deviation	<i>F</i>
18-24	19.06	3.88	3.72*
25-34	19.76	3.63	
35 and over	20.03	4.64	

Note: Scores ranged from 5 to 25, with higher scores indicating a stronger connection to nature.  
 \* $p < .05$ ; post-hoc analyses did not indicate significant differences among the groups; differences between the youngest and oldest age cohort approached significance at  $p < .07$ .

### 3.3 Experiences, nature connection, and age cohort

To determine if there was a relationship between the level of participation in outdoor free play and recreational experiences with connection to nature, General Linear Model Univariate analyses were conducted. Results indicated that all free play and recreational experiences were significantly ( $p < .05$ ) related to connection to nature except for playing in alleys and swimming

in pools. The models were rerun with the interaction term activity x age. Age was not a moderating factor in any of the relationships with the exception of visiting zoos and aquariums,  $F(2,1119) = 5.54, p < .01$ .

#### 4.0 Discussion and conclusion

The results support the current thinking that children's nature experiences have changed over time (Clements, 2004; Skår & Krough, 2009), with younger age cohorts experiencing less time outdoors, particularly in free play activities such as climbing trees and playing around ponds, rivers, and lakes. Cohort differences in connection to nature are less clear, however. As with previous research, the results indicate a relationship between hands-on, direct experiences and connection to nature (Chawla & Derr, 2012; Ewert, Place, & Sibthorp, 2005; Wells & Lekies, 2006). Additionally, other types of experiences, namely visiting zoos and aquariums, can be important in fostering nature connections (Bruni, Fraser, & Schultz, 2008; Clayton, Fraser, & Burgess, 2011). More understanding is needed how these nature-based attractions help children experience aspects of the natural world and what the long-term implications are. Park districts, outdoor education programs, and other organizations can play an important role providing traditional opportunities to engage children with nature through free play and other direct experiences, as well as through newer types of activities that may be beneficial. It is especially important to consider the ways that parents, grandparents, and others from older generations with more direct nature experiences can serve as mentors to younger people.

This study was limited by the nature of the sample of university students which included a small proportion of individuals beyond the traditional college student age. It is unknown to what extent these individuals are representative of the population older than 25 and if the results would be similar with a broader sample of adults. Additional research is needed with a representative sample of adults, and with children and adolescents as they are growing up, to learn more about changes in outdoor participation across the life span and over time. Furthermore, a greater understanding is needed about the ways that gender, rural or urban residence, family influences, and other personal characteristics can shape nature experiences.

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