Effect of Childhood Experiences with Nature, Including Planting Trees, on Adult Understanding of Trees in Cities

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Abstract
Adults in major metropolitan areas across the United States of America were surveyed regarding their childhood experiences with nature and their current attitudes toward trees. Almost all respondents expressed positive attitudes toward trees in cities, regardless of childhood exposure to plants or background. A majority strongly agreed, for example, that trees in cities help reduce noise. Their responses were influenced by childhood experiences. The childhood influences of being raised near woods, spending time in places with trees, planting plants, and caring for plants all had positive influences on the adult opinion of whether trees have spiritual meaning. For example, those who often cared for plants as children were more likely to report, as adults, that trees have spiritual meaning than were those who never cared for plants as children. All of those same childhood influences, except being raised near woods, also had positive influences on the adult action of taking gardening classes. For example, adults who spent time in outdoor places with trees as children were more likely to have taken a gardening class in the past year than adults who did not spend time with trees as children.

INTRODUCTION

More than 80% of the population of the United States of America (USA) live in urban areas where chances to interact with nature are greatly reduced (U.S. Census Bureau, 2000). Europe and Latin America are also highly urbanized, at 75% (United Nations 2001). Worldwide, almost 50% of the population lives in urban areas, and almost all projected future growth will be in urban areas, causing this percentage to increase rapidly in the coming decades (United Nations 2001). As these areas become more urbanized, more trees will be removed to make room for new development. Will children raised in such stark surroundings fail to develop strong, positive responses to nature because of fewer opportunities to interact with nature?

Nature education and outdoor experiences have been shown to help children gain a respect for living things, to stimulate their curiosity, and to provide them with meaningful life experiences (Bullock 1994; Cooper Marcus 1992). Other studies have shown that instruction in environmental education promotes positive attitudes toward the environment in elementary school children, and these positive attitudes are retained during childhood (Jaus 1984; Skelly and Zajicek 1998). Will such early interventions with programmed experiences with plants carry over to positive adult responses to nature?

Numerous factors, including parental attitudes, the surroundings where they are raised, and participation in gardening or tree planting programs, contribute to the quality and quantity of children’s experiences with nature. Are children that have positive or extensive experiences with nature more likely to understand and appreciate the values of the urban forest when they are adults?

OBJECTIVES

The goal of this project was to examine the relationship between childhood contact with nature and adult attitudes toward the urban forest among residents of large metropolitan areas in the United States. The objectives were to: 1) assess the public's understanding of trees and their benefits in urban areas, 2) examine the relationship between childhood contact with nature and adult attitudes, and 3) determine if there are differences in these relationships
based on demographic factors, such as ethnic backgrounds. This paper reports the results of part of this project, focusing on the relationships between four childhood activities and one adult attitude and one adult action.

METHODS

A 20-minute telephone survey, prepared by Caroline Pearson-Mims, John Tarnai, Don Dillman, and the author, was administered by the Social and Economic Sciences Research Center at Washington State University. Financial support was provided in part by the United States Department of Agriculture Forest Service Urban and Community Forestry Program on the recommendation of the National Urban and Community Forestry Advisory Council.

Background information about the participants, including gender, age, and income, was gathered. Participants were surveyed regarding their current attitudes towards urban trees and about their participation in various activities, such as recycling and volunteer activities. Participants also were surveyed regarding their childhood memories of experiences with nature. For example, they were asked how often they spent time bird watching before age eleven.

The population was respondents, 18 years old and older, in households with telephones, in the 112 most-populated metropolitan areas in the continental USA. A sample combining randomly generated and directory listed telephone numbers was purchased from Genesys Sampling Systems of Fort Washington, PA, USA. Respondents in each household were selected based on who had the most recent birthday. The overall response rate was 51.8%, which is high for residents of large metropolitan areas (Groves and Couper 1998). The final sample consisted of 2004 completed interviews. The sampling error was +/- 2.2% for the binomial variable questions.

Analyses were conducted to examine whether responses to the questions "Do trees have a particular personal, symbolic, or spiritual meaning to you?" ("yes" or "no") and "During the past year, have you participated in a class or program about gardening?" ("yes" or "no") varied based on childhood experiences. Chi-square statistics from two-way frequency tables were used.

The raw data and more information on this project and its results are available at www.wsu.edu/~lohr/hih/nucfac.

RESULTS AND DISCUSSION

Respondents ranged from 18 to 90 years old, with a mean age of 42. Forty-four percent were male; 56% were female. Less than half of the population had completed a four-year college degree (40.5%). Most were White or of European background (75.7%), 9.1% were Black or African American, 5.3% were Hispanic or Latino, and the remaining 9.9% were Asian American, Native American, Multi-ethnic, or Other.

Respondents expressed very positive attitudes toward trees in urban areas. For example, 52.5% of the respondents strongly agreed that "Trees should be used in cities because they reduce noise," and 75% strongly disagreed that "Trees should NOT be planted in cities, because they cost the city too much." Nearly all respondents (90.6%) strongly agreed that "Humans have a responsibility to protect nature and the environment."

Relationships between Adult Attitudes and Childhood Experiences

To examine whether childhood experiences with nature could impact adult values towards trees, we examined whether people with positive childhood experiences with plants were more likely to report positive responses on two questions: "Do trees have a particular personal, symbolic, or spiritual meaning to you?" (overall, 59% answered "yes") and "During the past year, have you participated in a class or program about gardening?" (overall, 10% said "yes"). The influence of childhood experiences with nature on people's responses to these two questions is reported below.

1. Childhood Experiences: Home Surroundings. Respondents were asked questions about what surrounded their childhood homes. Of those who said that their childhood home was
“next to woods or forest,” 63% also said that trees had “a particular personal, symbolic or spiritual meaning” to them (Table 1). Significantly fewer (55%) of those who lived in homes that were not next to woods or forest felt that trees had such value. This showed that childhood surroundings could influence adult attitudes.

Being raised in a home next to woods or forest did not affect the adult behavior of participating “in a class or program about gardening” in the last year (Table 1). Of the respondents who lived in homes near woods during childhood, 11% reported taking a gardening class in the last year, while 10% of those whose childhood home was not near woods reported participating in a gardening program in the last year. Other results reported from this study also showed that this type of passive childhood interaction with nature may have a positive influence on adult attitudes and not on some adult actions (Lohr and Pearson-Mims 2002).

2. Childhood Experiences: Being in Places with Trees. Many of us assume that childhood experiences in nature positively affect adults' attitudes toward plants. We looked at this relationship by asking people if they had spent time in outdoor places with trees or plants very often as children. As expected, the relationship was positive (Table 1). Of the adults who said that, before age 11, they had very often spent “time in places with trees or plants,” 61% also said that trees had “personal, symbolic, or spiritual meaning,” while only 47% of those who reported not being in places with trees very often felt that trees had such value. These results are consistent with previous studies asking adult environmentalists about the experiences that contributed to their concerns for the environment: those adults overwhelmingly reported that childhood experiences outdoors were very important (Palmer 1993; Tanner 1980). These previous studies did not ask about the early experiences of non-environmentalists, so whether the experiences of environmentalists were different from the experiences of other adults was not determined. The results of this study, which was not restricted to environmentalists, confirm that early experiences with nature do vary among the general urban population and do influence their adult values, as well.

Spending time outdoors with trees and plants as a child also was associated with an increased likelihood of taking gardening classes as an adult (Table 1). Of the adults who reported being in places with trees very often as a child, 11% reported taking a gardening class in the last year, while only 6% of those who did not do this very often during childhood reported taking a gardening class. These responses demonstrated the potential of childhood nature experiences to influence adult attitudes and actions positively.

3. Childhood Experiences: Planting or Caring for Plants. To examine whether adult attitudes or actions might be affected by actively working with plants during childhood, we asked adults how often they planted trees, seeds, or plants as children. Increased frequency of such childhood activities had a positive influence on adults’ feelings about trees (Table 1). For example, 71% of adults who often planted trees, seeds, or plants as a child felt that trees had spiritual meaning, while only 45% of those who rarely did so felt this way about trees. Planting trees, seeds, or plants during childhood also affected adult participation in gardening classes.

Organizers of children's tree planting programs believe that children who plant trees develop a sense of ownership for the trees they have planted and have a strong incentive to maintain the plants and assure their survival (Lewis 1996). Sponsors of such programs hope that these children will have a "sense of kinship and respect for the natural world" when they are adults, as well (Lewis 1996). Our results strongly support this belief.

Taking care of indoor or outdoor plants as a child also was associated with the likelihood of feeling that trees have spiritual value and of taking a gardening class as an adult (Table 1). As predicted, people who often cared for plants as children were more likely to report that trees had spiritual meaning and more likely to take a gardening class than were people who cared for plants less often.

Responses to these questions about stewardship of plants showed that active involvement with plants did have a strong influence. This strong influence of active
participation with plants was also seen in response to other questions in the survey (Lohr and Pearson-Mims 2002).

CONCLUSIONS
Childhood experiences with nature, such as living near woods and caring for plants, had a positive influence on adults’ perceptions of the spiritual values of trees and on their likelihood of taking a gardening class as an adult. Understanding this influence is particularly important, given that, in the future, more people will be raised in urban areas where chances to interact with nature are few. These results show that efforts to create opportunities to interact with plants, such as tree planting and gardening programs for children in surroundings devoid of nature, can be effective in fostering the positive values that come from living with plants. This information could allow us to tailor children's environmental and gardening activities more effectively to engender appreciation for nature in our adult citizens.

Literature Cited
Table 1. Percent of people answering "yes" to the questions "Do trees have a particular personal, symbolic, or spiritual meaning to you?" and "During the past year, have you participated in a class or program about gardening?" based on the frequency of selected childhood experiences with plants.

<table>
<thead>
<tr>
<th>Selected childhood experience</th>
<th>Frequency</th>
<th>Believe trees have spiritual value (%)</th>
<th>Took a gardening class or program (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Live next to woods or forest</td>
<td>No</td>
<td>55*</td>
<td>10**</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>63</td>
<td>11</td>
</tr>
<tr>
<td>Spend time around trees or plants</td>
<td>No</td>
<td>47*</td>
<td>6*</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>61</td>
<td>11</td>
</tr>
<tr>
<td>Plant trees, seeds, or plants</td>
<td>Never</td>
<td>45*</td>
<td>7*</td>
</tr>
<tr>
<td></td>
<td>Rarely</td>
<td>56</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Occasionally</td>
<td>58</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Often</td>
<td>71</td>
<td>15</td>
</tr>
<tr>
<td>Care for indoor or outdoor plants</td>
<td>Never</td>
<td>42*</td>
<td>7*</td>
</tr>
<tr>
<td></td>
<td>Rarely</td>
<td>53</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Occasionally</td>
<td>59</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Often</td>
<td>71</td>
<td>14</td>
</tr>
</tbody>
</table>

*For each selected childhood experience, numbers within the column are significantly different based on a chi-square statistic ($P=0.001$).
**Numbers within the column are not significantly different.