Do Gardens Make You Green?: Home Gardens, Identity, and Pro-Environmental Behavior Among Southeast Asian American UC Berkeley Students

Johnny Sanvichith

ABSTRACT

Pro-environmental behavior comprises actions that are intended to be beneficial to or relatively unharmful to the environment, and may be influenced by intersecting forms of ethnic identity and environmental identity. Ethnic identity is one’s perceived connection to a particular ethnic group(s), and environmental identity is one’s perceived connection to the natural world. There is no research on the relationship between these forms of identity. To examine this relationship I surveyed second-generation Southeast Asian American UC Berkeley students, eliciting information about their experiences with home gardens, their connection to ethnic identity and their environmental identity. The study objectives considered: 1) the overlap between environmental and ethnic identity, 2) the relationship between environmental identity, ethnic identity and pro-environmental behavior, and 3) home gardening influences on identity and pro-environmental behavior. I found statistically significant correlations between environmental identity and pro-environmental behavior, which was expected and supported in other studies. I also found significant correlations between environmental identity and ethnic identity, and increased pro-environmental behavior with home-gardening exposure. Home gardens are able to lay the foundation for an enhanced ethnic connection while providing exposure to green areas and promoting pro-environmental behavior.

KEYWORDS

environmental identity, ethnic identification, pro-environmental behavior, environmental attitudes
INTRODUCTION

Pro-environmental behavior is becoming more common and is correlated with environmental attitudes. Environmental problems are underpinned by an anthropocentric view of the earth, in which humans are seen as morally primary, and natural resources are taken for granted (Scott & Willits, 1994). However, a new ecological paradigm, based on the belief that humans can live more harmoniously with nature and achieve a balance between environmental protection and economic growth challenges this view (Scott & Willits, 1994). Pro-environmental behavior (PEB), a manifestation of this new paradigm, is defined as behavior that is intended to benefit the environment or harm it as little as possible (Steg & Vlek, 2009). Individuals with strong environmental attitudes, reflecting great concern for the environment, tend to exhibit pro-environmental behavior (Arbuthnot, 1977). According to Azjen’s theory of planned behavior, attitudes are influenced by identity, and intentions reflect social constructs, perceptions of behavior and attitudes toward behavior (Ajzen, 1991). These factors contribute to PEBs (Karp, 1977) and predict nearly 75% of PEB (Kaiser and Fuhrer, 1999). While identity may be the most influential factor in shaping attitudes and intentions (Hinds & Sparks, 2008), no research has considered how specific identities affect each other and effect pro-environmental behavior.

Individual identity is complex and composed of several intersecting forms of identity (Snyder & Cantor, 1998), such as ethnic and environmental identity interacting with one another. The more salient identities in an individual influence their attitudes, values, and decisions (Minow, 1997). Ethnic identity is influenced by one’s sense of belonging to and identification with an ethnic group, and the degree to which this affects one’s thinking, perceptions and decisions (Phinney, 1996). A high level of identification with an ethnicity mitigates psychological distress and cushions the psyche against psychological distress (Phinney, Kohatzu, Schulenberg, Maggs & Hurrelmann, 1997). However, psychologists have often focused on the social construction of specific identities and, as a result, overlooked the effects of interactions with non-human nature (e.g. national parks, trees, rivers) in shaping individual identity (Clayton, 2003). The concept of environmental identity focuses on peoples’ connections to the natural world,
and how this affects decisions and perceptions of one’s surroundings (Clayton, 2003). Psychologist Susan Clayton (2003) developed the environmental identity scale (EID) to measure the saliency of an individual’s connection to the environment. She concludes that a stronger environmental identity is correlated to increased levels of PEB (Clayton, 2003). Additionally, there is no literature analyzing the interactions between environmental identity and ethnic identity.

Southeast Asian Americans, a majority of which are refugees, have a relatively low level of ethnic identification (Besier & Hous, 2006), yet the experience of maintaining home gardens may allow them to preserve ethnic identity and increase environmental identity. Most first generation Southeast Asian Americans immigrated to the United States as refugees of war, arriving in the 1970s and 1980s (Rumbaut, 1995). As targets of discrimination, many eschewed ethnic identity, instead seeking to assimilate by abandoning their ethnic group to achieve full membership in the new society (Besier & Hous, 2006). Despite the growing literature on Asian American youth, few studies have looked at the experiences of refugee children and their transition between the “new” and “old” worlds (Thai, 1999; Hunt, Moloney, & Evans, 2010). Second-generation Southeast Asian American college students are unique due to their experience of being on the margin of two cultures, and the nature of their families’ departure from the “old” world (Thai, 1999). Many Southeast Asian Americans were born and raised in rural areas and practiced home gardening as part of their ethnic identity and traditions (Capistrano & Marten, 1986; Midmore, 1991). Home gardening in urban areas of the United States may allow many Southeast Asian immigrants to re-create a rural environmental experience in an urban setting (Winklerpris, 2002), and also increase their environmental identity (Hinds & Sparks, 2008). So, one would expect home gardening practices to affect Southeast Asians environmental and ethnic identity, yet no studies have addressed the relationship of home gardening to Southeast Asian American ethnic and environmental identity.

I seek to understand how ethnic identity and environmental identity shape pro-environmental practices. The objective of my study is to explore the relationship between southeast-Asian ethnic identity, environmental identity, and pro-environmental behavior through two research questions:
• What is the nature of relationship between Southeast Asian ethnic identification and environmental identity with pro-environmental behavior?
• What is the relationship between home gardening exposure and Southeast Asian ethnic identification, environmental identity and pro-environmental behavior?

**METHODS**

To understand the relationship between childhood home gardening, ethnic and environmental identity, and pro-environmental behavior, I surveyed 95 second-generation Southeast Asian American students at UC Berkeley surveys, 65% of which from a web-questionnaire and 35% from a paper survey. Vietnamese comprised the highest number of respondents (45.70%) and Hmong the lowest (2%), while 23.15% identified with two or more ethnicities (Table 1). I distributed the three-page survey to members of four Southeast Asian ethnic clubs–Southeast Asian Student Coalition (SASC), Laotian American Student Representatives (LASR), Vietnamese Student Association (VSA), Berkeley Cambodian Student Association (BCSA).

**Table 1: Ethnic composition of sampled students (n=95)**

<table>
<thead>
<tr>
<th>Ethnicity*</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vietnamese</td>
<td>45.70%</td>
</tr>
<tr>
<td>Laotian</td>
<td>18.10%</td>
</tr>
<tr>
<td>Chinese</td>
<td>18.10%</td>
</tr>
<tr>
<td>Khmer</td>
<td>9.50%</td>
</tr>
<tr>
<td>Other</td>
<td>5.70%</td>
</tr>
<tr>
<td>Hmong</td>
<td>2%</td>
</tr>
</tbody>
</table>

*23.15% of all sampled identified with more than one ethnicity

**Study measures**

To assess the relationship between childhood home gardening and ethnic and environmental identity, I examined four study measures: ethnic identification, environmental identity, pro-environmental behavior and exposure to home gardening. I modified Roberts et al. (1999) multi-group ethnic identity measure to determine respondents’ ethnic group identification. The test includes nine questions addressing
ethnic group membership, ethnic salience, and ethnic identity. I assessed the salience of environmental identity using a modified Environmental Identity Scale, asking ten questions to document respondents’ connection to the environment in terms of values and attitudes. (Clayton, 2003). I measured pro-environmental behavior by asking eleven questions concerning common pro-environmental practices such as recycling, buying organic foods, etc. Finally, I asked six questions to quantify levels of childhood home gardening exposure, focusing on various factors, such as the size of the home garden, the type of garden, number of plants, and whether they were grown for food. I classified students into two groups: exposure and no exposure to home gardening.

Data Analysis

I used regression analysis to answer my first research question: What degree does environmental and ethnic identity overlap? and my sub question: What is the relationship between identity and pro-environmental behavior? I converted each Likert-scale response to a number (e.g. one is strongly disagree and five is strongly agree), and independently summed responses to determine levels of ethnic identity, environmental identity and pro-environmental behavior. Each score was, in turn, converted into a percentage. I used R-commander and performed regression analysis between environmental identity and ethnic identity, environmental identity and pro-environmental behavior, and ethnic identity and pro-environmental behavior. Using Pearson’s correlation test between the variables, I determined whether the measures were statistically significant.

I performed ANOVAs to answer my second research question: What is the relationship between home gardening exposure and Southeast Asian ethnic identification, environmental identity and pro-environmental behavior? I categorized individuals into two groups: home gardening and no home gardening exposure. Then I used R-commander to perform the ANOVA analysis to determine if there were statistical differences between the home gardening groups and the three study variables: ethnic identification, environmental identity and pro-environmental behavior.
RESULTS

Study Measure Results

I found that ethnic identification in students was generally higher than environmental identity and pro-environmental behavior, and a skew in home gardening exposure characteristics. There was no statistically significant difference between the study measures, but ethnic identification among respondents had an overall higher average (76.1 +/- 14) than environmental identity (71.4 +/- 10.8) or pro-environmental behavior (75.2 +/- 10.2). I found that home gardening exposure occurred in 65% of all respondents (Table 3). Outdoor gardens and outdoor potted gardens were the most common (34.5%), and food was grown in most gardens (97%) (Table 3; Table 4).

Table 2. Average, standard deviation and variance in three study measures.

<table>
<thead>
<tr>
<th></th>
<th>Total Possible</th>
<th>Average</th>
<th>SD</th>
<th>Average (%)</th>
<th>SD (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethnic Identification</td>
<td>50</td>
<td>30.65</td>
<td>11.76</td>
<td>76.1</td>
<td>14</td>
</tr>
<tr>
<td>Environmental Identity</td>
<td>40</td>
<td>35.8</td>
<td>14.14</td>
<td>71.4</td>
<td>10.8</td>
</tr>
<tr>
<td>Pro-Environmental Behavior</td>
<td>45</td>
<td>33.38</td>
<td>11.4</td>
<td>75.2</td>
<td>10.2</td>
</tr>
</tbody>
</table>

Table 3. Home gardening exposure. (n=95)

<table>
<thead>
<tr>
<th>Childhood home gardens</th>
<th>Garden used for food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure No exposure</td>
<td>Yes  No</td>
</tr>
<tr>
<td>65% 35%</td>
<td>97% 3%</td>
</tr>
</tbody>
</table>

Table 4. Characteristics of home gardens. (n=55)

<table>
<thead>
<tr>
<th>Types of gardens</th>
<th>People</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outdoor potted</td>
<td>6</td>
<td>10.91</td>
</tr>
<tr>
<td>Outdoor garden</td>
<td>10</td>
<td>18.18</td>
</tr>
<tr>
<td>Indoor potted</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Outdoor potted, indoor potted</td>
<td>1</td>
<td>1.82</td>
</tr>
<tr>
<td>Outdoor potted, indoor potted, outdoor garden</td>
<td>18</td>
<td>32.73</td>
</tr>
<tr>
<td>Outdoor potted, outdoor garden</td>
<td>19</td>
<td>34.55</td>
</tr>
<tr>
<td>Outdoor garden, indoor potted</td>
<td>0</td>
<td>0.00</td>
</tr>
</tbody>
</table>
Regression Between Study Measures

In the regression analysis, I found strong correlation between each of the study measures. Environmental identity and ethnic identification were strongly correlated ($R^2 = 0.199$) (Figure 1). I also found that environmental identity and pro-environmental behavior were strongly correlated ($r^2 = 0.208$) (Figure 2). However, there was a weak correlation between ethnic identification and pro-environmental behavior ($r^2 = 0.086$). Finally, I found high correlations between environmental identity and pro-environmental behavior ($r$ (d.f.) = 0.465(95), $p = 6.52e-06$ according to the Pearson’s correlation test (Table 5).

Figure 1. Environmental identity and ethnic identification regression. $R^2 = 0.1999$

Figure 2. Environmental identity and pro-environmental behavior regression $R^2 = 0.2085$
Figure 3. Ethnic identification and pro-environmental behavior regression. $R^2 = 0.086$

Table 5. Pearson’s correlation test with each variable.

<table>
<thead>
<tr>
<th>Pearson correlation test</th>
<th>t</th>
<th>d.f.</th>
<th>r</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental identity and ethnic identity</td>
<td>4.81</td>
<td>95</td>
<td>0.465</td>
<td>0.00000652</td>
</tr>
<tr>
<td>Environmental identity and pro-environmental behavior</td>
<td>4.73</td>
<td>94</td>
<td>0.456</td>
<td>0.00000876</td>
</tr>
<tr>
<td>Ethnic identity and pro-environmental behavior</td>
<td>2.8</td>
<td>95</td>
<td>0.293</td>
<td>0.04744</td>
</tr>
</tbody>
</table>

ANOVA Between Study Measures and Homegardening Exposure

Using ANOVA, I found significant differences between home gardening exposure and pro-environmental behavior, but not in environmental and ethnic identity. I found pro-environmental behavior was significantly different between homegardening exposure ($F(b,w) = 0.047, p=0.047)$ (Table 6). However, the correlation between environmental and ethnic identity was not statistically significance with no general trends in the distribution. Ethnic identity had a higher average and was more concentrated when compared with home gardening exposure (Figure 4).
Table 6. ANOVA between homegardening exposure (n=55) and no home gardening exposure (n=35).

<table>
<thead>
<tr>
<th>Study Measures</th>
<th>HG average</th>
<th>SD</th>
<th>No-HG average</th>
<th>SD</th>
<th>f-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Identity</td>
<td>0.724</td>
<td>0.116</td>
<td>0.694</td>
<td>0.986</td>
<td>1.471</td>
<td>0.228</td>
</tr>
<tr>
<td>Ethnic Identity</td>
<td>0.763</td>
<td>0.123</td>
<td>0.751</td>
<td>0.159</td>
<td>0.1714</td>
<td>0.68</td>
</tr>
<tr>
<td>Pro-environmental Behavior</td>
<td>0.767</td>
<td>0.102</td>
<td>0.726</td>
<td>0.097</td>
<td>3.3</td>
<td>0.047</td>
</tr>
</tbody>
</table>

Figure 4. Boxplots comparing HG exposure (Yes/No) and different study measures.

**DISCUSSION**

My study explored the relationship of identity and behavior in Southeast Asian UC Berkeley students, and I found a significant relationship between identity and
behavior as well as a difference in those measures in terms of home gardening exposure. Relationships between ethnic and environmental identity have received little attention from researchers, and no research has been done on the effects of home garden exposure. My results addressed this gap by showing a significant correlation between environmental identity with both ethnic identity and pro-environmental behavior. I also found home gardening exposure leads to significantly increase pro-environmental behavior. Home gardens are able to lay the foundation for an enhanced ethnic connection while providing exposure to green areas and promoting pro-environmental behavior.

High levels of ethnic identification

I found a wide range and generally high levels of ethnic identity, suggesting that young adults have varied levels of ethnic group exploration (Phinney, 1989). Ethnic identity was generally higher when compared to the other measures (environmental identity, and pro-environmental behavior) and there was variation in the range of answers (0.44 as lowest to 1 as highest) (Figure 6). This could possibly be due to individuals being in different stages of their ethnic identity development. Phinney (1989; 1990) found differences in ethnic identity associated with age, noting that ethnic identity is formed through exposure to ethnic culture over time and has three stages: unexamined, moratorium (exploration), and achieved ethnic identity. Second-generation Vietnamese American Phuong Do explains her search for her ethnic identity, with moratorium (exploration) beginning in college (Do, 1999). This pattern is also seen in other studies, in which minorities begin to explore their ethnicities after high school (Thai, 1999; Thai, 2002). This suggests that wide distribution of ethnic identity may be due to individuals experiencing different levels of ethnic identity. Each person is different and has a different trajectory depending on social and educational influences.

Environmental identity and pro-environmental behavior

I found a correlation between environmental identity and pro-environmental behavior (R=0.55), possibly reflecting that environmental attitudes have a relationship to
pro-environmental behavior. Drawing on regression analysis, I can’t assume causation, but other studies suggest a causal relationship. The creator of the environmental identity scale, Susan Clayton, tested the scale on several dozen adults and concluded that it does correlate well with pro-environmental behavior (Clayton, 2003). Harland (1999) also determined that environmental attitudes correlated with environmental behavior. This suggests the EID scale examines how significant the environment is to an individual and may also be an estimate for pro-environmental behavior.

**Ethnic identity and environmental identity**

I found a strong correlation (R=0.55) between environmental identity and ethnic identity, reflecting the importance of the role of age in facilitating the development of both. College students are exposed to new ideas that may inform emerging self-identity, and they generally demonstrate high levels of pro-environmental attitudes and behavior (Milfont, Duckitt & Cameron, 2006). This age is also an essential time to learn about one’s ethnic background, and heritage (Phinney, 1990). Yet, while many authors have noted these two patterns, no research has examined the relationship between ethnic and environmental identity among college students. There is a possibility that environmental and ethnic identity influence each other’s formation. Perhaps if an individual began exploring their own ethnic identity, they could be more open to learning more about other topics and expand on their environmental identity. Perhaps influencing one identity will open new choices and broaden a person’s connection to their surroundings.

**Home gardening trends among participants**

Maintaining and caring for home gardens is common in Southeast Asian cultures and can help immigrants become better adjusted to a new environment and the hardships of acculturation (Rumbaunt & Ima, 1988). Since many Southeast Asian Americans come from rural backgrounds, they can stay connected to their past through home gardening. I found that over 75 percent of respondents had childhood experience with home gardens and 97 percent of the gardens were used to grow food. A major reason for this rate of
home garden exposure and food growing is that Southeast Asian immigrants are still fairly new to the United States. Most immigrated during the 1980’s as refugees of war, and most of family lines have been in the United States for only two generations (Rumbaut & Ima, 1988). I found that over 65 % of respondents’ families earned under $25,000 annually, highlighting the fact that many Southeast Asian immigrants are in lower income brackets. This is supported by Portes & Rumbaunt (1988), who determined that many Southeast Asians in San Diego are living in poverty and only a small percentage go to college. Given these findings, it seems likely that home gardens provide additional food security for a low-income group, a contention that is supported by and other studies have shown that gardens provide food security, income and nutrition (Cleveland & Soleri, 1999).

The effects of home gardening exposure on ethnic identity

I did not find a significant relationship between home gardening and ethnic identification, but there was a generally high level of association, suggesting home gardening does have some effect to ethnic identity. Theoretically, home gardening is able to increase ethnic identification because it symbolizes Southeast Asian ethnicity. Southeast Asian immigrants mainly come from rural areas, and many maintain their gardens using traditional methods and plants (Rumbaut, 1988). Possibly, exposure to home gardens can increase an individual’s ethnic identity. However, I found that childhood exposure to home gardening was not statistically significant. When comparing the boxplots of ethnic identity with different levels of home gardening exposure, home gardening exposure have a higher average score and a more concentrated distribution. (Figure 4). This suggests home gardening can influence ethnic identity. A study done by Winklerpris (2002) showed the influence home gardens have on communities. His study on home gardens in urban areas of Santarem, Brazil found that communities used gardens to link between urban and rural cultures, keeping a community together through these interactions. Some Southeast Asian ethnic groups create enclaves to be able to support one another, such as the Vietnamese immigrant community in Chicago called Uptown (Hein & Hutchison, 1999). Although there is little literature about home gardens and their
effect on Southeast Asian immigrants, home gardens may serve to integrate communities by preserving cultural traditions and identity.

**Home gardening and pro-environmental behavior**

I found that home garden exposure had a positive effect on pro-environmental behavior (Table 6), which may be accounted for in terms of the experience of the natural world that home gardens provide to children. While there is little research about the effects of home gardens on environmental behavior, Shepard and Speelman (1986) looked at the effects on environmental attitudes through the use of outdoor education. They found that exposure to the outdoors produced increased environmental concern and overall attitudes. In a study of the factors effecting children’s environmental attitudes Eagles and Demare (1999) found exposure to nature and interactions in the home, including reading about the environment, watching TV, and talking about it to be of primary importance. I believe home gardens can serve the same purpose, because they can represent limited green spaces often in urban areas.

**Limitations and Future Research**

My finding’s inference is limited in scope due my study design. I applied a snowball and convenience sample to gather most of my information, making my findings applicable only to group I sampled, rather than to all Southeast Asian s at UC Berkeley. Also, the measures I used did not have a strong weight in the respective university communities. The method I used to compare the various study measures is questionable because all of the tests are different. I could have developed my own scale for all the study measures to better compare the study measures rather than using a percentage system. In addition, my study could have benefited from interviews that would have added a qualitative aspect to the overall project. Other studies focusing on second-generation Southeast Asian Americans concentrated on interviews as their primary source of data, and used surveys secondarily (Thai, 2002; Robinson et al., 1999).
My research contributes to the limited literature on second-generation Southeast Asian college students and partially fills the gap in literature on the relationship between environmental and ethnic identity. There is a growing literature on second-generation Southeast Asian American, but it is still limited because of the generation is fairly young. I contribute to filling the gap in knowledge about childhood exposure to home gardening, and the relationship between environmental and ethnic identity. Environmental and ethnic identity have never been studied together, and my project can play a role in understanding how these two affect each other. Finally, my research creates a quantitative test that can examine multiple identities in other groups.

**Broader Implications**

Childhood home gardening exposure can allow a person to retain their ethnic values and promote environmental awareness. Creating an environmentally aware generation does not only include exposure to outdoors settings and environmental education courses, but possibly through indirect exposure to home gardens. It is important to introduce moral environmental ideas to children at a young age and home gardens allows a child to subtly understand the importance of the environment, so they can develop appreciation for the natural world. This research suggests the need in advocating for increased participation in home gardening and the creation of communal urban gardens to provide exposure to natural settings. Gardens provide food and accessibility to limited crops and serve aesthetic purposes. Home gardens are an important part of the Southeast Asian community by representing a traditional practice carried through many generations. Gardens lay the basis for enhanced ethnic group relationships, and provide the connection to the environment to increase pro-environmental behavior for present and future generations.

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REFERENCES


