CHAPTER III
METHODOLOGY

This chapter describes the combination of qualitative and quantitative methods used to explore the research questions. The sampling design, data collection procedures, instrument development, and pretesting are discussed. Development of qualitative coding, analysis procedures, and coding schemes used to handle the data are discussed.

Sampling Design

Twenty suburban couples who owned homes participated in the study. Ten of the couples were from Michigan and ten were from Georgia. Within each group, half the couples currently used a chemical lawn care service and half did not use a service.

Homeowners were recruited from established, middle and upper-middle class, residential subdivisions. "Established" was defined as a subdivision where the majority of homes range in age from 15-25 years. Subdivisions were also matched, as closely as possible, by the value of the homes. Valuations were based on the current average value of homes as estimated by local real estate salespeople. Estimated home values ranged from $100,000 to $380,000.
Subdivision directories were used as a source of names for recruiting participants by telephone. Names were chosen in a systematic random pattern. Homeowners were called in the late afternoon and evening. A brief message was left on any answering machines that were encountered. If no contact had been made after two calls no further attempts were made to contact that particular homeowner. A telephone screener was used. (Appendix A-I) Reminder calls were made to respondents the day before the scheduled interview.

Data Collection Procedures

Husbands and wives were personally interviewed in their homes. After giving informed consent (Appendix A-II) and being assured of the confidentiality of the interview, husbands and wives were interviewed separately by professional, experienced interviewers. An attempt was made to interview the couple during the same time frame but this was not possible for six of the twenty couples. If individuals were interviewed at separate times, the first respondent was asked to refrain from talking about the interview to the other spouse. Interview lengths ranged from one hour to three and a half hours. Interviews in Georgia were completed in June, 1994 and Michigan interviews were completed in July, 1994.

Interviews were taped recorded. The tape was turned off for interruptions such as the phone ringing. The interviewer took notes during the interview.

The sequence of the questions was the same for each interview. The first third of the interview consisted of the respondents describing their lawns, activities and experiences with the lawn, and memories of the lawn. The picture sort was presented next, generally about twenty minutes after the interview had
begun. The length of time that respondents took to complete the sort varied widely from person to person. The shortest sort took approximately 20 minutes; the longest sort took over an hour. After the picture sort the Environmental scale and Health scale were presented and the respondent was encouraged to talk about their environmental and health concerns.

This researcher was involved in all aspects of this study: developing and pretesting the questionnaire, analyzing field procedures used during pretesting, conducting interviews, transcribing tapes, entering data into the computer program, and actively participating in all discussion related to the research project. The second interviewer was briefed on the project before beginning the recruiting and interviewing.

**Instrument Development**

**Interview Guide**

A key strength of qualitative research is its ability to develop a deep, full understanding of a phenomenon. Through in-depth one-on-one interviews the investigator hoped to discover what the lawn meant to the respondents, what activities took place on the lawn, what kinds of maintenance practices were involved with the lawn, and the environmental and health concerns related to lawn care chemical use.

An interview guide was developed. (Appendix A-III) Questions 1, 2, 3, 4, 5, and 6 were based upon the review of literature and were designed to act as departure points for discussion.
As a stimulus to discussion participants were asked to respond to short Likert scales: the Health Scale, Q. 9, and the Environmental scale, Q. 7. (Appendix A-III)

Existing Instruments

Health scale. The Health scale is comprised of four questions pertaining to the likelihood and seriousness of exposure to pesticides. This has been used in previous research as part of a North Central Regional Project in which the researcher participated (Rucker et al., 1988). The items were found to have good reliability and to correlate well with other variables. The goal of using these four items was to promote discussion about health issues related to using lawn care chemicals.

NEP scale. As environmental awareness began to emerge in the 60s and 70s, researchers in the field began looking at ways to measure overall public concern for environmental quality rather than focusing on specific environmental attitudes toward individual problems. The New Environmental Paradigm (NEP) scale was originated in 1978 by Dunlap and Van Liere who believed that a "new environmental paradigm" was emerging in society. The NEP beliefs are associated with anti-anthropocentric views which were challenging the older view of anthropocentric, antiecological order. Subsequent studies have used the NEP scale and are reviewed for information regarding the validity and reliability of the scale in Appendix G.

The decision to use the NEP scale as part of this study was based upon two factors: (a) it has been used extensively and appears to be a parsimonious
instrument for measuring shifts in environmental concern and (b) there have been several variations of the scale used. The purpose for using the scale was to provide a change of pace in the interview and a departure point for discussion about environmental issues. Encouraging individuals to talk about the statements would provide an opportunity to gain an in-depth understanding of how the concepts were defined and interpreted by the respondents.

The original NEP (12 questions) was modified for use in this study by the addition of three questions related to lawn care chemicals. The primary use of the modified scale was to stimulate discussion about environmental issues related to lawns.

Clothing/Protective Equipment Pictures

Visual stimuli are often used to enhance clothing research projects. Photographs, slides, video tapes, pen and ink sketches, and drawings (colored or black and white) have all been used. Few comparative studies have evaluated the effectiveness of different types of visual stimuli. When clothing is the element of interest in a study the stimulus (clothing), model, and setting are all important.

Combinations of clothing and equipment used as stimuli in this study were based upon the EPA's Worker Protection Standards, a brief survey of lawn care industry advertisements, and observations of people mowing their lawns. EPA recommended Personal Protective Equipment (PPE) for handling pesticides may include gloves, boots, coveralls, hoods, respirators, and protective eyewear, depending on the product. New rules allow safety glasses with sideshields and
browguards to be used as a substitute for safety glasses or faceshields (U.S. EPA, 1993).

The outfits represented an array of "protectiveness" ranging from minimal (tennis shoes, shorts, short sleeved shirt) to total (body covered from head to toe with various kinds of protective gear added). Twelve basic clothing combinations were designed. Within each combination various items of protective gear were added. (Appendix A-IV) The intent of this exercise was to explore respondents' reactions to various kinds of outfits and pieces of equipment that might be perceived of as "protective". The more extreme outfits would not be appropriate in most cases for either homeowners or lawn technicians to wear because of potential heat stress. The choice of clothing and protective equipment should be directed by the product label, the toxicity of the product, the method of application, and whether application is taking place outdoors or inside.

Sixty two clothing/equipment combinations were photographed. Color photographs were chosen as the stimuli in order to present a realistic representation of the clothing. Color was the only difference between some of the outfits.

A young, Caucasian male was chosen to pose for the pictures because the overwhelming majority of lawn care technicians are white males in their 20s and 30s. The best stimulus for this specific project was determined to be a full, head to toe frontal pose. While some studies have eliminated the head in their pictures in order to control for facial expressions, this was not possible in this study. Protective face and head gear are an important part of the total outfit.
The model posed with a hand push spreader, similar to what might be used in lawn chemical applications at home. A concentrated attempt was made to standardize the pose, body position, and facial expressions for each picture in order to keep the focus on the clothing and equipment, not on the attractiveness of the model. The model's training as a military cadet was a great help.

The outfits were professionally photographed in a studio against a neutral background using 35mm film. The changability of natural sunlight, wind, and other outdoor conditions were judged to be too difficult to control. The researcher was concerned that an outdoor background might influence perceptions of the outfits. During the pretesting, one respondent commented that she liked the neutral background because she could visualize the "technician" working on her own lawn. Each 4" x 6" photograph was laminated in order to protect the surface from fingerprints during the sorting task.

During pretesting, all 62 pictures were handed to the respondents in one deck. Respondents reported the size of the deck and the similarity of the outfits made sorting difficult and confusing. Further testing showed that dividing the single, large deck into three smaller decks made the task much more manageable.

The 62 pictures were randomly assigned to one of three color coded decks (red, yellow, blue). Within each deck, the pictures were ordered, based on random assignment. The ordering within the decks was the same for each interview. The decks were rotated for each respondent based on a predetermined scheme. Each respondent was given the decks, one at a time, and asked to sort them into piles. No further instructions were given. Respondents were
encouraged to talk about the pictures as they sorted them. At the end of each sort, respondents were asked "Why did you sort them in this way?" After answering, the respondents were asked to pick the outfit they would prefer a lawn care technician to wear. After the three decks had been sorted the respondents were asked which one outfit they would most prefer the lawn care technician wear on their lawn. A record was kept of the groups that were sorted for each deck. The intent of this exercise was to determine what outfit they would prefer a lawn care technician to wear on their lawn, what criteria they used as a basis for the sorting, and what meanings respondents attached to the various types of clothing and protective equipment.

The pile sorting task has been used extensively in field research (Weller & Romney, 1988). The outstanding strength of the pile sort task is that it can accommodate a large number of items. It is easy to administer and respondents do not mind sorting things into piles and talking about them. According to Romney and colleagues (1979) the results of pile sort data collection methods, using medium-size samples between 30 and 40, generally reach reliabilities of about .90.

Pretesting

The entire interview was pretested with three females and one male. Their responses were used in setting up the interviewer's checklist that accompanied each question. The only major change was the one previously noted regarding management of the picture sort.
Data Analysis

Data Processing Procedures

Data processing began with verbatim transcription of the audio tapes, using both a computer word processing program and a computer database program. Three transcribers were involved in interviewer transcription. The use of the computer facilitated the handling of the large amount of interview material and made the retrieval and organizing of the data easier and less time consuming.

Qualitative Analysis

The first task of qualitative analysis is descriptive (Patton, 1990). Qualitative analysis depends on presenting solid descriptive data in such a way that others reading the results can understand and draw their own interpretations. Analysis began with each individual case. Each interview was read and responses were treated as independent for that particular interview.

The author and a second coder independently read transcriptions, case by case, identifying the respondents' descriptions of their lawns, activities, and the environment. They were guided by the research questions. The author and two other independent coders read the transcripts searching to identify and classify common themes of meaning and environment.

The next step was cross-case analysis of the interview questions. The basic design of the study produced eight groups of respondents. Data were examined within and across the basic eight groups: state to state, service to nonservice group, and husband to wife.
The interview guide provided a descriptive analytical framework for analyzing responses. Responses were grouped by topics from the guide. The decision to report findings for all eight groups was made on a question by question basis. If analysis failed to reveal any meaningful commonalities or differences between any of the particular groups, that comparison was not reported.

**Check coding.** Check coding aids definitional clarity and is also a good reliability check (Miles & Huberman, 1994). It brought to the analysis a clearer vision of what the codes meant and which blocks of data best fit which code.

Reliability can be measured with the following formula:

\[
\text{Reliability} = \frac{\text{number of agreements}}{\text{total number of agreements} + \text{disagreements}}
\]

Based on this measure, coder reliability for this study was .95.

Coding was done on the transcript printouts. The codes were kept as simple as possible in order to facilitate this time consuming process. Coders worked independently of each other. Half the interviews was coded twice. Discrepancies in coding were discussed among the coders.

Three coders searched for patterns of lawn meaning that began to emerge from the data in two ways. First this was done by looking for indigenous concepts such as nature, beauty, property value, and green that the respondents expressed when they described their lawns. Second, this was done though
sensitizing concepts which the researchers brought to the data. These concepts usually have their origins in the research literature or particular issues that were identified at the beginning of the study. Sensitizing concepts relevant to this study were derived from the literature about environmental aesthetics, psychology, and the historical development of the lawn. Based upon both indigenous and sensitizing concepts, domains of meaning were derived from the responses of the participants.

A domain may be defined as an organized set of words, concepts, or sentences, all on the same level of contrast, that jointly refer to a single conceptual sphere (Weller & Romney, 1988). The cultural domain is simply the subject matter of interest, a set of related items.

Quantitative Analysis

The small sample size precluded the full scale use of any sophisticated quantitative analysis techniques. Descriptive statistics such as means and relative and cumulative frequencies were used to inspect appropriate data. Inspection of the frequency tables for the Health scale revealed how scores clustered for many of the variables. The income data was judged to meet the minimum criteria for running an ANOVA.

Factor analysis was used for the NEP scale. Based upon the qualitative inspection of the data, all the interviews were treated as being equal and separate. The 40 interviews were considered an adequate number necessary to meet the minimum requirements for running a factor analysis. Previous research has shown that two to three factors have frequently been identified in the scale.
The most distinctive feature of factor analysis is its data reduction capability. A smaller number of clusters of variables can be obtained from a larger set of independent items. The eigenvalue is a measure of the relative importance of the function. The sum of the eigenvalues is a measure of the total variance existing in the discriminating variables. Total variance accounted for by the combination of all common factors is usually referred to as the communality of the variable. The loadings represent regression coefficients of factors to describe a given variable. Three factors were generated in this analysis.
CHAPTER IV
FINDINGS

This chapter reports the findings related to the investigation. The research questions for each of the four objectives are stated at the beginning of each section. The final section of the chapter reports the overall reaction of the respondents to the study. The summary and discussion of the findings are presented in Chapter V.

The data for this study are based upon responses from 20 suburban couples who owned homes in established, middle and upper-middle subdivisions. Ten of the couples were from Georgia and ten were from Michigan. Within each group, half the couples currently used a chemical lawn care service (svc) and half did not use a service (no svc). While the sample size was small, the responses from the indepth interviews provided rich, meaningful information.

Research Question for Objective 1

Are there differences and commonalities between Georgia and Michigan homeowners with regard to (a) demographic characteristics, (b) lawn maintenance activities, (c) family usage activities, and (d) perceived meaning of the lawn?
Demographic Characteristics

Education

Educational attainment was similar between husbands and wives, service and nonservice users, and the two states (Table 1). Overall the group of 40 respondents was highly educated. Thirty five percent had an advanced degree beyond four years of college. Thirty three percent had a four year college degree. Twenty percent had completed some college. Only 12% had ended their formal education upon completion of high school.

Table 1. Highest Educational Level Attained.

<table>
<thead>
<tr>
<th>Educational Level</th>
<th>Georgia No Service</th>
<th>Georgia Use Service</th>
<th>Michigan No Service</th>
<th>Michigan Use Service</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>High school only</td>
<td>0 1</td>
<td>0 1</td>
<td>2 1</td>
<td>0 0</td>
<td>5</td>
</tr>
<tr>
<td>Some college</td>
<td>1 0</td>
<td>2 1</td>
<td>0 2</td>
<td>1 1</td>
<td>8</td>
</tr>
<tr>
<td>Completed college</td>
<td>0 3</td>
<td>1 3</td>
<td>1 1</td>
<td>2 2</td>
<td>13</td>
</tr>
<tr>
<td>Advanced degree</td>
<td>4 1</td>
<td>2 0</td>
<td>2 1</td>
<td>2 2</td>
<td>14</td>
</tr>
<tr>
<td>Total</td>
<td>5 5</td>
<td>5 5</td>
<td>5 5</td>
<td>5 5</td>
<td>40</td>
</tr>
</tbody>
</table>

Age

The average age for the Georgia and Michigan service and nonservice groups are listed, by gender, in Table 2. Georgia respondents ranged in age from 45 years old to 66 years old. Michigan respondents ranged in age from 41 years old to 69 years old. Typically wives were, on the average, 2 to 4 years younger than their husbands.
Table 2. Average Age of Respondents in Years.

<table>
<thead>
<tr>
<th>Respondents</th>
<th>Georgia</th>
<th>Michigan</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No Service</td>
<td>Use Service</td>
</tr>
<tr>
<td>Husbands</td>
<td>54</td>
<td>60</td>
</tr>
<tr>
<td>Wives</td>
<td>52</td>
<td>56</td>
</tr>
</tbody>
</table>

Children

Two families in Georgia had children under 18 years of age living at home.

Four Michigan families had children under eighteen still living at home.

Income

Respondents were asked what their total family gross income was for 1993 (Table 3). One Georgia couple and two Michigan couples refused to answer.

Table 3. Comparison of States by Family Income Categories.

<table>
<thead>
<tr>
<th>Income Categories</th>
<th>Georgia (n = 9)</th>
<th>Michigan (n = 8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$25,001 to $50,000</td>
<td>12.0%</td>
<td>12.5%</td>
</tr>
<tr>
<td>$50,001 to $75,000</td>
<td>44.0%</td>
<td>12.5%</td>
</tr>
<tr>
<td>$75,001 to $100,000</td>
<td>22.0%</td>
<td>0</td>
</tr>
<tr>
<td>$100,001 to $125,000</td>
<td>22.0%</td>
<td>0</td>
</tr>
<tr>
<td>$125,001 to $150,000</td>
<td>0</td>
<td>12.5%</td>
</tr>
<tr>
<td>$150,001 to $175,000</td>
<td>0</td>
<td>37.5%</td>
</tr>
<tr>
<td>$175,001 to $200,000</td>
<td>0</td>
<td>25.0%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

ANOVA testing showed a significant difference in income between Georgia and Michigan families ($F = 6.79; P < .02$). In reality, the actual amount of disposable income is probably very similar between the two states. Costs of
living (such as property taxes) and salaries are generally lower in the South.

**Occupation and Retirement**

Table 4 shows the distribution of employment and retirement between the

groups. Twenty five percent of the Georgia sample were retired. Forty percent

of the Michigan sample were retired. Of the entire sample, 60% were employed

outside the home and 32.5% were retired. All of the employed respondents were

in managerial and professional positions. Several men owned their own

businesses. Only one woman, from Georgia, was employed parttime. She had

children at home. Three Michigan women were currently caring for their

children full time. Of these three, one was planning to go back to work within

the next year or two.

**Table 4. Distribution of Employment and Retirement.**

<table>
<thead>
<tr>
<th>Employment Status</th>
<th>Georgia</th>
<th>Michigan</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No Service</td>
<td>Use Service</td>
</tr>
<tr>
<td></td>
<td>H W</td>
<td>H W</td>
</tr>
<tr>
<td>Employed</td>
<td>4 4</td>
<td>3 4</td>
</tr>
<tr>
<td>Retired</td>
<td>1 1</td>
<td>2 1</td>
</tr>
<tr>
<td>Home With Children</td>
<td>0 0</td>
<td>0 0</td>
</tr>
<tr>
<td>Total</td>
<td>5 5</td>
<td>5 5</td>
</tr>
</tbody>
</table>

**Environmental Organizations**

Respondents were asked if they belonged to any environmental organizations.

Six people indicated they belonged to a group that they considered an
environmental organization. These included National Geographic Magazine, the National Rifle Association, Michigan United Conservation Club, Trout Unlimited, Ducks Unlimited, and the garden club. Several people indicated they had contributed to Greenpeace but were not sure if that meant they were a member.

Lawn Maintenance Activities

State Differences

Five Georgia homeowners describe their back yards as "natural". This was defined as being an area with no cultivated grass. Pinestraw and ivy are used as ground cover under the pine trees. All the Michigan homeowners had grass in their front and back yards. Two Michigan homeowners talked about the many trees in their backyards but they still maintained lawns in those areas. While no measurements were made of the actual square footage of the amount of grass that made up the lawns, it was evident by observations that there was less grass surrounding the Georgia homes.

The species of grasses that grow in the two regions of the country are different. Homeowners in Georgia were more likely to name the kinds of grass growing in the area: Bermuda, centipede, fescue, and St. Augustine. Two of the Michigan respondents did not know what species of grass they had growing in their lawn. These differences in grasses, as well as the clay soil, resulted in Georgia respondents talking about the necessity to aerate and reseed on a regular basis. No Michigan respondent considered reseeding a regular, yearly activity.

Georgia’s growing season is longer than Michigan’s season and as a result more time must be spent in lawn maintenance in the South. But only one
Georgia homeowner mentioned that his lawn was "an eleven month" job.

Three Georgia homeowners had installed in-ground sprinkling systems.

The in-ground systems operated on a timer. No Michigan respondent had an in-ground system. All the homeowners reported that they watered on an "as needed" basis.

Equipment

Respondents were asked what kind of lawn equipment they owned (Table 5).

The types of lawn equipment were very similar for homeowners in both states.

Everyone owned a power operated lawn mower.

Table 5. Lawn Equipment.

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Georgia (n = 10)</th>
<th>Michigan (n = 10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Operated Mowers</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Blowers</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Edgers</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>String Trimmers</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Fertilizer Spreaders</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

Other kinds of equipment that were mentioned included pesticide sprayers, a chipper, manual weed digger, spade, trimming shears, and clippers. Even the homeowners who no longer mowed and maintained their own lawns had a full complement of yard equipment.

Chemical Lawn Care Services

Every family had used a chemical lawn service at some time. Two main reasons were given for currently using a service: (a) it's easier to hire a service than do-it-yourself and (b) the lawn is in poor condition and the homeowner
believes the service will help improve it. Several respondents in the no service group stated that they planned to use a lawn service in the future. They looked upon the lawn care company as a back-up to their own efforts. If the homeowner was unable to maintain the lawn at an acceptable level, the lawn service would be called and used until the lawn was back to the acceptable level.

**Family Usage Activities**

Both husbands and wives were asked what kind of family activities take place on the lawn (Table 6). They were in total agreement in their answers. The majority of respondents said "None" and then elaborated on their response.

<table>
<thead>
<tr>
<th>Activities</th>
<th>Georgia (n = 10)</th>
<th>Michigan (n = 10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front lawn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Children play</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Back lawn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>Children play</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Dogs live there</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

Several mentioned that occasionally a neighborhood child would run across the grass. One Georgia family had a fenced backyard where their two dogs lived. Others with dogs mentioned that the lawn was used as a bathroom. Mowing and maintenance were reported by all respondents as the activity most frequently occurring on the front lawn. Two backyards, one in Georgia and one in Michigan had pools. The owners indicated that very little activity took place outside the immediate pool area.
Perceived Meaning of the Lawn

Respondents were asked to describe their lawns, how they felt about having a lawn, what it meant to them, why they did the things they do with their lawn, and if they enjoyed doing what they did. Six domains that were judged to encompass meaning emerged through reading and interpretation of the interview transcripts. Responses were very similar across gender, states, and service-nonservice groups. Table 7 reports the distribution of responses which emerged in relation to all of the domains.

The domains include aesthetic perceptions, psychological motives, neighborhood norms, reservations, economic concerns, and exercise.

Table 7. Domains of Meaning Related to the Lawn.

<table>
<thead>
<tr>
<th>Domains</th>
<th>Georgia No Service H W</th>
<th>Georgia Use Service H W</th>
<th>Michigan No Service H W</th>
<th>Michigan Use Service H W</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aesthetic:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beauty</td>
<td>3 4</td>
<td>5 5</td>
<td>4 5</td>
<td>5 4</td>
<td>35</td>
</tr>
<tr>
<td>Neatness</td>
<td>1 4</td>
<td>5 4</td>
<td>5 5</td>
<td>5 5</td>
<td>34</td>
</tr>
<tr>
<td>Utilitarian</td>
<td>3 1</td>
<td>4 3</td>
<td>2 4</td>
<td>1 3</td>
<td>21</td>
</tr>
<tr>
<td>Psychological:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self</td>
<td>5 5</td>
<td>4 4</td>
<td>3 5</td>
<td>4 3</td>
<td>33</td>
</tr>
<tr>
<td>Others</td>
<td>2 2</td>
<td>0 2</td>
<td>1 2</td>
<td>0 3</td>
<td>12</td>
</tr>
<tr>
<td>Nature</td>
<td>2 2</td>
<td>0 2</td>
<td>1 1</td>
<td>2 1</td>
<td>11</td>
</tr>
<tr>
<td>Neighborhood Norms</td>
<td>4 5</td>
<td>3 4</td>
<td>4 4</td>
<td>3 4</td>
<td>31</td>
</tr>
<tr>
<td>Reservations</td>
<td>4 3</td>
<td>1 2</td>
<td>3 3</td>
<td>3 2</td>
<td>21</td>
</tr>
<tr>
<td>Economic</td>
<td>2 1</td>
<td>1 3</td>
<td>2 2</td>
<td>3 2</td>
<td>16</td>
</tr>
<tr>
<td>Physical Activity</td>
<td>1 0</td>
<td>3 1</td>
<td>4 0</td>
<td>1 0</td>
<td>10</td>
</tr>
</tbody>
</table>
Individuals often described their lawns in several different ways. If this was the case, their comments were counted only once within the appropriate domain, regardless of how many times they made similar statements. Each domain is defined and illustrated with quotations from individual interviews.

Aesthetic Perceptions

Aesthetic perceptions are classified into three categories: beauty, neatness, and utilitarian.

Beauty. A personal, emotional reaction to the perceived beauty of the lawn was the most frequent aesthetic perception. This is reflected in statements that describe the appearance of the lawn in terms such as pretty, pleasant, lush, cool, or clean. The greenness of the grass was mentioned many times.

GA husband, svc: I like a rich, green lawn...lush lawn. Not high but grass is rather thick, a lot of blades to the square foot.

GA husband, no svc: Looking out on a nice looking yard...we like it, we love it...we get a tremendous amount of enjoyment out of seeing things look green, good.

GA wife, svc: It's a lush, rich green, a carpet under your bare feet...It's so pleasant to look out your window early in the morning and see such a beautiful color green greeting you. It's an attractive, peaceful color.

GA wife, no svc: I think it brings beauty and pleasantness to the site.

MI husband, svc: It's green, it's nice. When there's enough moisture, it's very pleasant.

MI husband, no svc: I like the color green...There's something about green that's just a nice calming effect.

MI wife, svc: We want to have a green, a nice green looking yard...we always make sure that our lawn is green.

MI wife, no svc: We have lush grass and it does very well, and I think it's beautiful.
Neatness. In the second aesthetic perception which emerged, emphasis is placed on neatness rather than beauty when evaluating the lawn. The lawn is described as being neat, manicured, tidy, trimmed, or edged.

GA husband, svc: There's something about a well cared for lawn; neat, trim...I just love it.

GA husband, no svc: I don't want it to look seedy...Grass high, uncut, thin, weedy.

GA wife, svc: Like it nice and clean, a newly vacuumed carpet. Don't want to see any footprints out there...neat, managed.

GA wife, no svc: We try to keep it tidy. Try to keep it neat.

MI husband, svc: Like it trimmed and cut. Free of weeds.

MI husband, no svc: Like to see it wonderfully maintained...trimmed up real nice and edged by the sidewalk.

MI wife, svc: Notice whether lawn is maintained, trimmed and neat. Don't like sloppy grass.

MI wife, no svc: Like it trimmed a certain height, no grass laying around, weed free, edged.

The importance of neatness was evident in the responses to the question about wildflowers. Respondents were asked what their reaction would be if their neighbor planted a front yard of wildflowers. Fifteen of the 40 individuals responded negatively; wildflowers would be unacceptable in the front yard. Three people said they would like something like that. The remaining 22 respondents qualified their answers. If the wildflowers were taken care of, kept up, maintained, organized, not messy, not weedy, not shaggy or hodge podge they might be acceptable.

Utilitarian. The third aesthetic category which emerged from the data describes how the lawn contributes to the appearance of the house. The
utilitarianism of the lawn is discussed in terms of what it does for the property.

GA husband, svc: Lawn is an extension of the house. Having an attractive house includes having an attractive lawn.

GA husband, no svc: Lawn gives a sense of presence to the house.

GA wife, svc: Backdrop. It's a frame for my flower gardens. It enhances my flowers and makes the appearance of my home look better against the lawn.

GA wife, no svc: (What if you didn’t keep your lawn up?) Ugly. Makes your house look awful.

MI husband, svc: Aesthetically is makes the residence look better. Compliments house and makes it look better.

MI husband, no svc: I want our house to look nice, so keep lawn nice.

MI wife, svc: Enhances the appearance of your property.

MI wife, no svc: Makes the house look nice.

Psychological Motives

Psychological motives are classified into three major categories; those directed toward the self, those directed toward others, and those related to nature.

Self. The largest number of responses reflected motives that are directed toward the self. The lawn is a source of personal pride, provides individuals with a sense of accomplishment, and is a reflection of one's self.

GA husband, svc: There's pride in what you see and how it's developed over the years.

GA husband, no svc: Personal pride...hate to be a sore thumb in neighborhood. It would embarrass me to have an ugly lawn.

GA wife, svc: Makes me feel good, gives me a good feeling because of the well kept beautiful look it provides.

GA wife, no svc: It gives a sense of accomplishment...when we drive up and we like what we see.
MI husband, svc: It's more a pride sort of thing...it's some reflection on your standards of appearance. Sort of an internal pressure.

MI husband, no svc: Sense of pride in it's appearance.

MI wife, svc: A personal pride in the things that you have or being responsible for the things that are in your care for one reason or another. By virtue of having purchased the house and the lawn you make a commitment to take care of it. Personal satisfaction, when it's all done and you step out from the house and it looks nice, you feel good just as if you dress the children up for church and you take a picture.

MI wife, no svc: Love it, taking this raggedy yard and you just mow it and it just looks so beautiful...creating. If I didn't care for it would bother my ego and image...letting your pride go down.

Others. In the second psychological category the meaning of the lawn is influenced by what one believes other people might think or do. Homeowners believe the lawn is one of the first thing others notice about one's home and it is important that these are positive perceptions.

GA husband, no svc: It is the first thing people would see of our home. So I think it is especially important.

GA wife, svc: Somewhere it is written you have to have a front lawn...Your neighbors don't like you if your yard doesn't look decent.

GA wife, no svc: Lends to the style of the neighborhood. We want our neighborhood, I want it, to look nice when people drive through it.

MI husband, no svc: People who care for lawn, take care of their house...take care of what you've got. All my friends take care of their things.

MI wife, svc: I like having a lawn. I think it can be something that invites people to want to come up to our home. If your lawn or area outside the home is untidy, it say that your home inside is untidy. I just think it can set the quality.

MI wife, no svc: We get a lot of compliments, people stop and say, "Oh, your yard is so pretty."

Nature. The third psychological category reflects the feelings that the lawn provides a means for keeping in touch with nature. Part of nature is being outdoors in the sunshine and being around growing things.
GA husband, no svc: I enjoy and respect growing things. I would certainly feel that way about the lawn.

Ga wife, svc: I feel more in tune with nature; like a part of it. You’re helping to add to the beautification of nature. You’re helping to contribute.

GA wife, no svc: Lawn very important...gives me the feeling that I’m in my own private park.

MI husband, svc: If I didn’t have a lawn, I would want access to somewhere green, like a park...couldn’t live in a concrete jungle...would get tired of a desert.

MI husband, no svc: I’m an old farmer, like to see things green and growing. An outdoors person.

MI wife, svc: Having a family and children, I think it’s important for them to get out and look for bugs, look at the birds, and see the rabbits go through the yard...think it’s important for them to have the space.

MI wife, no svc: Enjoy caring for the lawn because I enjoy being outside. Being in fresh air. Great outdoors.

Reservations

The reservations domain reflects the ambiguity people feel about their lawn and the reasons they give for having a lawn. It also encompasses the negative aspects of having a lawn such as the time, work, and cost of maintenance.

GA husband, svc: Lawn means a lot of work and cost but I get visual pleasure from it and enjoy hearing the odd comment about how nice it looks.

GA husband, no svc: I’d probably just as soon not have one. I would like it to be maintenance free. And a better use for the land rather than growing grass. We spend a lot of money on chemicals to try to keep that looking just green and without any weeds in it. You could have plants growing that would be far more lovely than the grass. I guess I think about European lawns where they use every piece of soil to grow something, either for beauty or food....Ultimately the lawn is probably the easiest way because you go over it with the mower. Other than the chemicals that you put on.

GA wife, no svc: I enjoyed cutting it when I did it. Can’t deal with it now.

GA wife, svc: I want it small and pretty. Since I have to mow it I don’t want it to be very big.
MI husband, svc: It's stupid to have a back lawn, never use it...why have it when you don't use it...I'm getting to the point where I don't want to be a slave to my lawn.

MI husband, no svc: I do 95% of the lawn work. I'd rather be playing golf. Somebody else's turf. Admire a lot of these homes sitting back with the beautiful font yard but if I had to keep it all up, No.

MI wife, svc: I like having flowers, I like having a garden...in my mind grass is kind of like laundry during the summer, it's kind of like a necessary evil.

MI wife, no svc: In some respects it has been a real pain...It's a joy because it's not a lot to upkeep and it's a pain because we have a real hard time growing grass in the back.

**Neighborhood Norms**

Neighborhood norms are the written and unwritten rules and expectations about the maintenance and appearance of one's lawn. They may include real or perceived sanctions which would be enforced if one's lawn is not maintained to the community standards.

GA husband, svc: Social pressure...continues us in good stead with our neighbors. Other lawns in our neighborhood tend to look very, very good...If didn't care for lawn, neighbors (would) probably complain. If the yard is junky, unkept, uncut...(you would) prejudge people if their lawn looks like that.

GA husband, no svc: I think that everyone who lives here and everywhere else should take care of their lawn and try to make it an asset. I feel very strongly that you have a responsibility, not only to your neighborhood, but to the area in general.

GA wife, svc: If we didn't care for our lawn it would be over run with weeds, bugs, the grass would die. Probably be an ugly eyesore...Probably get nasty little letters from our neighbors or phone calls.

GA wife, no svc: I don't want it to be an eyesore. Since it is a visible lawn in terms of the neighborhood, I want it to be appropriate in the neighborhood. Feel an obligation, because we live in a nice neighborhood, and everyone keeps up their lawns.

MI husband, svc: In this neighborhood, everyone takes care of their property. That's one of the reason why we moved here.
MI husband, no svc: I think it's important in a neighborhood like this to keep up with the Jones. I think people try to keep their property in pretty good stead...sometimes they might look around at their neighbors and see a guy really putting in some effort and they might do likewise and keep their lawn half way decent...sort of a domino effect there.

MI wife, svc: I think in a suburban setting where you've chosen to purchase a home in this kind of subdivision, that I think implicitly makes a commitment to keep it under control. I guess the lawn ought to fit the area in which you've chosen to live.

MI wife, no svc: I think people in this neighborhood expect people to keep up their property...I know people complain about those who do not kept their yards up and they send a little reminder in the spring clean-up time.

Economic

The economic domain has two components. Of primary importance to the homeowner is the real or perceived dollar value that the lawn adds to one's property. A secondary consideration is the monetary cost of caring for the lawn.

GA husband, svc: If I didn't care for it (my lawn), my property value would decline.

GA husband, no svc: From the appearance point of view...obviously it influences property values. If you were to be selling your home, that's something that would be necessary.

GA wife, svc: Makes the value of your home higher if your lawn looks good.

GA wife, no svc: I think he (husband) would like to do a lot of things differently (with lawn), but that's money, so if you can't do it, I think he sort of has a giving up attitude. He can see what it should be, not interesting to him as it is.

MI husband, svc: From a pure economic or financial point of view, I'd say that a good looking lawn, because it compliments the house, is just going to enhance the value if you're going to consider resale...I think the lawn helps curb appeal, if it's a good looking lawn. And that curb appeal sells houses.

MI husband, no svc: I'm a firm believer the lawn...adds to the property value of the house.

MI wife, svc: I'm sure that the value of the property would decline in terms of resale (If one didn't maintain lawn).
MI wife, no svc: I don't think anybody would put up with that (not maintaining one's lawn), because you have too much money invested in your property. And that's why you buy in a subdivision that has association rules.

**Physical Activity**

This domain reflects the belief that caring for the lawn provides a means for physical exercise.

GA husband, svc: It's good for me. After my heart attack, I need the exercise.

GA husband, no svc: I enjoy working on it...Gives me physical activity taking care on it.

GA wife, svc: (Why mow lawn?) Because it's good exercise and I need the exercise.

MI husband, svc: Good exercise. Enjoy being outside. Have a desk job. Need exercise and fresh air.

MI husband, no svc: Look upon the lawn as a source of recreation and exercise.

**Research Question for Objective 2**

Are there differences and commonalities between spouses with respect to (a) lawn maintenance activities and (b) perceived meaning of the lawn?

Responses to the demographic and perceived meaning questions illustrated that there were many more commonalities among the husbands and wives, service and nonservice groups, and states than differences. The decision was made to combine state and service groups for this research question.

**Lawn Maintenance Activities**

Husbands are primarily responsible for the care and maintenance related to the lawn. Basic activities include mowing, trimming, edging, raking, and fertilizing on a regular basis.
Mowing the Grass

Mowing is the most labor intensive job related to the lawn. Husbands have primary responsibility for mowing the lawn (Table 8). Depending upon the moisture situation and time of year, most lawns are mowed once a week.

In families with older children, the children were supposed to mow but if the children's activities prevented them from doing this chore a parent would do it.

Table 8. Responsibility for Lawn Mowing.

<table>
<thead>
<tr>
<th>Primary mower</th>
<th>Georgia (n = 10)</th>
<th>Michigan (n = 10)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Husband</td>
<td>8</td>
<td>5</td>
<td>13</td>
</tr>
<tr>
<td>Wife</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Children</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Hire Mowing Service</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>10</td>
<td>20</td>
</tr>
</tbody>
</table>

Several wives indicated they would mow the lawn if their husband was out of town or busy with work, but they did not consider it "their job." The respondents who hired a mowing service did it for (a) health reasons and (b) time considerations.

Using a Lawn Service

There was no definitive answer to "Who hires the service?" It appears that it is a joint family decision based upon either (a) the husband does not have time to care for the lawn or (b) the appearance of the lawn was judged to be inadequate. Those who use a chemical lawn service were usually aware when the service had treated the lawn. Several mentioned the posting sign as a signal that the service had been there. When asked what the service did the two most
common answers were "Spray" and "Put down fertilizer." Respondents seldom knew what chemicals were being used. They viewed the lawn service as the expert and their primary concern was that the lawn look like a service was being used. The homeowner expects to see a green, thick, weedfree lawn. The absence of dandelions in Michigan lawns was very important.

Perceived Meaning of the Lawn

Husbands and wives differed in only one respect when they talked about their lawns. When describing the size of their lawns, women were more likely to say "It's small" or "It's big." Men usually described the size of the lawn in terms of square feet or lot size. While the husband is the person primarily responsible for caring for the lawn, women had no problem in responding to the questions and talking about the lawn. Women take an active part in the care of the yard, they are primarily in charge of the flowers. While they seldom physically mow the lawn, they offer advice regarding the way it looks and how it should be cared for. Husbands and wives were very similar in their responses to the questions about the meaning of their lawn, why they felt the way they did about the lawn, and why they took care of the lawn in the ways that they did. Wives had no difficulty in talking about the meaning of the lawn and the activities associated with maintenance of the lawn.

Research Question for Objective 3

What kinds of environmental and health concerns do homeowners have regarding the use of chemicals on their lawns?
Environmental Concerns Related to Lawn Chemicals

The Environmental Scale (Appendix A-III) was used to stimulate discussion about environmental issues related to the lawn. Respondents were asked to rate a series of environmental statements. After they had completed the exercise they were asked, "What is your reaction to a series of statements like this?"

Environmental Scale Reactions

Reactions to the environmental scale ranged from the Georgia wife (svc) who said, "Just looked at these and said I have to answer the questions" to the Michigan husband (no svc) who said

I don’t know if I want to get involved here. Question the purpose of this. Everyone looking for politically correct answers. Not willing to get caught in that trap! Little upset to see this. Thought we were going to talk about the lawn.

Other Michigan husbands expressed similar sentiments.

MI husband, svc: This isn’t exactly related to lawn. Not easy. Can I circle in the middle? Someone is trying to get me to think about environment!

MI husband, svc: Don’t know what this has to do with lawns.

MI husband, svc: Who’s this being done for? Environmentalists? Chemical company?...Do gooders...always around trying to get you to sign petitions.

One GA husband (no svc) echoed these sentiments: Get irritated with Greenpeace. This sounds like a green piece (referring to Greenpeace). They are so sure of themselves...they treat others like none of them are intelligent, all dishonest and we (Greenpeace) are all pure and perfect. Get tired of that.

Only one wife and two husbands responded in a positive manner to the scale.

MI wife, no svc: I think the whole notion of environmental stewardship is, you know, got to be very important.

GA husband, svc: These are questions that need to be brought to our attention. Need to be addressed. Probably wouldn’t be in our generation but in future generations. Think this is going to be a problem in the future.
GA husband, no svc: This probably caused me to think about integrating my practice with my lawn. In certain settings it would be easy to live "au Naturale" but when you choose to live in a subdivision you conform. But when you're confronted, you realize everybody's little part is an infringement on nature. It's important to be growing in sensitivity.

The overwhelming majority of the respondents reacted to the scale in terms of the lawn chemical statements which were added to the scale for purposes of this study. Some expressed the belief that chemicals are necessary yet dangerous. Others were more uncertain about their dangers.

GA wife, svc: I think you're probably going to have to use chemicals or you're going to have a big problem. But yes, I think they are dangerous and should be handled less if that is at all possible.

GA wife, svc: Agree we need to protect and not abuse the environment but the problem is that in order to have beautiful yards and lawns we have to use some kind of chemical...If lawn chemicals are dangerous, I don't know anything else to use instead of them.

MI wife, svc: Do I think we should go out and spray everything with DDT? No. Do I think that all lawn chemicals are necessarily abusive to the environment? I don't think so.

GA husband, svc: I don't know if all lawn chemicals are dangerous. If they are used properly, they are not dangerous.

MI husband, no svc: I'm not convinced that lawn chemicals are a huge, terrible problem...dangers of lawn chemicals are not that great. Technology will bring us further along.

MI wife, svc: I don't know about this chemical on the lawn, I, I want lawn care company to do a good job on our lawn, but I'm wondering whether that's what is the best thing to use...but I'm not too happy about having them (weeds) and digging them out.

The Environmental Scale

As a result of the participants' responses, several things were learned about the scale itself. Respondents were unsure about the meaning of some of the terms. "Steady-state" and "spaceship earth" were the two terms most frequently questioned. Steady-state was a particular problem. Definitions included such
things as government control of growth, balanced growth, and no growth. Because of the wide discrepancy among respondents the statement containing this term was deleted from scale analysis.

Examination of the frequency distribution pattern of the responses showed that answers clustered around the midpoint of the scale. Based upon this finding and comments that respondents made as they did the exercise it was evident that had they been given a choice of "don't know", many would have chosen it.

Responses made to previous questions in the interview had confirmed that this was a very homogenous group. Therefore responses from the various groups were combined and analysis run with the total sample. Although the sample size (n = 40) was small, it met the minimum criteria for factor analysis. An exploratory factor analysis was done with the remaining fourteen items of the environmental scale. Two of the three statements dealing with lawn chemicals, added to the original NEP Scale for this study, did not load on any factor. The third statement, lawn chemicals are dangerous and other things should be used in place of them, loaded on Factor 1. When the three lawn chemical statements were deleted from the data set and factor analysis was run again, Factor 1 emerged stronger, explaining more of the variance. The decision was made to use the eleven items from the original NEP scale.

The eleven item correlation matrix was factored by means of the principal components analysis method of factor extraction (Table 9). Factor loadings of .500 or greater were used to identify the items that were assigned to each factor in the final three-factor rotated matrix. Eigenvalues are all greater than one.
Table 9. Factor Loadings for Combined Georgia and Michigan Sample.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The balance of nature is very delicate and easily upset.</td>
<td>.81188</td>
<td>.18157</td>
<td>.01010</td>
</tr>
<tr>
<td>When humans interfere with nature it often produces disastrous consequences.</td>
<td>.77817</td>
<td>-.10689</td>
<td>-.26567</td>
</tr>
<tr>
<td>There are limits to growth beyond which our industrialized society cannot expand.</td>
<td>.76615</td>
<td>-.19236</td>
<td>-.02560</td>
</tr>
<tr>
<td>We are approaching the limits of the number of people the earth can support.</td>
<td>.72380</td>
<td>.05816</td>
<td>.00173</td>
</tr>
<tr>
<td>Mankind is severely abusing the environment.</td>
<td>.60410</td>
<td>-.40917</td>
<td>-.44951</td>
</tr>
<tr>
<td>Factor 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plants and animals exist primarily to be used by humans.</td>
<td>.10642</td>
<td>.85610</td>
<td>.08349</td>
</tr>
<tr>
<td>Mankind was created to rule over the rest of nature.</td>
<td>.04530</td>
<td>.78524</td>
<td>.27380</td>
</tr>
<tr>
<td>The earth is like a space ship with only limited room and resources.</td>
<td>.36922</td>
<td>-.65458</td>
<td>.07615</td>
</tr>
<tr>
<td>Factor 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humans need not adapt to the natural environment because they can remake it to suit their needs.</td>
<td>-.08613</td>
<td>.07119</td>
<td>.81053</td>
</tr>
<tr>
<td>Humans must live in harmony with nature in order to survive.</td>
<td>.36558</td>
<td>.06649</td>
<td>-.70816</td>
</tr>
<tr>
<td>Humans have the right to modify the natural environment to suit their needs.</td>
<td>.18044</td>
<td>.29668</td>
<td>.65192</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Eigenvalue</th>
<th>% Variation</th>
<th>Cumulative %</th>
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<tbody>
<tr>
<td>Factor 1</td>
<td>3.60483</td>
<td>32.8</td>
<td>32.8</td>
</tr>
<tr>
<td>Factor 2</td>
<td>2.21379</td>
<td>20.1</td>
<td>52.9</td>
</tr>
<tr>
<td>Factor 3</td>
<td>1.31749</td>
<td>12.0</td>
<td>64.9</td>
</tr>
</tbody>
</table>

Cronback’s alpha .82
Factor analysis suggests that there are three dimensions in the NEP scale to be found among individuals in this group of respondents. The major dimension suggests that there is delicate balance in nature, which humans can disturb. Factors 2 and 3 suggest a "man over nature" dimension. Humans were created to rule, there are no limits placed on man's use of the earth's resources, and human's can do as they please on the earth.

Comparison of the factors that emerged in this study with those that emerged in the Albrecht study (Appendix G) reveal that Factor 1 in this analysis is reflected in both Albrecht's Factor 1 and 2: balance of nature and limits to growth. Factor 2 and 3 reflect the same theme as Albrecht's Factor 3: man over nature. It is interesting to note that while the majority of the respondents had many comments to make regarding the lawn chemical statements during the interview, the rating of the statements themselves did not have much effect in the factor analysis.

General Environmental Threat

Respondents were asked if they considered the use of lawn chemicals to be a threat to the environment (Table 10). Respondents who said "Yes, there is a threat" perceived it in terms of being likely to affect water quality, air quality, food, or wildlife. Those who answered "Maybe" expressed uncertainty about the origin of the threat: maybe from the pesticides, but not the fertilizer. Those who said "No" perceived that proper application of the product prevented any harm or that it might take a long time for harm to occur "maybe in 10,000 years."
Table 10. Lawn Chemicals Perceived as a Threat to the Environment.

| Responses | Georgia | | | | | | | | Michigan | | | | | | | | | |
|-----------|---------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|           | No Use | Use | No Use | Use | Total |
| H W | H W | H W | H W | H W | H W |
| Yes | 1 | 2 | 4 | 3 | 18 |
| No | 1 | 0 | 0 | 1 | 6 |
| Maybe/ Don’t Know | 3 | 1 | 1 | 1 | 16 |
| Total | 5 | 5 | 5 | 5 | 40 |

Eleven wives and seven husbands expressed the belief that lawn chemicals pose a threat to the environment. Ten husbands and six wives were ambivalent about an overall threat. The trend for more wives to be concerned about a threat is similar to findings from other studies which report that women, especially those with children, are more likely to be concerned about the environment than men. Only six individuals, three wives and three husbands, thought there was no threat.

Local Environmental Difference

Respondents were asked if it would make any difference to their local natural environment if they stopped using lawn chemicals (Table 11). Twenty seven individuals responded that if they stopped using lawn chemicals the appearance and quality of their lawn would deteriorate. Eleven individuals said it would make no difference to the local environment. Three of these eleven stated that it would make no difference as long as they were the only ones who stopped using the lawn chemicals in their neighborhood.
Table 11. Difference to Local Environment If Stop Using Lawn Chemicals.

<table>
<thead>
<tr>
<th>Responses</th>
<th>Georgia No Service</th>
<th>Georgia Use Service</th>
<th>Michigan No Service</th>
<th>Michigan Use Service</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>H W</td>
<td>H W</td>
<td>H W</td>
<td>H W</td>
<td></td>
</tr>
<tr>
<td>Appearance deteriorate</td>
<td>3 5</td>
<td>4 3</td>
<td>5 0</td>
<td>4 3</td>
<td>27</td>
</tr>
<tr>
<td>No difference</td>
<td>2 0</td>
<td>0 2</td>
<td>0 4</td>
<td>1 2</td>
<td>11</td>
</tr>
<tr>
<td>Beneficial</td>
<td>0 0</td>
<td>1 0</td>
<td>0 1</td>
<td>0 0</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>5 5</td>
<td>5 5</td>
<td>5 5</td>
<td>5 5</td>
<td>40</td>
</tr>
</tbody>
</table>

Two respondents indicated that it might be beneficial to stop using lawn chemicals. One Michigan wife thought it would be beneficial to all the wildlife, especially the worms and crickets. One Georgia husband thought it would improve the air and every little bit that one could do to help the environment helps. But he also expressed reservations about what would happen to the greenness of his lawn. One respondent, a Michigan husband, talked about runoff problems. He stated that he assumed that if lawn chemicals were used in moderation they would not be detrimental.

More husbands (n = 16) than wives (n = 11) indicated that the appearance of the lawn would deteriorate if they were to stop using lawn chemicals. More wives (n = 8) than husbands (n = 3) stated that it would make no difference to their local environment if no lawn chemicals were used.
Global Environmental Difference

Respondents were asked if they thought that it would make a difference to the global environment if they, themselves, stopped using lawn chemicals (Table 12). Thirteen respondents thought it would make no difference. Seven said that as one person, "No difference", but together with others it might make an impact. Nineteen individuals were uncertain. They thought it might help to stop using lawn chemicals but they weren't sure how. They just didn't have enough information upon which to make a judgment.

Table 12. Difference to Global Environment If Stop Using Lawn Chemicals.

<table>
<thead>
<tr>
<th></th>
<th>Georgia</th>
<th></th>
<th>Michigan</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No Service</td>
<td>Use Service</td>
<td>No Service</td>
</tr>
<tr>
<td></td>
<td>H W</td>
<td>H W</td>
<td>H W</td>
</tr>
<tr>
<td>Maybe/Don't know</td>
<td>1 3</td>
<td>2 2</td>
<td>3 1</td>
</tr>
<tr>
<td>No</td>
<td>4 2</td>
<td>2 1</td>
<td>0 2</td>
</tr>
<tr>
<td>No, not as one person</td>
<td>0 0</td>
<td>1 2</td>
<td>2 1</td>
</tr>
<tr>
<td>Yes, make difference</td>
<td>0 0</td>
<td>0 0</td>
<td>0 0</td>
</tr>
<tr>
<td>Total</td>
<td>5 5</td>
<td>5 5</td>
<td>5 5</td>
</tr>
</tbody>
</table>

Approximately an equal number of wives and husbands were unsure about the difference it would make to the global environment if they stopped using lawn chemicals. "No" and "No, not as one person" responses reflected the same pattern. Only one wife thought that it would make a difference to the global environment if she stopped using lawn chemicals.
Health Concerns Related to Lawn Chemicals

A second pencil and paper exercise was used to stimulate discussion about health concerns and lawn chemicals. After rating four Likert type questions regarding the susceptibility and seriousness of health risk associated with pesticides respondents were asked if they thought the use of lawn chemicals posed a threat to their health (Table 13).

Comments were diverse. They ranged from husbands who said "I always wash after I apply chemicals", "I only apply pesticides once or twice a year", and "highly unlikely, but serious if it does" to the Michigan wife who said "any kind of pesticide can harm you, breathing it can make you sick, on you skin, it can hurt."

Table 13. Lawn Chemicals a Threat to Personal Health.

<table>
<thead>
<tr>
<th>Responses</th>
<th>Georgia</th>
<th>Michigan</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No Service</td>
<td>Use Service</td>
</tr>
<tr>
<td></td>
<td>H W</td>
<td>H W</td>
</tr>
<tr>
<td>No</td>
<td>2  3</td>
<td>4  3</td>
</tr>
<tr>
<td>Maybe/Don't know</td>
<td>3  2</td>
<td>1  0</td>
</tr>
<tr>
<td>Yes, a threat</td>
<td>0  0</td>
<td>0  2</td>
</tr>
<tr>
<td>Total</td>
<td>5  5</td>
<td>5  5</td>
</tr>
</tbody>
</table>

Respondents who asserted that there was no threat emphasized that they applied pesticides properly and used them sparingly so there was no danger. Others said that other pollutants such as second hand smoke were a greater threat. Several of those who were uncertain about any threat stated that they relied on
government agencies and the product manufacturer to make sure the lawn chemicals were safe.

Those respondents who indicated they felt there was a threat to their health generally considered it to be something that would be immediate and serious. For example, spilling something on the skin which would need to be washed off immediately was described as a serious, immediate risk but not as a long term health threat.

Several respondents voiced comments similar to those from the Michigan husband who was very adamant that he was sick of hearing about things like this:

If we listen to everything - food, water, air giving us cancer - we’ll all die of malnutrition. Guess the less pollutants we put in the air and ground, overall is going to be better, but I don't worry about those other thing too long.

While husbands or a service applied the lawn chemicals that were used, wives were more likely to say they thought there was a threat to their health. Five wives but only one husband stated "Yes, there is a threat". Two of the wives expressed concern that the lawn chemicals might affect one’s breathing. This concern voiced by the wives is consistent with other research from the health literature that reports wives and mothers to be the person who is responsible for overseeing the health of others in the family.

Research Questions for Objective 4

1. Do homeowners view any particular type of clothing or personal protective equipment as a nonverbal clue signaling danger about the products and services being used?

2. What kind of clothing would a homeowner choose for a lawn care technician to wear when applying pesticides?
3. Does clothing worn by lawn care applicators influence the overall perception of the lawn care company?

Respondents were asked to sort pictures that represented a variety of outfits that a person could wear when applying pesticides. These outfits were designed to show how clothing and equipment could offer minimum to maximum coverage of the body. Those illustrating the least or the most protection were not necessarily the combinations that either homeowners or lawn technicians would need or want to wear.

Twelve basic outfits, with 62 different combinations of clothing and protective equipment, were presented. (Appendix A-IV) Each picture was unique. At the end of the sorting exercise respondents were asked why they sorted the pictures as they did, which outfit they would choose for a lawn care technician to wear when applying pesticides on the lawn, if they would wear that outfit, and would the outfit influence the hiring decision and their perception of the company. The outfit that was designed to be the least protective consisted of tennis shoes, shorts, and a short sleeved shirt (Figure 3). The outfit that looked most similar to an ordinary lawn care technician is shown in Figure 4.

**Clothing/Equipment as a Danger Signal**

Based upon the reactions to the outfits, the respirator and the Tyvek® fabrics, were the two major indicators of danger. Responses to the initial glimpse of one of these outfits included comments like "You must be kidding," "Looks like a nuclear cleanup crew," and "My dog would run and hide if that guy came on my yard." Despite this initial reaction, 15 respondents included a
respirator as part of the outfit that they would most prefer to see a lawn care technician wear (Table 14). Protection of the lungs was considered very important when applying pesticides. The most frequently chosen outfit with a respirator was the white Tyvek®. The dark Tyvek® elicited a negative reaction: "Looks scary" and "Don’t like that metallic look". The fabric is not shiny under normal wearing circumstances. In photographing the lighting evidently was such that the outfits appeared "shiny, metallic like" to some respondents.

Table 14. Frequency with which Outfits With or Without Respirator Were Chosen.

<table>
<thead>
<tr>
<th>Outfit</th>
<th>Respirator</th>
<th>No Respirator</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>White Tyvek®</td>
<td>13</td>
<td>5</td>
<td>18</td>
<td>45.0</td>
</tr>
<tr>
<td>Blue coverall</td>
<td>3</td>
<td>8</td>
<td>11</td>
<td>27.5</td>
</tr>
<tr>
<td>Dark Tyvek®</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>10.0</td>
</tr>
<tr>
<td>Jacket/blue jeans</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>7.5</td>
</tr>
<tr>
<td>Long work pants</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>5.0</td>
</tr>
<tr>
<td>Shorts</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>5.0</td>
</tr>
<tr>
<td>Total</td>
<td>22</td>
<td>18</td>
<td>40</td>
<td>100</td>
</tr>
</tbody>
</table>

Choosing Clothing for Pesticide Application

Twenty eight respondents reported that the amount of skin showing in the pictures was the criteria they used to sort the outfits; they considered those outfits that covered more of the body to be more protective. Other sorting schemes were based on the amount of precaution that the respondent perceived
the wearer to be taking as indicated by the clothing and equipment, the wearing of pants in or over the boots, and combinations of the different types of equipment (the boots, gloves, mask) with no consideration of the clothing.

**Tyvek® Outfits**

White Tyvek® with the hood up, boots, goggles, sunglasses and respirator, was chosen by 8 of the 40 respondents as the most preferred. (Figure 5) Various combinations of the white Tyvek® with protective gear were chosen by 10 other individuals. In total, some variation of the white Tyvek® was chosen by 18 individuals as the outfit they would most prefer to see a lawn care technician wear when applying pesticides on the lawn.

Four people chose some variation of the dark Tyvek® outfit as their first choice. Two of these four outfits included the respirator (Figure 6).

**Blue One-Piece Coverall**

Eleven respondents chose some variation of the blue, one-piece coverall at their number one choice. Three of the eleven chose the full protective outfit which included the respirator as their first choice.

**Jacket and Blue Jeans**

Three people chose the jacket and blue jean combination outfit. Two respondents chose pictures with the respirator as part of the outfit.

**Shorts and Short Sleeved Shirt**

Two people chose the short sleeved shirt, shorts, boots, gloves basic outfit. One of these outfits included the respirator.
Figure 5. Outfit Chosen Most Often As Most Preferred.

Figure 6. Dark Tyvek® Outfit Chosen Most Often.
Other Outfits

One person chose the work pants, short sleeved shirt, boots, gloves, respirator, no glasses outfit. One person choose the work pants, long sleeved shirt, boots, no gloves, no respirator, no glasses outfit.

Respondent's Protective Clothing

Respondents were asked if they would wear an outfit like the one they chose for the lawn technician. Only three indicated that they would do so. Both men and women were unlikely to wear any special protective clothing. Gloves and boots were the most frequently mentioned kinds of protective gear. Women were more likely to say that they would never apply pesticides as compared to men. Men felt they did not need any special protection, i.e., the respirator, because they seldom applied any pesticides. The application of fertilizers was not viewed as being hazardous so special clothing and equipment need not be worn.

Perception of the Lawn Care Company

Reaction to Fully Protected Technician

Respondents were asked if they would be concerned if they saw a lawn care technician wearing full protective garb, like the pictures, working on their lawn (Table 15). Nineteen respondents reported that they would be concerned if they saw a lawn care technician wearing full protective garb, like the pictures, working on their lawn.

GA female, svc: Yes, anytime I saw one of those guys in the space suit with a mask on I would be very concerned about what he was doing.

GA male, no svc: Yes,...would raise a question in (my) mind, wonder what they are putting on there.
Table 15. Full Protective Garb Cause for Concern.

<table>
<thead>
<tr>
<th>Responses</th>
<th>Georgia</th>
<th>Michigan</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No Service</td>
<td>Use Service</td>
</tr>
<tr>
<td></td>
<td>H</td>
<td>W</td>
</tr>
<tr>
<td>Yes</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Yes, but...</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>No</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

GA male, svc: Sends message that this stuff is dangerous and you maybe shouldn’t be spraying it in your yard. Does send the image that this stuff is dangerous.

MI female, no svc: Yea, I would think that if they have to wear that get up and they are telling me it’s safe, there’s something wrong. They put the sign up that say keep children and pets off the lawn for 24 hrs. It kind of makes me wonder.

MI female, svc: Not the one I selected (outfit), but the ones with the face mask would cause me concern.

MI male, svc: Yea, when the guy’s wearing all covered up with the gas mask on, I wonder what in the Sam Hill is going on.

MI male, no svc: Yes, that they’re going to kill something other than the grass...given the relative value of my lawn, anyone wearing one of those breathing apparatus, I’d have them stop. I can deal with dirt.

Fourteen respondents said they would be concerned but they qualified their answers. Nine respondents said "No, they would not be concerned." The reoccurring theme for both these groups was that lawn care technicians apply these chemicals for a living, 8 hours a day, 5 to 6 days a week so they should be wearing protective clothing. Respondents stated that the lawn chemicals may not be especially dangerous in a one time application (as when a homeowner uses it) but constant exposure could be harmful.
GA husband, svc: General public is educated enough to know if someone is working with chemicals...need protection.

GA husband, no svc: It scares me when I look at him, with all the things, (but) guess I wouldn’t want myself to feel that he could be harmed because I don’t want to see him wearing the right stuff.

GA wife, no svc: I think anyone who reads anything at all knows there are possibilities of problems...We’d like to have a lovely lawn and we’re going to use chemicals...we certainly wouldn’t want anyone to be damaged with it if we could avoid it.

GA wife, no svc: Looks like serious stuff but I understand the constant exposure.

GA wife, svc: With all the TV documentaries on lawn care I think most people are aware of the dangers.

GA wife, svc: If I see a lawn truck I assume there are chemicals on it and I don’t think of the consequences. He needs to be protected.

MI husband, no svc: Employer is responsible. If a guy needs it he should wear it.

MI husband, no svc: It’s one thing for someone to do that once a year, it’s another to do it day after day.

MI wife, no svc: Lawn care wouldn’t bother me wearing that stuff, but if tree service would wear that stuff. That would bother me...blowing around in the wind.

MI wife, svc: Yes, (cause me concern) but it’s like an x-ray technician. They need protection...do day in and day out.

MI wife, svc: Yes, looks like nuclear power garb, but we’re bombarded with that stuff about dangers to the environment. Don’t know if it’s all bad or not.

Clothing’s Influence on Hiring

Respondents were than asked what effect a lawn technician’s clothing would have on the decision to hire the company (Table 16). Twenty four people said "None." They reported that they seldom saw a company representative before hiring the service. Those who said "Maybe", "Professional", and "Yes" were more concerned with the general appearance of the company representative, i.e., wearing a uniform that was clean and professional looking and looking clean.
Table 16. Outfits Influence on Hiring Decision.

<table>
<thead>
<tr>
<th>Responses</th>
<th>Georgia</th>
<th></th>
<th>Michigan</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Service</td>
<td>Use</td>
<td>Service</td>
<td>Use</td>
</tr>
<tr>
<td></td>
<td>H</td>
<td>W</td>
<td>H</td>
<td>W</td>
</tr>
<tr>
<td>None</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Maybe</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Professional</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Yes</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>No Answer</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

and neat. All respondents believed it was unlikely that a company would send a sales representative to their home dressed in any kind of protective gear. Several stated that they would also be surprised if a technician came to their door in full protective gear. They would expect him to take off a respirator, hood, and gloves if he came to speak to them.

Respondents were then asked if the clothing would influence their decision to rehire the company. The answer was "No." The decision to rehire would be based on the quality of the service and the condition of the lawn. While the wearing of protective gear might cause questions to be raised about the product, the clothing alone would not warrant the canceling of the service.

**Respondent Reaction to the Study**

A significant finding that emerged from this research was the number of homeowners who had never thought about the lawn in relation to the
"environment". There was a complete disassociation of the lawn from the natural environment and the related environmental issues.

GA wife, no svc: Thought provoking...a lot of things you don’t think about...lawn is just there. Easy thing to put a little squirt of poison on that weed. We’re working people, don’t have time to catch lady bugs. Chemicals are the solution.

GA wife, svc: I’ve never thought about how the scale of what I did would impact the environment. I’ve read a lot about the environment but I’ve never thought about my lawn.

GA wife, svc: There are more significant and long range things to worry about environmentally than the chemicals we use on our lawns. If we can find a nonharmful way to kill weeds, fertilize let’s do it...otherwise use common sense.

GA husband, no svc: I think there are people who are looking after me out there so I don’t have to worry about it that much. The news media, environmentalists. Keep you aware. I don’t think that companies are making products are trying to hurt the environment. I don’t worry about it too much.

GA husband, no svc: I don’t want to give the appearance that I’m not concerned...but other things (environmentally) are more important the lawn.

MI wife, no svc: Going to have a whole new perspective of my lawn...really gives me a lot of food for thought.

MI wife, svc: If I were to do this interview with you in two weeks would probably be different. After thinking about some of these questions...Makes you think about your home and family.

MI husband, no svc: How is this going to do any good? Why are you doing something like this? What I’ve gotten from this is that you want me to be more aware of the chemicals we use on our lawn.

MI husband, svc: This has been, unquestionably, the most in depth consideration I’ve given to a lawn, mine or anyone else’s. It was interesting.

MI husband, svc: Fascinating project. Not thought much about lawns and environment before this interview.

Only one respondent, a Georgia wife, said that she had thought about the effect of lawn chemicals on the environment. She stated that she would be willing to use alternatives to lawn chemicals but they would have to work. She echoed others when she said that she didn’t believe that people would be willing to give up their green lawns.
CHAPTER V

SUMMARY AND DISCUSSION OF FINDINGS AND IMPLICATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

This chapter includes the purpose of the study, the limitations of the study, and a discussion of the findings of the study and their implications for further research and practice.

Summary

The primary purpose of this study was to learn about the contemporary lawn and its care from a group of suburban homeowning couples through use of both qualitative and quantitative methodologies. Twenty suburban couples who owned homes in established, middle and upper-middle class subdivisions in Georgia and Michigan participated in the study. Half the couples currently used a chemical lawn care service and half did not use a service. Personal interviews were conducted, separately, with husbands and wives during June and July in 1994.

Limitations of the Study

Generalizations of the findings are limited to the population represented by the respondents: white, middle and upper-middle class, older suburban
homeowners in Georgia and Michigan. However, it is reasonable to expect some commonality among residential homeowners living in similar subdivisions across the United States.

Recruitment criteria were (a) being a suburban homeowning couple and (b) use or nonuse of a chemical lawn care service. No effort was made to achieve a balance among families based on presence or absence of children, age, or income.

Personal interview data can be greatly affected by the emotional state of the interviewee at the time of the interview, reactivity of the interviewee to the interviewer and to the content of the interview, and to the length of the interview. Respondents had been told the interview would take approximately an hour, all took longer. Most respondents spent an average of half an hour in the picture sort section of the interview. As a result, for most participants, responses to questions near the end of the interview tended to be very brief. Respondents participated in the study as unpaid volunteers. Interviews took place in respondent homes. Interruptions by the phone and children occurred during some of the interviews.

**Discussion of the Findings**

**Objective 1**

The first objective of this study was to identify Georgia and Michigan suburban homeowners’ activities related to lawn maintenance and family use and perceived meaning of the lawn. There were very few differences between families in this particular group of suburban homeowners living in Georgia and
Michigan. They shared similar demographic characteristics, activities, and perceived meanings of the lawn.

**Demographics**

This was a highly educated, middle-aged, affluent, homogenous group of homeowners. Approximately a third of the respondents were retired. A large retired population provides a pool of individuals who have the time and financial resources to spend on the lawn. For most people, owning their own home is the biggest financial investment that they ever make. One does not own a home, with its surrounding grounds, with the expectation that it will be a depreciating investment. The lawn and its care were very important to all the homeowners.

**Maintenance**

The growing season for grass is longer in Georgia but only one Georgia husband mentioned that fact. There are differences in the kinds of grasses that grow in Georgia and Michigan but that did not appear to be a factor in lawn maintenance. Pinestraw, a groundcover, was used in Georgia. No one in Michigan used it. Michigan homeowners talked about dandelions. Georgia homeowners did not.

All the homeowners owned a wide assortment of lawn equipment. Everyone owned a lawn mower, even the families who were using a mowing service. There were few differences between families who used a chemical lawn service and those who did not use one. All the homeowners had used a chemical service at some time in the past. Several of the no service husbands mentioned that they planned
to use one again when they judged the condition of the lawn to be in need of professional help.

**Activities**

Activities on the lawn were minimal. Those activities that took place were usually in the back yard. Children and dogs played primarily on the back lawn. Only one family with children extensively used the back yard. Many children spend their days with a child care provider before they begin school and after starting school they are involved in many extracurricular activities. The children in this study did not spend a great amount of time playing on their lawns.

**Perceived Meaning of the Lawn**

The lawn provides aesthetic and psychological satisfaction. People find pleasure in it both for its beauty and for its place in "manicured" nature. It is also viewed as a part of the self, it tells the world who one is. As Rapaport (1982) has written, environmental elements become indicators of social position, ways of establishing group or social identity, and ways of defining situations within a specific culture which in turn lead to expected behaviors in the settings. The lawn reflects looks, identity, and values of a person, the family, and the neighborhood.

The aesthetic domain tallied the most responses. Within this domain, while beauty ranked the highest, the perception of "neatness" appears to be very strong. This may be very similar to what is seen in the clothing literature; if a garment is soiled, the viewer is unable to see its beauty. The research related to preference has also shown that people prefer a more managed look in nature.
The number of statements made by respondents that were classified under the self component in the psychological domain illustrate how clearly perceptions of the lawn are associated with the sense of self. Individuals easily verbalized multiple meanings of their lawn. The manicured lawn makes one feel good and gives a sense of accomplishment and pride. Although much of the activity fulfills personal goals and needs, the awareness of others’ expectations is nearly as strong. Responses to the third component, nature, support the idea that homeowners view their lawns as part of an idealized form of nature. It should be green, lush, weed free and neat.

Respondents were very aware of the neighborhood norms and sanctions. The norms and standards of the neighborhood strongly influence the care and maintenance of the lawn.

The reservation responses reflect uncertainty and some frustration about the necessity of having a lawn. But as several people asked, "What else do you do with the yard? I don’t want dirt." In America lawn grass is considered the ideal groundcover for open areas in both the front and back yard. Even though there may be other plants available that would serve the same environmental purposes (control erosion and provide cooling) and would require less maintenance no one in this study questioned the use of grass. It is the plant of choice for lawns.

Responses related to the economic domain illustrate the belief of homeowners that the ideal American lawn adds real dollar value to their property. If a beautiful, manicured lawn adds profit or salability to a home, it is hard to
imagine the homeowner will just "let it go natural". For many, natural means weeds and, for both health and aesthetic reasons, Americans do not like weeds. As the next generation moves up the housing chain, it is difficult to envision a major change in the ideal lawn unless some significant health or environmental event happens to change this perception. Lawns, and related industries, are a multi-billion dollar business in the United States.

Respondents enjoyed working on their lawns for the physical exercise. Those who spoke about exercise often talked about being outdoors, with "nature", at the same time.

But responses from these suburban homeowners suggest that the lawn is not viewed as "natural" environment. Only two individuals talked about the importance of grass in controlling erosion and generating oxygen. This is consistent with the findings from the two focus groups and Gallup poll that were reported in the review of literature. Environmental considerations are not top-of-mind responses for individuals when asked about the suburban lawn. This might be different if one were talking to a homeowner of a newly built home. But even at this point, where controlling the soil from erosion is important, homeowners do not just plant anything that will grow. Landscapers are hired and grass, shrubs, and trees are artistically arranged and planted.

Objective 2

The second objective was to compare spousal lawn activities and perceived meaning of the lawn. Husbands were responsible for caring for the lawn. Wives tended the flowers. The question of who hires a chemical lawn service was not
readily answered. It appears it is a joint decision based upon time considerations and the appearance of the lawn. Generally, neither spouse had a great deal of knowledge about what chemicals were used on the lawn. This was true for both service and nonservice users.

Perceived meanings were very similar for husbands and wives. The idea that the lawn provides as means of physical exercise was mentioned by more husbands than wives. This may be a reflection of the way the study was constructed. The focus of this study was lawn grass. Women are primarily responsible for the flowers and few actively participated in mowing and maintaining the lawn. There may have been more mention of exercise if they had been asked about their gardening activities.

Objective 3

The third objective was to explore homeowners' beliefs about environmental and health concerns related to the use of lawn chemicals. The reaction to the environmental scale was surprising. Respondents did not understand what this environmental scale had to do with their lawn. Several husbands became very upset. Respondents reacted to the lawn chemical statements in the scale, stating that some use of lawn chemicals was necessary.

When asked if these chemicals posed a threat to the environment 18 said "Yes", while the remaining 22 generally felt that they did not. The trend for more wives to believe there was a threat is consistent with other environmental literature dealing with gender.
When asked what difference it would make to the local environment if they stopped using lawn chemicals, the majority of respondents said that the appearance and attractiveness of their lawn would diminish. Approximately a fourth of the sample said it would make no difference. Only two individuals thought it might be beneficial if they stopped using lawn chemicals. When asked if it would make a difference to the global environment if they stopped using lawn chemicals, only one Michigan wife indicated it would. Others thought it might but not as just one person. They did not think that if they stopped using lawn chemicals their neighbors would too. And they did not see a need to stop using lawn chemicals because they did not think that their use was affecting the environment.

The possibility of an immediate health threat was more real. Spills and fumes were viewed as having potential for immediate and serious harm. Again the trend was for more women to be concerned about health than men.

Objective 4

The fourth objective was to investigate the role of clothing as a nonverbal clue in the perception of danger related to the use of lawn chemicals. The use of special clothing and equipment for lawn care technicians received overwhelming acceptance. Although respirators and special protective garments were viewed with initial alarm, when asked which outfit they would prefer to see a lawn technician wear, the majority of the participants chose outfits that provided complete protection for the wearer. A common response was that the lawn technicians worked full time applying chemicals and they should be protected.
Thirty six of the forty respondents chose an outfit that offered full body protection from the neck down. Twenty two respondents included a respirator as part of their preferred outfit. All the outfits included rubber boots. Only two outfits were chosen that did not include gloves. The outfit that had been designed to be the most protective was chosen by the greatest number of respondents (8 of 40). Variations of that outfit category were chosen by 45% of the respondents. Respondents reported that the wearing of protective clothing would have no influence in their decision to hire or rehire a lawn care company.

Individual homeowners judged themselves to be at much less risk than a technician. They did not usually wear protective clothing and did not perceive it necessary to do so in the future. They felt that because of the infrequency of their chemical applications they received little exposure. The use of fertilizer was not viewed as being dangerous.

Implications and Recommendations for Future Research

The negative response to the environmental scale poses questions for conducting research projects and developing educational materials. Respondents questioned what these kinds of statements had to do with their lawn and who was funding the study. No one terminated their interview but, for those who were most upset, the responses from this point onward tended to be very brief. What triggered this reaction? Several respondents mentioned the number of environmental organizations that solicited funds in their neighborhood. Did they think the interview would conclude with a plea for donations? Did respondents unconsciously feel that they could be harming the environment by using lawn
chemicals and so became defensive? Would another topic such as recycling have elicited a similar response? Are there so many conflicting messages about the environment that people feel overwhelmed and just do not want to discuss environmental issues? Or was this response unique to this group of homeowners?

This situation also raises the question of what kind of reactions do people have to materials labeled "environmental"? The researcher believes that the respondents who reacted so strongly would have refused to be interviewed if they had associated "environmental" with the study during the recruitment call. Would this be true for other populations? If it is true for other homeowners who are similar to those in this study, do inferences made in other environmental studies need to be weighted for this kind of negativism? Has the term "environmental" developed a negative connotation? Are there other terms that could be used that would evoke positive reactions?

Homeowners talk about their lawns and nature yet they do not associate their lawns with the larger natural environment. Is this true for other homeowning groups in American society? Would other groups feel as strongly about their lawns as this group? If lawn chemicals prove to be detrimental to the environment and health, will Americans be willing to accept a less than perfect lawn? Can alternate products and plants be developed that would reduce the need for extensive use of chemicals? Research that includes urban, rural, and city homeowners as well as greater ethnic diversity, different family styles, and wider price ranges of homes would provide more depth and clarity to the meaning of the lawn and answers to these questions. Results of this study, along
with other studies, indicate that the aesthetic and psychological meanings of the lawn are of the greatest importance.

Definitive scientific studies that provide satisfactory answers to the questions regarding the environmental and health effects of lawn chemicals are lacking. A great deal of research is ongoing in many different fields. The questions about the health effect of pesticides on children are especially troubling. How much exposure is there for children from pesticides on the home lawn? How does this compare to other chemically treated grassy areas where children play such as day care centers, school grounds, and parks? How does lawn exposure compare to the exposure from chemicals used inside the home? How does the presence of children influence beliefs and attitudes about the use of lawn chemicals?

The willingness by this group of homeowners to accept a maximum level of protective clothing for a lawn technician needs to be explored with other groups. The outfits that represented the most protective end of the continuum would probably be unnecessary for either homeowners or lawn technicians in the usual lawn chemical application situations. However, these findings, if validated by other studies, could provide assurance to the lawn care industry that, in situations where it was warranted, protective clothing would not drive away customers.

The purpose of this study was to explore the meaning, activities, and concerns related to the American lawn. Boyden's biohistorical approach provided an ecological-historical framework in which to explore the phenomenon of the ideal American lawn. When this study was initially being planned the
researcher and her advisor had difficulty in organizing the research objectives and questions. Understanding and tracing the development of the lawn through history and examining the social, legal, and technological influences were very important in designing a coherent study.

The historical development of the lawn provided important insights into understanding why current attitudes, beliefs, values, and practices associated with the American lawn exist. The English ideal of grass, Thomas Jefferson and his belief in the small landowner, and the advent of the Industrial Revolution with the resulting migration to the city all were powerful influences on the evolution of the ideal lawn. Technological inventions such as the lawn mower, improved grass varieties, and synthetic chemicals have made lawn maintenance much easier. Societal changes including dual income families, the increasing popularity of the game of golf, and a growing retired population are continuing to shape and strengthen the ideal of the lawn.

Many legal and social systems continue to support the ideal lawn. Deed restrictions and neighborhood covenants that mandate a certain standard of appearance, set backs from the street, advertising, and peer pressure from neighbors demand that the homeowners maintain a lawn. This lawn is, at the minimum, to be kept mowed and relatively neat and in its most ideal form - be green, thick, lush, weed free, and manicured.

The attitudes and beliefs that were reflected in responses in this study have major implications for education efforts involving the suburban lawn and lawn chemicals. Respondents disassociate their own lawns from the general
environment. Given the historical importance of the lawn, the current strength of the support systems for the lawn, and the uncertainty about environmental and health effects it appears unlikely that current lawn maintenance practices will change very much in the near future.

The biohistorical approach demands access to and assimilation of an enormous amount of material from many disciplines. Many hours of reading and thinking result in the generation of many pages of writing. Yet if one is to understand the context within which beliefs and values develop and evolve this kind of approach is essential. More studies using this kind of framework and qualitative methodology would add to the depth, richness, and understanding of many research problems.