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Benefits of Community Gardening on Quality-of-Life Issues¹

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Abstract

A nationwide survey of community gardeners found differences in rankings of the importance of community gardens related to quality-of-life perceptions based on Maslow's hierarchy of human needs model. Race, gender, and city sizes affected perceptions. When comparisons were made among the four racial/ethnic divisions, responses to 18 of the 24 questions were found to be statistically different. Community gardens were especially important to African-American and Hispanic gardeners. Male and female gardeners rated quality-of-life benefits from gardens similarly in importance. However, women placed higher value on the importance of saving money and the beauty within the garden. Gardeners in small, medium, and large metropolitan cities had similar quality-of-life perceptions with only 4 of the 24 statement responses showing significant differences. Significant differences were found in 10 of the 24 statement responses between gardeners of the two large cities of Los Angeles and New York. In most cases, mean ratings were higher for gardeners in New York than those in Los Angeles.

Index words: people-plant interaction, horticultural therapy, human issues in horticulture, racial background, gender, city size.

Significance to the Nursery Industry

Research involving humans and their interaction with horticulture is growing and will become increasingly crucial as

urbanization of communities continues and our ever increasing population resides in smaller places. Results of this study indicate that community gardens provide many quality-of-life benefits to gardeners. The survey results indicate that community gardens provided extremely important quality-of-life benefits to African-American and Hispanic gardeners. Perhaps the most interesting findings in the study are those that reveal that the garden is meeting quality-of-life needs on the higher levels of esteem and self-actualization.

Studying and learning the quality-of-life benefits provided by horticultural practices such as community and school gardening provide new opportunities for the green industry.

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Positive results from this study, and others like it, will provide new avenues for promotion, advertisement and expansion of the green market to community residents who may not be aware of the opportunities and benefits offered through horticulture.

Introduction

Community gardens were first introduced to the United States by European immigrants in the late 1800s and early 1900s. Periods of popularity occurred during the Panic of 1893 and the Depression of the 1930s as gardens supplemented income (3). Since the early 1900s, gardens have been used in schools to teach various subjects with nature and the outdoors as the focus. Teachers also found that gardens helped children to learn responsibility and form social relationships (21). Growing garden produce was a patriotic duty during both World Wars. Gardens became popular again in the late 1960s and early 1970s not only as a way to produce food, but also for their social and psychological benefits (3).

Studies have demonstrated that gardens help to increase self-esteem, provide both economic and psychological benefits to gardeners, and are a place for social interaction (8, 10, 13, 16). Shoemaker (14) found that while less experienced gardeners were motivated to garden for food production, experienced gardeners participated in community garden programs for the higher level social benefits.

These same types of benefits have been seen in studies of green spaces and landscapes in the urban environment (19). Asakawa (1) studied the effects of greenery on residents in neighborhoods and concluded that 'green spaces positively influenced many subjective assessments or feelings.' Stainbrook (18) believed that natural settings incorporated by urban planners and designers or by other institutions 'could contribute to a more natural and healthy urban environment that provides for some of man's basic psychological needs.'

The objectives of this study were to examine community gardeners' perceptions of their quality-of-life and what influence race, gender, and city size had on this perception.

Materials and Methods

A total of 1,108 surveys with stamped, self-addressed envelopes were mailed to community garden coordinators at 46 garden sites in November and December, 1992. Surveys were distributed by coordinators to community gardeners who voluntarily agreed to participate. No assistance was given by coordinators in completing the survey.

The survey was designed following a format by Kaplan et al. (9) and was written to test quality-of-life factors. Twenty-four statements were designed to question individuals on garden benefits and their influence on gardeners' perceptions of quality-of-life. The quality-of-life factors were based on Maslow's hierarchy of human needs model which progresses

Table 1. Statistical significance of quality of life statements on all levels of Maslow's pyramid of human needs as indicated from a survey of community gardeners.

Statement	Racial/ethnic background	Gender	City size	New York vs. Los Angeles
Physiological				
1. I like to work in the soil.	0.020*	NS	NS	NS
2. I enjoy working outside.	0.000*	NS	0.031*	NS
3. I need the physical exercise.	NS	NS	NS	NS
4. I like the garden colors, smells, beauty.	0.038*	0.025*	NS	0.006*
5. Gardening is working with nature.	0.019*	NS	NS	0.010*
6. I like to work with my hands.	0.000*	NS	NS	NS
7. I feel healthier when I eat my own produce.	NS	NS	NS	0.016*
Safety				
8. I feel safe in the garden.	0.002*	NS	NS	0.001*
Social				
9. It's a good place to meet people.	NS	NS	NS	0.018*
10. I enjoy helping others to garden.	0.011*	NS	0.042*	0.000*
11. The gardens beautify my neighborhood.	0.000*	NS	NS	0.000*
12. I can share my produce with others.	0.004*	NS	NS	NS
13. My gardening experience helps others.	0.001*	NS	NS	NS
14. I care for my garden and community.	0.000*	NS	NS	0.034*
15. I enjoy working alone.	NS	NS	0.003*	NS
Esteem				
16. I can produce my own food.	0.000*	NS	0.002*	NS
17. I can create something of beauty.	0.009*	NS	NS	0.003*
18. Gardening makes me feel good about my own abilities.	0.018*	NS	NS	NS
19. My garden food tastes better than store-bought food.	0.003*	NS	NS	0.044*
20. I'm proud of my garden.	0.005*	NS	NS	0.005*
21. I can handle the work needed.	NS	NS	NS	NS
22. I can save money by gardening.	0.021*	0.019*	NS	NS
Self-actualization				
23. My garden gives me a feeling of peace.	NS	NS	NS	NS
24. I can teach my children to garden.	0.003*	NS	NS	NS

Non-significant (NS) or significant () at $p = 0.05$.

from physiological and safety needs, to higher psychological needs, such as social, self-esteem, and self-actualization (Table 1). Gardeners rated the importance of each statement to themselves or their own life on a Likert-type scale (11) ranging from one as 'not important' to five as 'extremely important'.

Data were compiled into contingency tables. A multi-variate ANOVA analysis was used to test for significance among racial/ethnic backgrounds, between gender, and among city sizes and all interactions involved. Post-hoc analyses, including a least significant square analysis, were used to indicate where the differences were occurring within each comparison. No significant interactions were detected, therefore, statistically significant independent factors will be discussed.

Results and Discussion

Demographic information. Three-hundred-sixty-one (361) gardeners responded from 36 community garden sites, resulting in a 33% response rate. This level of response was adequate for supplying ideas and trends for the given sample population, but is not intended for generalizations to other populations.

Surveys were sorted by city and grouped by population size. For the purpose of this study, small cities had a population of less than 100,000 people, medium-sized cities were 100,000 to 700,000 people, and large cities had more than 700,000 people (20).

Included within the sample were 201 (55.7%) Caucasian, 43 (12.0%) African-American, 64 (17.7%) Hispanic, and 53

(14.7%) Asian respondents. There were 105 (29.1%) respondents living in small cities, 76 (21.1%) in medium-sized cities, and 180 (49.9%) in large cities. There were 156 (43.2%) male and 205 (56.8%) female respondents.

Influence of racial/ethnic backgrounds. A multi-variate ANOVA indicated that, while many times all racial groups rated statements highly in importance, there were significant differences among the racial/ethnic backgrounds. The univariate ANOVA indicated that 18 of the 24 factors were significantly different among the groups (Table 2). Overall, the garden was shown to be important to all racial/ethnic groups at different levels of Maslow's hierarchy, but was especially important to African-American and Hispanic gardeners.

Physiological needs. Six statements were found to be significantly different among the racial/ethnic groups on the lowest level of Maslow's pyramid. These statements dealt primarily with 'working with soil' (statement 1), 'working outside' (statement 2), 'working with nature' (statement 5) and 'working with one's hands' (statement 6). Post-hoc analyses indicated that African-Americans rated these statements as more important compared to the other groups. The average mean change among the groups for this set of statements was 0.83 (Table 2). Although community gardens are located in both rural and urban areas, those located in urban area neighborhoods, where there are few 'green' areas, may pro-

Table 2. Means and mean differences for statistically significant quality of life statements for racial background comparisons as indicated from a survey of community gardeners.

Statement	Caucasian mean ^a	Hispanic mean	African-American mean	Asian mean	Mean differences
Physiological					
1. I like to work in the soil.	4.17b ^y	4.32a	4.19b	3.58c	0.74
2. I enjoy working outside.	4.61a	4.29b	4.37a	3.94b	0.67
4. I like the garden colors, smells, beauty.	4.21b	5.00a	4.45b	4.03b	0.97
5. Gardening is working with nature.	4.11b	4.55a	4.71a	3.91b	0.80
6. I like to work with my hands.	4.21b	4.59b	4.85a	3.86c	0.99
Safety					
8. I feel safe in the garden.	2.80b	4.04a	3.93a	2.71b	1.33
Social					
10. I enjoy helping others to garden.	3.22b	4.05a	3.90a	2.94b	1.11
11. The gardens beautify my neighborhood.	3.06b	4.59a	4.60a	3.18b	1.54
12. I can share my produce with others.	3.70c	4.14b	4.47a	3.27c	1.20
13. My gardening experience helps others.	2.97c	3.70b	4.16a	3.15c	1.19
14. I care for my garden and community.	4.11b	4.93a	4.76a	3.87b	1.06
Esteem					
16. I can produce my own food.	4.06a	2.38b	4.01a	4.03a	1.68
17. I can create something of beauty.	3.95b	4.59a	4.34b	3.45c	1.14
18. Gardening makes me feel good about my own abilities.	3.74b	4.05b	4.53a	3.86b	0.79
19. My garden food tastes better than store-bought food.	4.36b	3.41b	4.73a	3.81b	1.32
20. I'm proud of my garden.	4.12b	4.73a	4.76a	4.01b	0.75
22. I can save money by gardening.	2.82b	2.41b	3.83a	3.06b	1.42
Self-actualization					
21. I can teach my children to garden.	1.99c	3.89a	3.09b	2.46c	1.90

^aPossible statement scores range from 1 to 5. A statement mean above 3.0 indicates statements as being 'very' or 'extremely important' to respondents.

^yMeans followed by different letters within a row are statistically significantly different at $p = 0.05$ by LSD procedure.

Table 3. Means and mean differences for statistically significant quality of life statements for gender comparisons as indicated from a survey of community gardeners.

Statement	Male mean ^a	Female mean	Mean differences
Physiological			
4. I like the garden colors, smells, beauty.	4.19b ^y	4.66a	0.47
Esteem			
16. I can produce my own food.	3.37b	3.87a	0.50
24. I can save money by gardening.	2.64b	3.43a	0.79

^aPossible statement scores range from 1 to 5. A statement mean above 3.0 indicates statements as being 'very' or 'extremely important' to respondents.

^yMeans followed by different letters within a row are statistically significantly different at $p = 0.05$ by LSD procedure.

vide additional opportunities to work with nature. In turn, the garden may be providing opportunities to groups that would not otherwise have an opportunity to work in nature.

Safe environment needs. Post-hoc tests showed that African-American and Hispanic gardeners appear to value 'feeling safe' (statement 8) in the garden more than Caucasian or Asian gardeners. The mean difference between the highest ranking group, Hispanics, and the lowest ranking group, Asians, was 1.33 (Table 2). In a study of large American cities, The Figgie Report (7) noted that violent crime had risen in all but three of the cities involved in the study. Studies have shown that economically-disadvantaged African-American people are more likely to be victims of crime than middle-class Caucasians (6). These factors may contribute to the differences in importance of safety in the garden among the racial/ethnic groups.

Social needs. Comparisons among racial/ethnic groups concerning social needs in the garden showed 5 of the 7 statements (statements 10–14) produced significant differences. Post-hoc tests revealed that African-American and Hispanic gardeners tended to rate statements such as 'helping others to garden' (statement 10), 'beautifying the neighborhood' (statement 11) and 'sharing produce with others' (statement 12) as more important when compared to Caucasian and Asian gardeners. Often, African-American gardeners rated statements above all other groups. The overall average mean difference among groups on this level of Maslow's pyramid was 1.22 (Table 2).

These responses indicate that it is important to gardeners of all racial/ethnic backgrounds to have a garden in their community, in turn, promoting community involvement. This concept appears to be more important to African-American and Hispanic communities.

Self-esteem needs. Respondents indicated that it was important for the garden to provide a sense of self-esteem. Having 'sense of self-sufficiency in producing one's own food' (statement 16), 'creating something of beauty' and 'feeling good about my own abilities' (statement 18) were some factors that were statistically significant. Post-hoc analyses again showed that for most statements, African-American and Hispanics rated statements more importantly when compared to the other groups. The average mean difference among the groups was 1.18 (Table 2). In larger cities like New York,

many minority families come from poor neighborhoods (18) and gardens are not only one way to help subsidize one's income, but may also provide a sense of accomplishment in supporting one's own family.

Self-actualization needs. Post-hoc tests revealed that Hispanic and African-American gardeners value 'teaching children' (statement 24) in the garden as more important when compared to Caucasian and Asian gardeners. Hispanics rated this statement the most important with a mean of 3.89, while Caucasians rated this the least important of all groups with a mean of 1.99. The mean difference between the groups was 1.90 (Table 2). These results demonstrate that in some ethnic groups, community gardens are seen as places where people have the opportunity to nurture both plants and children.

Gender responses. Studies (5, 11, 12) have shown that between males and females, many have different opinions on what is considered important to them and also that they view the same situations from different perspectives. However, when comparisons were made between male and female gardeners, few differences were seen. The multi-variate ANOVA indicated that there were no significant differences when males and females were compared. The univariate analysis, however, indicated that three statements did differ significantly between the groups (Table 3). Statements that were statistically significant were found on the physiological and esteem levels of Maslow's pyramid. No significant differences were found on the other levels of safety, social or self-actualization.

Physiological needs. Post hoc tests revealed that women valued the garden's 'colors, smells, and beauty' (statement 4) more than men valued these garden attributes. The mean difference between the two groups was 0.47 (Table 3). Traditionally women have had jobs that are primarily indoors including sales, clerical, services, nursing, and teaching (12). This may lead women to have less time outdoors and, in turn, they may value the garden's colors, smells and beauty more.

Esteem needs. Females valued 'saving money' (statement 22) highly, averaging 3.43 in their mean score, while men valued this less with a mean of 2.64 (Table 3).

Influence of city size. When comparisons were made between groupings of small, medium, and large city sizes, few

Table 4. Means and mean differences for statistically significant quality of life statements for city size comparisons as indicated from a survey of community gardeners.

Statement	Small city mean ^a	Medium city mean	Large city mean	Mean change
Physiological				
2. I enjoy working outside.	4.68a ^y	4.48b	4.42b	0.26
Social				
10. I enjoy helping others to garden.	3.09b	3.46b	3.53a	0.43
15. I enjoy working alone.	3.02a	3.25a	2.51b	0.26
Esteem				
16. I can produce my own food.	4.12a	4.34a	3.69b	0.66

^aPossible statement scores range from 1 to 5. A statement mean above 3.0 indicates statements as being 'very' or 'extremely important' to respondent.

^yMeans followed by different letters within a row are statistically significantly different at $p = 0.05$ by LSD procedure.

differences were seen in quality-of-life values. Of the 24 quality-of-life statements tested, only four were significantly different (Table 4).

Unlike the small and medium cities, significant differences were found in responses of gardeners from New York and Los Angeles. Large cities generally have more diverse cultures within their populations that could have influenced the data. Eleven of the 24 quality-of-life statements were found to be significantly different (Table 5). Most of the quality-of-life factors were more important to gardeners in New York than those in Los Angeles.

Physiological needs. Three statements on the physiological level were significantly different. Statements concerning 'working outdoors in the garden' (statement 2) were rated as more important by gardeners in New York. Differences in growing seasons and city environments may influence gardeners in New York to value gardening and being outdoors in nature more than do gardeners in Los Angeles. New York may be perceived as predominately concrete, whereas, Los Angeles may be perceived as a greener city with greener landscaping. New Yorkers may be finding the garden to be a place of escape and relaxation. New York also has a shorter grow-

ing season and harsher winters, while Los Angeles, with its Mediterranean climate, has a long growing season.

Gardeners in Los Angeles valued the garden more for 'feeling healthier when eating my own produce' (statement 7). The average mean difference between the groups on these statements was 0.76. Since southern California is the leader in production of many of the nations fruits and vegetables, gardeners there may be more sensitive to the use of pesticides and may be more conscious of 'natural' and organically grown foods.

Safe environment needs. The mean rating for 'feeling safe in the garden' (statement 8) was higher for gardeners in New York compared to gardeners in Los Angeles. The mean difference between the two groups was 1.23 (Table 5). The demographic differences within the two city samples may have contributed to these differences. The sample of gardeners from New York was primarily from inner-city, lower income areas such as New York City and the Bronx. The sample of gardeners from Los Angeles was from Alhambra. The Alhambra city development services referred to the city as an 'inner-city suburb'. Alhambra was once adjacent to Los Angeles but now has city developments encompassing it. Ac-

Table 5. Means and mean differences for statistically significant quality of life statements for New York and Los Angeles comparisons as indicated from a survey of community gardeners.

Statement	New York mean ^a	Los Angeles mean	Mean change
Physiological			
4. I like the garden colors, smells, beauty.	4.54a ^y	3.89a	0.65
5. Gardening is working with nature.	4.43a	3.78a	0.65
7. I feel healthier when I eat my own produce.	2.77b	3.76a	0.99
Safety			
8. I feel safe in the garden.	3.69a	2.46b	1.23
Social			
9. It's a good place to meet people.	3.20a	2.43b	0.77
10. I enjoy helping others to garden.	3.89a	2.81b	1.08
11. The gardens beautify my neighborhood.	4.62a	3.00b	1.63
14. I care for my garden and community.	4.46a	3.89b	0.56
Esteem			
17. I can create something of beauty.	4.43a	3.57b	0.86
19. My garden food tastes better than store-bought food.	3.46b	4.19a	0.73
20. I'm proud of my garden.	4.57a	3.91b	0.65

^aPossible statement scores range from 1 to 5. A statement mean above 3.0 indicates statements as being 'very' or 'extremely important' to respondents.

^yMeans followed by different letters within a row are statistically significantly different at $p = 0.05$ by LSD procedure.

cording to the development services, Alhambra is still primarily a middle-income area. For these reasons gardeners in New York may not feel as safe in their community and, therefore, rate safety in their garden as more important.

Social needs. Statistical significance was found for 4 of the 7 social need statements with New York gardeners rating the statements such as 'meeting people' (statement 9), 'helping others to garden' (statement 10) and 'caring for the garden and community' (statement 14) higher than Los Angeles gardeners. The average mean difference for statements on this level was 1.01 (Table 5). Beaver (4) concluded that communities often create networks among neighbors and create a sort of kinship. In the large, urban areas of New York, where the need for safety is a major concern, gardens may provide residents a safe environment in which to meet and socialize with their neighbors, and at the same time provide an avenue for beautification of their neighborhood.

Self-esteem needs. Two of seven statements on the self-esteem level were also found to be of greater importance to gardeners in New York than to those in Los Angeles. 'Creating beauty' (statement 17) and taking pride in one's garden (statement 20) were two statements that New Yorkers found to be of greater importance. Los Angeles gardeners, however, rated the importance of 'garden food tasting better than store-bought food' higher than New York gardeners. The average mean difference between the two groups for all statistically significant statements was 0.75 (Table 5).

Large urban areas have a high percentage of people living in government or low-income housing. Sprague (17) reported the average waiting list in large cities for assisted housing is 22 months and often the lists are closed. There is a higher incidence of vandalism and abandoned housing. Large numbers of people receive supplemental government income. In single-parent households, as many as four out of five single-mothers are unemployed, poor and depending on welfare for their subsistence. Gardens may help in creating a sense of self-sufficiency which, in turn, helps to build self-esteem and pride.

Significant differences in responses occurred in statements designed to represent all levels of Maslow's human needs model. Perhaps the most interesting findings in the study are those that reveal that the garden is meeting quality-of-life needs on the higher levels of esteem and self-actualization. These results correspond to the earlier findings from the American Horticulture Society's survey (9) where it was reported that the primary reason home owners garden is for 'peace and tranquillity'. Apparently, the benefits expressed by home gardeners (middle class and higher economic status Americans) are similar to Americans in community gardening programs. Social benefits were also found to be important, especially to African-American and Hispanic gardeners. These results correspond with the results found in Joan Shoemaker's study (14) that gardeners enjoy the opportunity to be with other gardeners.

Maslow's model is particularly effective in revealing significant differences among racial/ethnic groups. African-American and Hispanic gardeners consistently rated gardening benefits higher than did Asians and Caucasian gardeners in all categories. To African-American and Hispanic gardeners, some of which may lack economic means of securing

land or home ownership, the garden provides extremely important quality-of-life benefits.

From these results, it is evident that the community gardens included in this study provided many quality-of-life benefits to gardeners. These findings may have special implications for economically disadvantaged areas in larger cities where other resources are generally sparse.

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