

Perceived Benefits to Human Well-being of Urban Gardens

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SUMMARY. Private gardens occupy a significant proportion of the total surface area of a British city. For many people, the garden represents their only contact with nature and their chance to express themselves creatively. Yet relatively little research has been carried out on the role and value of such gardens to human well-being. We report in this paper on a major survey on the role of private, urban gardens in human well-being, conducted with a wide cross-section of randomly selected garden owners from the city of Sheffield, England, over the summer of 1995. In particular, we discuss the perceived value that gardens have to the well-being of people, both individually through the enjoyment of their own gardens and collectively through the contribution of city gardens to environmental enhancement. We relate these values to age, gender and social demographics.

Urban private gardens in the UK can occupy a significant proportion of the total surface area of a city, often comprising an area greater than that of all the parks and nature areas put together (Jeffcote, 1993). For example, in Sheffield, a typical city in the north of England, gardens and allotments comprise 15.6% of the total surface area, giving them the highest greenspace land cover of the city.

Gardens have been associated with human settlements throughout history. Gardening as an activity and the garden as a place produce aesthetic, spiritual and psychological benefits that extend well beyond the simple growing of plants. The British market in plants and garden-related equipment and supplies is a multibillion pound market. Over 10 million avid gardeners make gardening one of the most popular leisure activities in Britain. Private gardens are the most heavily used type of outdoor space and represent the most frequent contact with nature for most people. Such gardens have specific wildlife value and add considerably to the biodiversity of urban areas.

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Table 1. Age, gender, housing, and occupational characteristics of respondents by survey type (responses per category).

Demographic	Category	Questionnaire	Interview
Age	<34	97	47
	35-44	92	54
	45-54	67	42
	55-64	49	32
	>65	71	28
Gender	Male	152	78
	Female	224	125
Housing type	Terraced	169	76
	Detached	58	42
	Semidetached	156	85
House ownership	Owner-occupied	348	194
	Rented	37	9
Occupation	Professional	50	35
	Managerial	105	63
	Manual	87	39
	Retired	92	42
	Unemployed	15	12
	Student	9	1
	Housewife	17	11

For all the public interest in private gardens, they have been the subject of relatively little research. One area in particular which has been virtually ignored is the broader social meaning and the value to human well-being of popular gardens, i.e. the everyday residential gardens of everyday people (Grampp, 1993). Despite the large proportion of urban land which they occupy and their high value to most householders, they are the forgotten elements of many urban design and urban planning proposals, as compared to parks, public gardens and woodlands (Beer, 1991). It has been indicated that 90% of house owners/occupiers desire private garden space. In fact, dissatisfaction with public housing projects has been found to be particularly due to a lack of garden space, resulting in lack of privacy, ownership, and control of space (Kellet, 1982).

We report in this paper on a part of the findings of a major survey carried out on the role of residential gardens in developing greater environmental sustainability in cities, using Sheffield as an example. While much of the work concerned the use of resources such as water, pesticides and herbicides, and the wildlife value of gardens, part of the survey addressed the practical, social and emotional values that people ascribe to their gardens. We discuss the value of the private city garden to human well-being,

both in terms of the direct health and social benefits to the individual owner or household, as well as to the wider community through their contribution to a more sustainable city environment.

Materials and methods

Our objective in carrying out this survey was to obtain information on the roles and values that people ascribe to gardens, and to distinguish any relationship between these values and such factors as age, gender, employment, housing type and garden size. In order to achieve this we needed to obtain a balanced sample of urban garden owners. The simplest way of doing this was to base the sample upon housing-type (which in general terms is related to garden size and economic status). We chose a representative district of Sheffield in which to conduct our survey, using a stratified-random method. The basic sampling unit was the individual street. Streets to be sampled were selected by first dividing the whole study area into broad units, each having a definite character based upon housing type: whether predominantly high, medium or low density (terraced, semidetached and detached, respectively) and of similar age and size. Eight character units were defined and six streets randomly chosen for sampling within these units. A total of 850 reply-paid postal questionnaires were distributed in the 48 streets (a

maximum of 20 questionnaires was assigned to each street, to randomly selected houses) and 376 were returned: a response rate of 44%.

The written questionnaire contained 25 questions, of which four are discussed in detail here. Specifically, we asked the following questions.

1) About how much time do you spend working in the garden? Respondents were asked to estimate an average number of hours per week spent in the garden.

2) What do you particularly enjoy about your garden and gardening? Respondents were asked to choose from a list of enjoyment categories and also to write down any not listed. One category enabled respondents to say they enjoyed nothing about the garden.

3) How important is gardening to you compared with other leisure activities? Respondents were asked to rank gardening in order of preference with their other four main leisure activities.

4) Which practical, recreational and domestic activities do you carry out in your garden? Respondents were asked to mark activities from a list of 15 and also to write down any not listed.

In addition to investigating the perceived values of gardens to individual human well-being and enjoyment, we wished to establish the perceived value of gardens to collective well-being, i.e., the potential contribution of gardens to providing a fulfilling and sustainable urban environment. We asked respondents on the written questionnaire if they were willing for us to visit for a detailed interview. As a result, we carried out 202 detailed interviews in a structured format. We report the findings of one interview question: "In what way do you feel gardens contribute to the wider urban environment?"

To ensure that we had obtained a balanced sample, questions were also asked about gender, age, housing, and occupation. A breakdown of the survey respondents is presented in Table 1. Occupations were classified according to a modified form of the Standard Occupational Classification (Office of Population, Census and Surveys, 1991). Only a small number of people aged less than 25 replied to the written questionnaire, and we have therefore amalgamated this category with those under 35 years of age.

Table 2. Number of hours per week that people in different age groups spend working in the garden ($\chi^2 = 56.3$ $P < 0.001$).

Time gardening (h/week)	People within an age group (years) who garden for the specified time (%)				
	<35	35-45	45-55	55-65	>65
≤1	49	37	22	10	14
2-4	42	43	49	44	38
≥5	9	20	29	46	48
N	89	86	65	48	64

Analysis of the written questionnaire data was undertaken to establish whether relations existed between preferences and demographic variables. The chi square was used to test the significance of differences between the numbers of observed responses with those that would be expected to occur by chance. Only those relations that were significant at $P < 0.05$ are discussed below. Relationships between answers on specific questions and respondent's time spent in the garden, age, gender, housing type, employment, or garden size were also investigated.

Results

TIME SPENT IN THE GARDEN. There was a very clear relation between age and the amount of time spent in the garden (Table 2). There was little involvement in gardening by younger adults; on average, adults under 35 years of age only spent up to 1 h a week gardening, while 35 to 45-year-olds typically spent 2 to 4 h. Adults over 55 spent proportionately more hours, with retired people typically spending 5 h or more a week gardening.

ENJOYMENT OF GARDENS AND GARDENING BY THE INDIVIDUAL. In the written questionnaire we asked people to describe those things that gave them enjoyment through their gardens or gardening. The two most popular aspects of the garden: creation of a pleasant environment and promotion of relaxation, were chosen by over 75% of all respondents (Fig. 1). Other factors listed by over half of the respondents included the satisfaction gained through producing neatness and tidiness in the garden, the health value of fresh air and exercise, and the positive effects from the cultivation of plants. A smaller proportion of respondents valued the chance to be creative or express their personality. A quarter of respondents felt their gardens had a social value in meeting and talking with others in the neighborhood. The

number of people who listed fruit and vegetable production as a benefit corresponds to the number who had fruit or vegetables in their gardens. Around 10% of the people in the survey valued nothing about the garden or gardening.

RELATIONSHIPS BETWEEN AGE AND THE INDIVIDUAL'S ENJOYMENT OF GARDENS. People in the age categories of 55 to 65 and over 65 tended to value neatness and tidiness, while this was less important for the groups below age 55 (data not shown). The ability to be creative and to express one's personality was favored more by people between ages 35 to 44 and 45 to 54 age groups than by younger or older respondents. The value of gardens for exercise and fresh air was favored more by people over 55-year-olds and was valued least by the under 35-year-olds. The 45 to 54 age group tended to value the benefit of being close to nature and being in a pleasant environment. When asked to rank gardening as a leisure activity, there was a clear progression with age: fewer people than expected in the under 35-year-old group ranked it first, while many more people over 65 than expected put it top of their list.

RELATIONSHIPS BETWEEN TIME IN THE GARDEN AND THE INDIVIDUAL'S ENJOYMENT OF GARDENS. People who spent more time working in their gardens tended to be those who also valued neatness and tidiness and also the chance to meet neighbors (data not shown). Conversely people who spent less than 1 h per week in the garden tended to be unconcerned about neatness and did not value the opportunity that gardening gave them to be creative. They tended to like nothing about the garden or gardening. The group that showed the highest preference for creativity (those spending 2 to 4 h per week in the garden) was also least likely to dislike anything about the garden.

RELATIONSHIPS BETWEEN GENDER AND THE INDIVIDUAL'S ENJOYMENT OF GARDENS. Overall there were few significant differences between male and female respondents (data not shown). Significantly more women than men valued the opportunity to grow vegetables, yet significantly more men than women listed vegetable growing as an activity they carried out. Men tended to value neatness and tidiness more than women did, while women tended to value the opportunity to meet neighbors and make friends through the garden more than men did. Women spent more time in the garden overall than men did, with around twice as many women as men working in the garden for shorter periods (less than 4 h per week), while larger numbers of men than women tended to work for longer periods.

RELATIONSHIPS BETWEEN HOUSING TYPE AND THE INDIVIDUAL'S ENJOYMENT OF GARDENS. Among people who lived in semidetached houses, fewer than would be expected valued the opportunity to be creative and to express their personalities, while among those who lived in terraced houses, more than expected did so (data not shown). Significantly more people who lived in semidetached houses and significantly fewer who lived in detached houses valued nothing about the garden.

RELATIONSHIPS BETWEEN EMPLOYMENT AND THE INDIVIDUAL'S ENJOYMENT OF GARDENS. Significantly fewer people than would be expected in the professional and managerial groups valued neatness and tidiness, while more people than expected did so in the other groups (data not shown). Many more people than expected in the professional group valued the opportunity to be creative, with this being less important for other groups. When asked to rank gardening as a leisure activity, significantly fewer people than expected in the professional group ranked gardening as their first leisure activity.

Individual values from gardens and gardening

PERSONAL SATISFACTION AND RELAXATION. The two values that scored most highly as being enjoyed by individual garden owners were "creation of a pleasant environment" (76% and "promoting relaxation" (74% of respondents, respectively). The therapeutic aspects of contact with plants have been well-documented (Kaplan and Kaplan, 1983; Lewis, 1996; Ulrich and Parsons, 1992), and this value also scored highly (54% of respondents). Kaplan (1973) has identified similar gardening experiences as being particularly valuable to home gardeners. She classified relaxation and diversion from routine as "sustained interest" benefits, while "primary gardening experiences" included working outside and having contact with plants. We found this distinction unhelpful: it is difficult to distinguish between the benefits of active and passive relaxation (there may of course be a cultural difference here, with the United Kingdom having a long tradition of active gardening). For many, active tasks such as watering plants and weeding are seen as an enjoyable and relaxing activity, providing a diversion from routine. This is borne out by the results of this survey: while relaxation was scored highly by most respondents as a benefit, statistically there was a positive relationship between those who listed relaxation as a garden benefit and those who had the larger gardens. However, for those who had all but the smallest gardens, significantly more people identified working with plants as a benefit than would be expected to occur by chance. This implies that for many people, working in the garden is perceived as relaxation.

The production of a neat and tidy garden can give rise to intense feelings of personal satisfaction and is also important to many in generating a respectable external image of themselves. Gardens (particularly front gardens) present an image to the rest of the world and can be important in conveying impressions of status and territoriality (Bloore, 1996; Cook, 1968; Sadalla et al., 1987). A concern with neatness was more apparent in the older age groups, with men, and also with those who spent longer periods of time working in the garden. There was a negative relationship ($P < 0.05$) be-

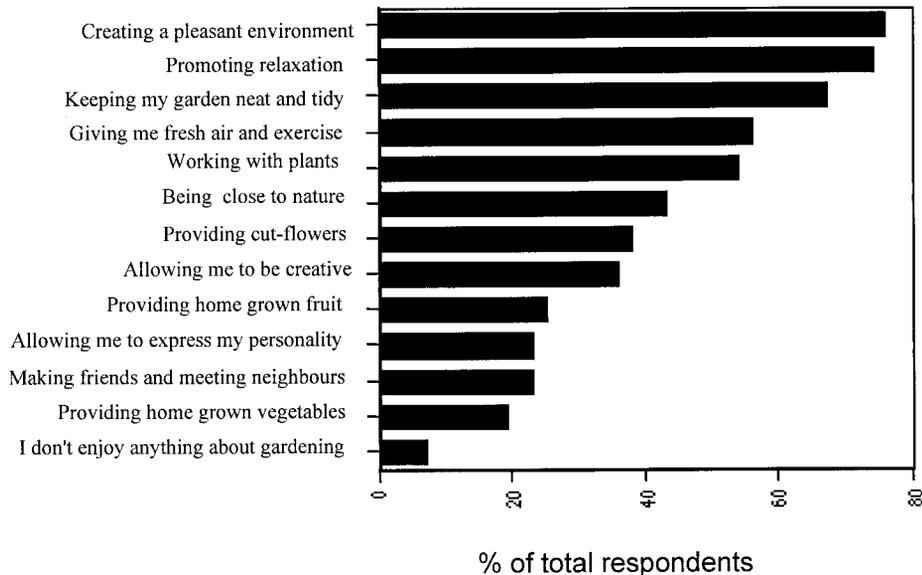


Fig. 1. The value of gardens and gardening to individual human well-being, based on categorizing responses to the following question "What do you particularly enjoy about your garden and gardening?" Responses are ranked according to frequency of occurrence.

RELATIONSHIPS BETWEEN GARDEN SIZE AND THE INDIVIDUAL'S ENJOYMENT OF GARDENS. A number of positive relationships between garden size and enjoyment were detected (data not shown). These included growing of vegetables and fruit, relaxation and opportunity for creativity: these all scored highly for people with the largest gardens [400 to 800 m² (4300 to 8600 ft²)]. People with gardens of 100 m² (1076 ft²) or larger also tended to favor working with plants and the value of exercise through the garden. Significantly more people than would be expected with small gardens [50 to 100 m² (538 to 1076 ft²)] liked nothing about gardening.

VALUE OF GARDENS AND GARDENING TO COLLECTIVE HUMAN WELL-BEING. According to data collected during the interviews, the two most common values that people hold about how gardens can contribute to the wider environment were creation of a more beautiful environment and promotion of relaxation (Fig. 2). Creating an area for wildlife and biodiversity was also rated as highly important to the overall environment. Over a third of the people surveyed welcomed relief in the garden from the concrete and tarmac of the city environment. There was a

widespread feeling that it is better for children to be brought up in a housing environment with gardens rather than streets alone. Gardens were perceived as a safe environment for children. Some related this to their education, to learning about nature, and to the development of responsible behavior. This was true particularly for families with small children. Some garden owners felt they were contributing to environmental protection by not using chemicals or adding to pollution.

Discussion

Although gardens are probably the most heavily used type of open space in cities, only a few studies have been published on the domestic uses of private gardens, (Cook, 1968; Halkett, 1978; Kellet, 1982), to which we add this Sheffield survey. Even fewer studies have been undertaken into the benefits of gardens to human well-being. Those that have (e.g., Kaplan 1973) were based either upon small samples, or nonrandom samples, or both. Our sample was both large and random.

We find that there are many categories of benefits from private gardens, both to the gardener and the community. It is also clear that the degrees to which people gain benefit from the different categories varies to some extent with age, gender and occupation. As a result of our study, we divide the human benefits of gardens and gardening into the following categories, all of which relate in some way or other to human well-being.

tween appreciation of neatness and tidiness and enjoyment of the opportunity to be creative. It has been suggested that appreciation of a naturalistic environment, representing freedom, represents a higher-order or more creative response to landscape than a simple appreciation of order (Francis, 1995).

CREATIVITY. Aside from the personal satisfaction and stress-reduction associated with relaxation in gardens, gardens also provide an opportunity for individual creativity and personal expression (Francis and Hester, 1990). Creativity was valued by 36% of respondents, while 23% valued the opportunity for self-expression. The opportunity to be creative seemed to be valued more by professional people in the 35 to 55 age groups.

HEALTH AND RESTORATION. The amount of physical exercise possible in the garden varies with its size and the features contained within it, but even routine, simple tasks such as walking in the garden and watering can be useful exercise (Browne, 1992): only for those people living in the smallest of gardens was exercise not recognized as being a value associated with the garden. Digging and other strenuous activities can have significant physical benefits, such as improving muscle tone and lung

capacity. This, coupled with working and relaxing in the fresh air, may also have health benefits, as may fresh, homegrown food. Relaxation in the garden, stress-reduction and the feelings of personal well-being thus produced may correlate with both physical and emotional health, and with age or stage in life. Some people stated that gardening was a good and productive way to spend time, and particularly for several retired people, it was a full-day activity, enabling them to establish a routine and plan day-to-day activities. Sixty-four percent of respondents considered gardening to be good exercise for them. These people tended to be in the age groups of 55 or older. Younger respondents tended not to value the opportunity for exercise.

Involvement in gardening helped some of our respondents to adjust themselves to a new routine immediately after retirement. In some cases, loss of a loved one resulted in a loss of interest in gardening, but for many it was very therapeutic, and they maintained garden features in the memory of their beloved ones

CONTACT WITH NATURE. Over and above the simple growing of plants, we found, as have others (Browne, 1992; Kaplan, 1973), that many people valued their city gardens as giving them contact with the natural world and the changing seasons—a factor that is particularly important in the city: 43% of respondents valued contact with nature. People in the 45 to 55 age group particularly appreciated this aspect of the garden. Gardens were viewed as a necessary relief and contrast to the hard elements of the built environ-

ment of the city. Garden wildlife was almost universally welcomed. Some gardeners attributed religious or spiritual associations to their gardens.

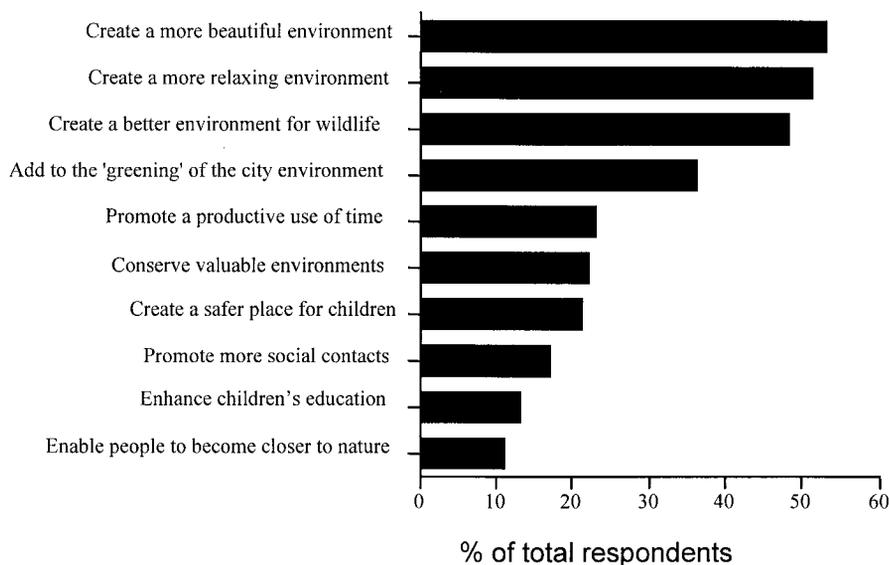
SOCIAL. Gardens can foster communities through encouraging acquaintances with neighbors (Brown, 1985). The opportunity to meet neighbors was seen as a benefit by 23% of respondents, and was particularly valued by two groups: those who spent longer periods of time in the garden (thus increasing the chances of meeting neighbors) and women (more of whom might be in the garden during the day).

PRODUCTION. People grow food in their gardens for a mixture of both practical and emotional reasons: for the taste, aroma and freshness of homegrown fruit and vegetables, for concern for the widespread use of chemicals on commercially available produce, and for the pleasure of growing a crop from start to finish. Economy was not given as a reason for food production by any of our respondents. Cultivation of vegetables and fruits was undertaken by 19% and 23% of respondents, respectively, and virtually the same percentage of respondents stated that the provision of homegrown fruits and vegetables was a benefit of having a garden. Kaplan (1973) reported a similar finding: those people who grew vegetables scored highly for tangible benefits of gardening, such as food production and harvesting. However, while 20% of respondents had vegetables in their garden, 43% said they had fruit trees or bushes, suggesting that half the people who have fruiting plants do not harvest or benefit from them. The growing of fruit and vegetables tended to be associated with the larger garden sizes; where space is restricted ornamental and recreational functions take priority. There was an interesting gender difference relating to garden-produced food: women tended to appreciate more the opportunity to have food available from the garden while men tended to be more involved in the cultivation of vegetables. This reflects traditional roles in the UK, where male gardening activities have been associated with vegetable cultivation.

Collective values from gardens and gardening

While most studies have looked at the value to individual well-being of

Fig. 2. The perceived contribution of city gardens to improved environmental quality, based on categorizing responses to the following question "In what way do you feel gardens contribute to the wider environment?" Responses are ranked according to frequency of occurrence.



the activity of gardening and of the relationship between the individual and their own garden, we also investigated how the presence of gardens can contribute to the perceived quality of a neighborhood or the overall environment.

It is of interest that the two most common values that people hold about how gardens can contribute to the wider environment are the same two that they see contributing to their own individual well-being: creation of a pleasant or beautiful environment and promotion of relaxation (Figs. 1 and 2). Here again, gardens are clearly linked with stress relief. This assumes particular importance in the city where their value in 'greening' the built environment also scored highly (36% of respondents). This agrees with other work (e.g., Kaplan and Kaplan, 1989; Herzog, 1992) which indicates inhabitants' preference for 'naturalness' in the urban environment. Creating an area for wildlife and biodiversity, which scored less highly as a benefit to the individual garden, was rated as more important to the overall environment. This makes ecological sense: a neighborhood rich in gardens is likely to have more value to wildlife than one with few gardens.

The presence of gardens was seen by 20% of respondents to be valuable in creating a safer environment for children. Gardens are perceived as safe because of their protective enclosure from such urban threats as increased motor traffic and highly publicized abductions. While this was felt strongly by respondents with young families, there is undoubtedly also a collective feeling that children are now safer in private rather than public space.

Conclusions

It is clear that the value of gardens to the people who use them goes far beyond pure utilitarian uses. The garden also has considerable emotional, psychological, healing and even spiritual values for many people. The results of our survey suggest that a great many people benefit from regular contact with plants and nature in their gardens. Those benefits, though, are complex. Although many people spend a good deal of time in their gardens, both working and relaxing, the degree

of involvement in different activities, and the satisfaction they gain from them, varies. For example, for some, working in the garden is the whole enjoyment, while for others sitting out and doing nothing is the ultimate aim!

It is clear that gardens and gardening play a central role in the lives of a significant number of city dwellers, and that gardens have positive influences on the well-being of many more. The respondents in our survey attributed a range of values to their urban gardens that sprung from their contact with plants and their cultivation. The values that people have identified themselves in the survey are closely related to those suggested in the literature (e.g. Kaplan and Kaplan, 1989; Herzog, 1995). As well as having considerable influence on perceptions of individual human well-being, our survey showed that people also perceive gardens as having beneficial values to their neighborhoods and communities. Several respondents who had made many friends and become acquainted with their neighbors through their gardens acknowledged their social value. It is apparent, however, that the majority of people in urban areas link the idea of a garden with relaxation and being in or creating a pleasant environment: it is probable that being able to look into the garden from a dwelling is as valuable as actually being in it in terms of stress relief. It is also apparent that, although preferences and perceived benefits varied with age, gender, housing type, and occupation, all but the smallest of gardens can be linked to a wide range of human benefits, and even the smallest has some value to human well-being.

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