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Does urban gardening increase aesthetic quality of urban areas? A case study from Germany

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ABSTRACT

We tested in two corresponding studies the hypothesis that urban gardening is of visual aesthetic value to the public. With the help of photo-realistic visualizations and a written questionnaire, 109 students and employees of the Karlsruhe University of Education (study 1) and 200 passers-by in the city of Karlsruhe (study 2) were asked about their opinion on different urban gardening scenarios, and attitudes towards urban gardening. Our results indicate that urban gardening can contribute to perceived attractiveness of urban areas, but that not all approaches are perceived as equally positive. While flowerbeds or flower meadows and orderly-managed vegetable plots, in comparison to conventional lawns, increased the aesthetic appeal of urban green space, container gardening approaches, which were often characterized as chaotic, did not. Although flower scenarios were preferred over vegetable scenarios, participants were rather positive about the idea of having more vegetable plots around. Socio-demographic variables had only minor influences on preferences and attitudes. As people were fonder of flowerbeds or flower meadows than of vegetable plots, a mixture of both might be advisable in urban gardening sites. This would also increase overall diversity, which is not only beneficial from an aesthetic, but also from an ecological point of view.

1. Introduction

Urban gardening is very diverse, and there is not one single definition that covers all the different activities and approaches. Urban gardening encompasses several unique gardening concepts, including container gardening, indoor gardening (container gardening indoors or use of greenhouses or solariums), roof gardening, and community gardening which involves groups of people who use outdoor public or private spaces to cultivate gardens for food or pleasure (examples in Müller, 2011; Rasper, 2012; Wunder, 2013). The present study understands urban gardening as a community process that involves private persons, initiatives, or societies who cultivate plants of many different kinds (not just for food production) in public spaces.

For a long time, urban gardening was an important source of food production, especially in times of crises (e.g., Perren, 2005; Mok et al., 2014). Today, urban gardening is experiencing a renaissance. Growing environmental awareness, but also counter-culture movements against consumerism, conformity and industry, inflation, and unemployment are motivating people to cultivate their own food (Hynes and Howe, 2004; Hou, 2014; Mok et al., 2014). In 2013, for example, more than 100 urban gardening projects could be found in the city of Berlin alone, not including allotment gardens, school gardens or children farms, while in 2002, only about eight projects existed in the whole country of Germany (Wunder, 2013). In parallel to the renaissance of urban gardening, many other attempts are currently undertaken to increase green space and biodiversity in cities, for example, by incorporating living roofs, green walls, or wildflower meadows (examples in Beatley, 2011; Benvenuti, 2014; Mok et al., 2014). As more than half of the world's population already lives in metropolitan areas and numbers are strongly increasing (Miller, 2008), more "biophilic cities" (Beatley, 2011) are needed to promote the well-being of people. Studies have shown that urban gardens and green space in cities can contribute to psychological and physiological health, social cohesion, recreation, and life satisfaction of humans (overviews in Brown and Jameton, 2000; Hynes and Howe, 2004; Guitart et al., 2012). More-

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over, they can contribute to the provision of ecosystem services in urban areas (overview in Middle et al., 2014; Speak et al., 2015).

Benefits of urban gardening are the production of healthy food (e.g. Wakefield et al., 2007; Alaimo et al., 2008; Ober Allen et al., 2008; Litt et al., 2011), the promotion of community feelings (e.g., Wakefield et al., 2007; Okvat and Zautra, 2011), and the meaningful use of vacant lots (e.g., Armstrong, 2000; Morckel, 2015). While health and social benefits of urban gardening have been rather well studied, few studies have investigated whether urban gardening benefits communities in terms of attractiveness (Morckel, 2015). Some studies mentioned neighborhood beautification as either an intentional purpose or unintended benefit (Armstrong, 2000; Alaimo et al., 2010; Hale et al., 2011), but none of these studies explicitly examined the factors that affect garden attractiveness (reviews in Draper and Freedman, 2010; Guitart et al., 2012). A recent study investigated with the help of site photographs the perceived attractiveness of eleven community gardens and nine vacant lots in Columbus, Ohio, during each of four seasons (Morckel, 2015). Community gardens were generally perceived as more attractive than vacant lots, and attractiveness ratings were highest in summer and lowest in winter. However, regardless of season or physical features, the level of maintenance of a green space had the largest influence on its attractiveness. This finding is in line with results of a Swiss study, in which a chaotic appearance of private domestic gardens was clearly disliked (Lindemann-Matthies and Marty, 2013). In the opinion of city officials in the United States, beautiful urban gardening plots have to be green, lush, neat and ordered (Aptekar, 2015).

The present research contributes to the existing literature about factors that affect aesthetic quality of green space in urban areas (Aptekar, 2015; Morckel, 2015). We tested, with the help of photorealistic visualizations, the influence of urban gardening scenarios (flowerbeds or flower meadows, vegetables either grown in containers or in the ground) and status-quo scenarios (conventional lawns) on perceived attractiveness. The research was carried out in Karlsruhe, a medium-sized city of about 300,000 inhabitants, which is ranked as one of the top sustainable cities in Germany. An important objective of the city's Local Agenda 21 is the provision of green space for urban gardening. Under the umbrella of the Parks Department, private persons or initiatives are encouraged to cultivate their own vegetables, herbs or flowers in designated public spaces. There are no regulations for the management of the garden plots. Three main objectives are pursued by the project, which is still in its start-up phase: provision of opportunities for people to grow their own food or to cultivate ornamental plants, provision of nature experiences, and beautification of the city. However, as urban gardening can be done in different ways, not all gardening approaches may contribute to a beautiful appearance of the city. In order to develop successful urban gardening programmes that are widely accepted it is important to know how differently-managed urban green spaces contribute to perceived attractiveness, how citizens respond to the idea of urban gardening sites in their neighborhood, and whether they would actually want to engage in urban gardening.

We set out the following research questions:

(1) Does urban gardening improve the attractiveness of urban green spaces in comparison to conventional lawns, and if so, which features of land use contribute to their perceived attractiveness?
(2) Which attributes are used by the public to characterize the different types of land use, and are they related to aesthetic ratings?
(3) Do people like the idea of urban gardening sites in their neighborhood, and would they like to engage in urban gardening?

2. Methodology

2.1. General overview (study 1 and 2)

This research consisted of two corresponding studies. In both studies, respondents were asked with the help of photo visualizations and a written questionnaire about their opinion on different urban gardening scenarios, and their attitudes towards urban gardening. We only visualized urban gardening scenarios which could actually be applied in the city of Karlsruhe. In the first study, the campus of the University of Education, which is situated in the inner city of Karlsruhe, was manipulated. This location was chosen because it is planned to integrate urban gardening sites into the campus. We were thus interested how urban gardening scenarios would be perceived by both students and employees. In the second study, green spaces in inner city residential areas of Karlsruhe were manipulated. The chosen locations are all potential areas for future urban gardening activities.

Study 1 was conducted in January 2014 and involved 75 students and 34 employees of the university. Study 2 was carried out in April 2014 and involved 200 city dwellers. For this study, people were approached in well-visited parks in the inner city, and asked whether they would be willing to participate in the survey (80% agreed to participate). Selection of participants was at random; after a respondent had completed all tasks, the next person was approached and asked for his or her participation. The entire process of participation was strictly anonymous and people were assigned numbers. Study 1 was approved by the law official of the Karlsruhe University of Education. In study 2, participants were informed verbally about the broad aims of the research and chose whether they wanted to participate in the survey.

2.2. Visualizations (study 1 and 2)

Digital photographs were taken using a Nikon D90 camera with an 18–105 mm lens. From these photographs, images were constructed by computer-aided photo editing (using the program Jasc Paint Shop Pro 9). The images varied in land use in the foreground, while the background was always taken from the original photograph. During the editing process, persons or anthropogenic elements such as bicycles or cars were not removed as we wanted most realistic images of urban gardening activities which, of course, involve people in city environments.

In study 1, digital photographs of five different campus locations were taken, and the visualizations developed as follows: in each location the first image was not manipulated, i.e., it depicted the status quo; the second one included flowerbeds or flowering meadows, and the third vegetables. To be as realistic as possible, one image showed vegetable plots without vegetation (depicting a winter scenario; no. 12 in Table 1), and another depicted container vegetables (no. 9). All flowers and vegetables can be found in the region and, with the one exception, were shown in their most attractive stages (flowering, mature vegetables).

In study 2, digital photographs of three different city locations were taken, and the visualizations developed as follows: in each location, the first image was not manipulated (status quo); the second showed vegetables grown in containers, the third vegetable plots, and the fourth flowerbeds or flowering meadows (resulting in 12 different images).

2.3. Questionnaire design

2.3.1. Study 1

The five campus locations, each with its three images, were imparted in the questionnaire from above to below, always showing the status quo first, then the flower scenario, and finally the