An Analysis of Differences in Perceived Social Value of Community Gardens as Urban Green Spaces between Participating and Non–participating Residents

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ABSTRACT

Background and objective: The purpose of this study is to determine the difference in the perceived social values of community gardens as urban green space between participating and non–participating residents.

Methods: From December to March 2021, a survey was conducted on community gardens that targeted both participating and non–participating residents. For data analysis, frequency analysis, independent samples T–test and regression analysis were performed using SPSS 21.0.

Results: First, there were differences between residents participating in GCG activities and non–participating residents in their perception of community gardens, as well as their perception of expected conflicts. To resolve expected conflicts, both groups responded that efforts through communication were necessary, but participating residents highlighted the need for trust with the administration; while non–participating residents suggested improving the physical environment. Second, both groups recognized the social values of the community garden as important, and generally evaluated the value of leisure and recreation to be high. However, there was a difference between the groups when it came to the importance of each category of social values: participating residents ranked the categories in the order of symbolic value, value of the commons, and ecological value, while for non–participating residents, the priority of social values was ranked in the order of ecological value > symbolic value = the value of the commons. From this difference, it can be noted that the focus on the perception of spatial values could change from the physical aspect to the cognitive aspect depending on whether residents participated or not. Third, both groups answered that it was necessary to expand opportunities for participation to promote social values. However, participating residents prioritized institutional support over expanding opportunities for participation, while non–participating residents recognized the diversification of programs as an equally important means of social value enhancement as the expansion of opportunities for participation, placing more importance on the physical conditions for their participation activities. The value of the commons was found to be a factor influencing the satisfaction with relevant projects.

Conclusion: In conclusion, both participating and non–participating residents recognized the community garden as important as a space for realizing social values. Therefore, to realize social values in community gardens and successfully promote relevant projects, specific practical measures and strategies are needed to expand the physical value of community gardens, reduce differences between groups in their perception of social values through transparent and open communication and active participation, and enhance cognitive value through institutional support.

Keywords: community garden, social value, participating residents & non–participating residents, value improvement, opportunity for participation

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Introduction

With the recent rise in interest in social values, it is increasingly necessary to prepare action plans for the realization of social values in public spaces. In 2017, the National Assembly presented specific implementation and evaluation indicators through the Basic Act on Realization of Social Values by Public Institutions (draft). According to the draft, social values are “values that can contribute to the public interest and development of the community in all areas, such as society, economy, environment, and culture,” and are core values that form the government's philosophy of administration of state affairs (Kim et al., 2020; Yoon et al., 2017). Social values are normative and practical values for improving the quality of social life rather than a clear theoretical concept. Walzer stated that social values are “community-dependent” values in which the meaning that the community considers important from a pluralistic perspective is given and those values are shared (Lim, 2009). In addition, social values are values that go beyond concern for private benefits, and pursue a sustainable community (Lee, 2016). Seoul Metropolitan Government has carried out activities to realize social values through a range of projects, including urban regeneration, town development, urban vegetable garden activities with voluntary participation of citizens, and community gardens. In particular, spaces such as urban parks and vegetable gardens contribute to the restoration of urban communities and regional revitalization through encouraging more active and voluntary participation by residents (Noh, 2012).

Community gardens located in public parks help build closer relationships among individual residents as the community directly manages such places, and the value becomes more diversified as the community shares them. Community gardens are differentiated from simple resident-participatory green space creation projects, in that the residents themselves are responsible for managing them; they differ from other spaces in that they have a high degree of openness, unlike existing urban vegetable gardens where individual rights are strong, and aim for common interests through the voluntary participation of citizens (Rosol, 2006). As part of an urban green space, community gardens not only have ecological value (Lee, 2016) that contributes to a healthy urban environment, but also have pluralistic value (Chae, 2016) in the physical and cognitive aspects. With the high openness and promotion of citizens' social participation, the importance of their social value has gradually increased.

From a pluralistic point of view, shared social values have the characteristics of publicness, fluidity, diversity, and consensus (Yoon et al., 2017). These characteristics may cause interests depending on the participating entities, and differences in value standards depending on the perceptions of such entities. In particular, there is a difference in perception from non-participating residents in community gardens activities; they recognized that residents participating in such activities were privileged, as a particular group of people participating in public space activities (Lee et al., 2016). Although residents have fundamentally common goals, they may differ in how and at what speed they achieve them. Participating residents tend to value the effort and competency required in the process of a project, while non-participating residents tend to value the results. It is necessary to establish social values that all community members can sympathize with, to structure the differences in perception among stakeholders based on these, and to prepare a preventive response plan for conflicts that may arise from differences in perception between various entities through case studies. Therefore, this study aims to determine the difference in perceptions between participating and non-participating residents about the social values of community gardens as urban green spaces, and suggest implications for the direction of realizing the ultimate social values.

Research Methods

Subjects and methods

This study attempted to derive the social values of “resident-participatory community gardens” as urban green spaces and investigate the difference in perceptions of the social values between residents who participated in such garden creation and those who did not. The site of the study is Gangdong community garden, located in 199-2 Amsa-dong, Gangdong-gu, Seoul, with an area of 10,000 m². At the site, a space where compensation has been completed among the plan-
ned sites for amsa historical park, a community garden was created, educational programs were operated and supported to spread garden culture, and gardener training was also provided Fig. 1. These were promoted through a business agreement between Gangdong-gu, Gangdong garden culture forum, and a community-based social venture (glower and garden in people). The Gangdong garden culture forum had 65 members based on payers of membership fees in 2021, and 158 based on participants in the chat room on KakaoTalk.

Before analyzing differences in perceptions of social values, four categories of social values were derived by considering the characteristics of social values and the functional aspect of community gardens as urban green spaces. To develop indicators for the social value of community gardens, not only were the characteristics of the social values of community gardens reported in previous studies synthesized, but social values of community gardens that appeared at home and overseas were also derived through consultation with field experts and researchers, and analysis of field data. Based on these, of the evaluation indicator elements of Korean social values in South Korea, evaluation indicator elements suitable for evaluating the social values of community gardens were selected. 20 indicators of social values of community gardens were selected, which matched the spatial characteristics of community gardens based on the 4 categories of social values of urban green spaces derived previously, and were feasible based on internal activity reports reflecting the field situation Fig. 2.

Classification of social values based on the functions of urban green spaces

Social values are pluralistic, normative, and practical as “values that are oriented towards others and communities,” and have characteristics including publicness given a meaning by the community, variability that changes according to Kim, 2007; the times and subjects of society, and diversity where diverse values coexist (Lim, 2009; Kim, 2010; Lee, 2016). The usage culture of a park composed of forests, trees, and flowers as a urban green space changes according to human behavior and perception (Chae and Cho, 2021), and the social values of green spaces reflect the relative importance given to and evaluated by individuals for changes that occur in their daily life (Eom et al., 2019), and may vary depending on the times and social conditions.

Fig. 1. Site map.

<table>
<thead>
<tr>
<th>Categorize</th>
<th>Develop indices</th>
<th>Perception survey and analysis</th>
</tr>
</thead>
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<tr>
<td>Social value</td>
<td>Function of urban green</td>
<td>Social value of community garden based on literature search</td>
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<tr>
<td>Social value</td>
<td>Function of urban green</td>
<td>Field report of community garden</td>
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<tr>
<td>4 Categories of social value in urban green</td>
<td>20 Indicators of social value in community garden</td>
<td>Survey of participant/Non-participant's perception</td>
</tr>
<tr>
<td>Literature search</td>
<td>Literature search and field expert/researcher</td>
<td>Online survey</td>
</tr>
</tbody>
</table>

Fig. 2. Research design.
Regarding the general function of urban green spaces, Rosol (2006) explained that it changed over time. In the early 20th century, with the intensifying of urbanization and industrialization, the importance of health functions within the functions of urban green spaces increased. From the second half of the 20th century, the social function of urban green spaces has been subdivided, and has been extended even to economic functions since then (Wagner, 1915; Nohl, 1983; Bosching and Selle, 1992); it can be seen that the value of green spaces has changed as their function has changed. In previous studies in Korea, social values of green areas were classified based on their function. Lee (2016) divided social values of urban green spaces based on their function into the individual level (“relaxation and emotional relief” and “exercise and leisure activities”) and the local community level (“ecological environment conservation” and “social community activation,” and “education and culture”). Chae (2016) studied the pluralistic values of green areas on nearby mountains, and reported that they have mainly physical value (ecological and recreational values) and cognitive value (symbolic value and the commons value). According to him, as for social values, it is important with whom such spaces are shared and whether the shared values are recognized equally among the shared subjects. Considering the spatial characteristics of urban green spaces, their social values are slightly different in terms of the detailed definitions that classify the functions and values of urban green space. However, they can be broadly summarized as having physical values resulting from ecological and recreational functions, and cognitive values based on the commons and symbolic functions shared with many residents within the community. Therefore, the social values were classified into four categories (ecological value, recreational value, symbolic value, and the commons value) by synthesizing previous studies of urban green spaces and considering the spatial function in Fig. 3.

**Selection of social value indicators of community gardens**

Based on the four categories of social values of urban green spaces derived above, the characteristics of social values of community gardens as urban green spaces were summarized as follows in consideration of previous studies and our findings through consultation with field experts, and the social values indicators were derived pursuant to the characteristics.

In terms of the physical aspect, the ecological value of community gardens protects and improves urban ecological en-
environment based on the ecological function of green spaces (Bosching and Selle, 1992). In particular, urban garden spaces provide new habitats for insects and birds, preserve local resources and biodiversity, and help restore local ecosystems through sustainable local agricultural production and eco-friendly planting and management methods (Rosol, 2006; Bütikofer, 2012). In addition, community gardens have the value of leisure and recreation, in that they provide a space for relaxation and vitality to urban residents; they can get away from their tiring daily lives and find a place to rest, as well as emotional satisfaction and stability through community garden activities (Borgstedt, 2011). Even if they do not actively participate in gardening activities, their sense of isolation diminishes simply by watching abandoned places become meaningful places and their neighborhoods come alive; in this way, increased interaction with community members will reduce their sense of alienation (Glaser, 1998; Holl and Meyer-Renschhausen, 2000; Putnam, 2001; Healy and Coté (OECD), 2004; Frank, 2011). In the cognitive aspect, community gardens have the social value of the commons that promotes participation and solidarity in the local community based on publicness and high openness. The feelings, time, and resources shared while creating a community garden increase empathy with the community and foster inclusion and solidarity (Ilnes, 2005; Bittner et al., 2008). The trust and sense of belonging formed in this manner forms a social network, and based on this, community gardens serve as a platform for the local community, becoming a place for education and meeting, a space for expansion and creation of social capital, and a space for social re-grounding of participating residents (Müller, 2011; Skolka, 1984; Bittner et al., 2008; Madlener, 2009). At the same time, participating residents proactively establish regulations for community activities, self-regulate and manage conflict situations, promote self-reliant activities among members, and develop mature citizenship (Borgstedt, 2011).

According to a report by a researcher who analyzed field data and expert advice on Gangdong Community Garden (GCG) in Seoul, the garden helped to restore the local ecosystem through the combination of environmentally friendly planting and management and eco-friendly tree species, and it has ecological value to act as a space for carbon reduction and fine dust mitigation as a local green resource. In addition, GCG, where local festivals and events, children's play programs, and educational programs have been performed, has the value of leisure and recreation as a space for local leisure and culture; it also has the social value of the commons, which promotes a garden culture through residents' active participation, creates local jobs through volunteer activities and technical education projects, thereby establishing a virtuous cycle of the local economy. As GCG can serve as a landmark representing the local culture, as well as develop a unique identity for the region based on the region's cultural heritage, it even has symbolic value as a cultural space and a garden landscape created by local residents.

Meanwhile, in the aforementioned Basic Act for the Realization of Social Values by Public Institutions (draft) (Yoon et al., 2017), the social values were defined as comprising 12 elements including human rights, safety, labor, jobs, health and welfare, support for the socially vulnerable, win-win cooperation, local economy, community restoration, ethic of responsibility, environment, and participation. Taking previous studies and field data together, and examining the characteristics and social values of community gardens, of the various elements, the ones that could be used as evaluation indicators of social values of community gardens were found to be jobs, health welfare, support for the socially vulnerable, win-win cooperation, local economy, community restoration, environment, and participation. Therefore, we classified the characteristics of the social values of community gardens summarized above into four categories, and applied to them the elements of social values defined by the draft regarding the realization of social values; the evaluation indicators for the social values of GCG can be specified as shown in Table 1.

### Research and survey methods

#### Derivation of survey items

To compare the differences in perception between participating and non-participating residents in community garden activities, previous studies focused on analyzing the differences in such perception according to subjects were examined. These included: factors affecting the performance of residents' autonomous operation according to differences in perception between local residents and citizens.
committee (Shin et al., 2016; Ha and Gil, 2016); and differences in perceptions of key factors, success factors, and conflict factors in the system according to the collective difference between citizen committee members and public officials (Lim and Ha; 2014, Kim and Lee; 2009). It was also reported that there were differences in the cause and subject of conflict according to subjects (Ko et al., 2019; Yoo et al., 2017; Kim et al., 2007). Differences in perception among subjects affected policy evaluation (Kang, 2007; Kim and Cha, 2010). Therefore, the survey items were derived by synthesizing studies on factors affecting the success and satisfaction of systems and policies according to differences in perception between groups (Shin et al., 2016; Ha and Gil, 2016; Lim and Ha, 2014; Kim and Lee, 2009; Kang, 2007; Kim and Cha, 2010) and studies on relevant conflict factors (Ko et al., 2019; Yoo et al., 2017; Kim et al., 2007). The items consisted of questions to derive improvement measures to enhance satisfaction and social values by determining the subjects’ perceptions of community gardens and community activities, as well as differences in perceptions of social values of community gardens as urban green spaces based on evaluation indicators of the social values of community gardens derived earlier Table 2.

First, the perception of community garden activities and the characteristics of participation in community activities were investigated. Since there would be a difference in the perception and specific activities between residents participating in community garden activities and non-participating residents, the survey items of the two groups were separately divided and composed. In addition, limiting factors were determined through questions about conflicts (subjects and factors) expected in community garden activities.

### Table 1. Indicators of social value of Gangdong Community Garden

<table>
<thead>
<tr>
<th>Category of social value</th>
<th>Detailed index</th>
<th>Assessment contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ecological value (4)</td>
<td>The healthy ecological environment</td>
<td>Offer the place and soil conditions to plant trees and flowers</td>
</tr>
<tr>
<td></td>
<td>Biodiversity</td>
<td>Degree of biodiversity</td>
</tr>
<tr>
<td></td>
<td>Climate change (reduction of carbon dioxide and particulate matter)</td>
<td>Effect of carbon emission reduction and reducing fine dust</td>
</tr>
<tr>
<td></td>
<td>Eco-friendly food</td>
<td>Amounts of eco-friendly products</td>
</tr>
<tr>
<td>Leisure and recreation value (4)</td>
<td>Enjoying garden and resting</td>
<td>Offer gardens and recreation place</td>
</tr>
<tr>
<td></td>
<td>Culture and experience program</td>
<td>Offer culture and experience programs</td>
</tr>
<tr>
<td></td>
<td>Play and education</td>
<td>Offer playgrounds and education programs</td>
</tr>
<tr>
<td></td>
<td>Health improvement</td>
<td>Offer sport facilities and sport ground</td>
</tr>
<tr>
<td>Symbolic value (4)</td>
<td>Landmark of local (Gangdong)</td>
<td>Degree of regional representation</td>
</tr>
<tr>
<td></td>
<td>Hub of garden culture in Gangdong</td>
<td>Awareness as hub of garden culture</td>
</tr>
<tr>
<td></td>
<td>Platform of the local community in Gangdong</td>
<td>Awareness as local activity field and as place solving local problem</td>
</tr>
<tr>
<td></td>
<td>Storage of cultural heritage in Amsa</td>
<td>Awareness as culture heritage</td>
</tr>
<tr>
<td>Cognitive value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The value of the commons (8)</td>
<td>Active communication</td>
<td>Frequency of communication between participants</td>
</tr>
<tr>
<td></td>
<td>Trust between the government and the citizen</td>
<td>Frequency of communication between government and residents</td>
</tr>
<tr>
<td></td>
<td>Active of autonomy</td>
<td>Autonomous management</td>
</tr>
<tr>
<td></td>
<td>Community fellowship</td>
<td>Diversity of participant groups</td>
</tr>
<tr>
<td></td>
<td>Opportunity of varied jobs</td>
<td>Diversity of created jobs</td>
</tr>
<tr>
<td></td>
<td>Vitalization of local economy</td>
<td>Circulation of profits</td>
</tr>
<tr>
<td></td>
<td>Equal chance for opinions</td>
<td>Frequency of giving opinion by each participant</td>
</tr>
<tr>
<td></td>
<td>Openness of using and participation</td>
<td>Frequency of participation in local community</td>
</tr>
</tbody>
</table>

the items were composed to evaluate the importance of each of the 20 indicators of social values of community gardens previously derived. Through these, we tried to understand the importance of each category of social values of community gardens, and to determine the difference in perception between participants and non-participants. Third, to determine how to promote social values of community gardens, items were also included that related to factors affecting the satisfaction of participating residents and improvements to promote social values recognized by the two groups.

**Survey and analysis methods**

This study limited its survey subjects to residents who are interested in resident participation and local community activities, and divided them into two groups, participating and non-participating residents, based on their participation in the community garden; a total of 102 residents, 51 from each group, were surveyed online using Google Forms from March 11 to 14, 2021. SPSS 21.0 for Windows was used for statistical processing of the data collected in this study, and frequency analysis, independent samples t-test, and regression analysis were performed on the survey results for both groups of participants and non-participants. Frequency analysis was carried out using a nominal scale to determine whether residents were aware of and participated in the community garden. Differences between the groups in the perception of social values were compared and analyzed through independent samples t-test on a 5-point Likert scale and regression analysis; the significance level of the t-test was set to \( p < .05 \) and \( p < .1 \). To derive improvements to promote social values, regression analysis on a 5-point Likert scale was performed to determine value factors affecting the satisfaction of participating residents, and the significance level was set to \( p < .01 \) and \( p < .05 \). In addition, for specific improvements, frequency analysis was performed using a nominal scale between the groups.

**Results and Discussion**

**Characteristics of respondents**

The local residents who participated in this study included 51 participating residents (50.0%) with experience in participating in GCG, and 51 non-participating residents (50.0%) without such experience: by gender, respondents were male (31.0%) and female (69.0%); by age group, under 30 (1.0%), 30-40 years old (15.0%), 40-50 years old (38.0%), 50-60 years old (36.0%), and over 60 years old (10.0%). The demographic characteristics of the residents who responded to the survey can be summarized as follows. The proportion of those in their 40s and 50s was the highest at 74.0%. For gender, the proportion of women was higher than that of men. For occupation, professional workers (27.0%) and housewives (27.0%) were the largest groups, followed by office workers/managers (19.0%), self-employed workers (13.0%), unemployed (2.0%), and others (12.0%). Most of them resided in Gangdong-gu (82.0%), and only 18.0% in other areas. The residents of Gangdong-gu.
were evenly distributed in Gangil-dong, Godeok-dong, Gil-
dong, Dunchon-dong, Myeongil-dong, Sangil-dong, Seongnae-
dong, Amsa-dong, and Cheonho-dong. The group composi-
tion of the residents who participated in the study is shown in
Fig. 4. Most of the respondents were residents of Gangdong-gu,
who were evenly distributed within the area, and those from
other areas were also found to reside near Gangdong-gu.

**Level of awareness and participation in GCG between
two groups**

**Participation characteristics of participants in GCG**

(1) Form of participation in GCG

Residents who have participated in the community gar-
den can be divided into non-members who only have par-
ticipated in volunteer activities (12.0%), and members (88.0%).
The members were grouped into “those only participating
in volunteer activities (35.0%)” and “those participating in
committee activities (53.0%).” This indicates that residents
participating as members were involved in the autonomous
management of the garden through committee activities. The main
activities consisted of “general volunteer activities (45.0%)”
and activities of committees such as “Garden Committee
(31.0%),” “Recreation Committee (16.0%)” and “Planning
Committee (8.0%).” The participation period was evenly
distributed: less than 6 months (18.0%), 6 months to 1 year
(21.0%), 1 to 2 years (21.0%), 2 to 3 years (20.0%) 3 years
or more (20.0%).

(2) Motives for participation and reasons for continued
participation

The main motives for participating in the community gar-
den were “participation in community activities (28.8%)”
and “volunteer work and contribution to the local community
(24.0%),” showing that contribution through participation in
local community activities accounted for more than 50.0%. In
addition, the reason for continued participation was “volunteering
and contributing to the local community (33.0%)” as the
highest ratio, followed by “good people participating to-
gether in such activities (27.0%)”; thus, more than half of
them found meaning in doing activities that contribute to
the community together.

(3) Factors hindering satisfaction and participation in
GCG

Satisfaction with participation in the community garden
was above average. Satisfaction with participation activities
was found to be high considering the following satisfaction
factors: “participation activities (30.5%),” “enhancement of
ecological and environmental values (17.1%)” and “volunteer
activities for citizens (14.6%).” Difficulties in participating
in community gardening activities included “irregular and
temporary activities (45.3%)” and “difficulty in communica-
tion with administrative agencies (21.9%).” In addition,
the important competencies of participants for continuous
participation were found to be “communality (53.0%)” and
“attachment to the community (32.0%)”; they responded that

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*(Figure 4: Characteristics of respondents.)*
a sense of community and affection for the community were more important factors than professionalism in gardening.

Understanding of GCG by non-participating residents

(1) Level of awareness
Most of the non-participating residents who responded to the survey were aware of GCG (88.0%), and had visited there (64.0%); the majority of them (69.0%) were found to have acquaintances participating in the activities.

(2) Perception of community gardens, and expected activities
Most of the non-participants perceived the community garden as a space created by residents together, either as “spaces where residents create a garden together (40.0%)” and “spaces where residents in the community participate (31.0%).” In addition, with regard to the reason for participating in the community garden, it was found that they expected different activities through the following programs and considered those as participation factors: “expectations of various programs (37.0%),” “garden creation (21.0%),” “adventurous playground activities (19.0%),” “various volunteer activities (13.0%)” and “community garden operation and planning (10.0%).” Therefore, it is considered necessary to plan various participation programs to increase the opportunity to participate in the community garden in the future.

(3) Participation in other community activities
Non-participating residents in GCG accounted for the majority of respondents participating in other community activities within the area (78.0%); as for other community activities, with the exception of participating in the residents’ association (18.0%), the residents were participating in activities centered on hobbies and friendships. The top reason for participating in other community activities was “consistent with my interests,” followed by “wanting to participate in community activities (27.0%)” and “wanting to volunteer and contribute to the local community (24.0%).” The reasons for not participating in GCG activities included “participating in other activities (29.1%)” and “lack of time (21.8%).”

Expected conflicts in community gardens between groups

Causes of conflict
Participating and non-participating residents in community gardens perceived “difference in perception between participants (32.0%)” as the most likely cause of conflict, followed by “lack of trust between the administration and residents (15.0%),” “difficulty in communication (14.0%)” and “insufficient systematic system and operation (14.0%).” Comparing the two groups, participating residents ranked the causes in the order of “difference in perception between participants (39.2%)” and “lack of trust between the administration and residents (29.4%)” while non-participating residents ranked them in the order of “difference in perception between participants (38.0%)” and “insufficient systematic system and operation (18.0%).” Fig. 5. Although both groups were found to be concerned about the difference in perception between participants, it can be inferred that whether they had participated in specific activities could be the cause of the difference in perception, from the fact that participating residents had higher concerns about conflicts with the administration than non-participating residents.

Fig. 5. Perception of conflict causes.
Subjects of conflict

Regarding the expected subjects of conflict, the majority of participating residents answered “conflict between residents and the administration (44.9%)” and “conflict between participants (38.8%),” indicating that they were more concerned about internal conflicts or conflicts with the administration than conflicts with external groups. On the other hand, non-participating residents were concerned about “conflict between participants and non-participants (45.1%),” showing a difference in their perception of conflict subjects Fig. 6. This difference can be seen as a result of the high fear of conflict between the groups to which they belong.

Solution of conflict

Both groups recognized “various efforts for communication (39.0%)” as the most important means for resolving conflicts. However, non-participating residents showed a higher awareness of “efforts for communication (46.9%)” than participating residents, while participating residents had a higher awareness of “introducing a transparent and open system (29.4%),” indicating a difference in perception between participating and non-participating residents Fig. 7. The difference in perception of conflict solutions is also considered to depend on whether they participated in such activities. In particular, given that participating residents have higher expectations for administration than non-participating residents and value trust with the administration, it is judged that the expansion of opportunities for residents' participation and transparent and active communication will be an important policy tool to enhance the trust with the administration. On the other hand, if the administrative response is not systematic and flexible, it may be a factor that decreases the trust between the administration and residents, and sows the seeds of social conflict.

Analysis of differences in perceptions of social values of the community garden between the groups

Perception of social values of the community garden

The average of each social value element is shown in Table 3. Overall, “leisure and recreational values (4.03)” was evaluated the highest, followed by “symbolic value (3.90),” “the value of the commons (3.80)” and “ecological value (3.79);” the average of all the elements was found to be 3.88. The leisure and recreational value and symbolic value were higher than the overall average, while the value of the commons and ecological value were relatively low. Some sub-items were highly evaluated for each value, including “a hub of garden culture in Gangdong-gu (4.23),” “a space for enjoying gardens and relaxation (4.17),” “creating a healthy ecological environment (4.15)” and “openness of using and participation (4.13);” while others were evaluated relatively low, including “providing eco-friendly agricultural products and food (3.15),” “providing various job opportunities (3.28) and “vitalizing the local economy (3.19)” Table 3. In summary, the social values of the community garden were evaluated highly by all the residents, and in particular, they regarded leisure and recreational values and symbolic values as important, and considered the value of the commons and ecological value as relatively low. Above
Table 3. Differences between groups according to independent t-test by detailed index

| Category of Social Value | Detailed Index | Non-participants | | T-test | | Overall |
|-------------------------|---------------|------------------|-----------------|-----------------|------------------|
|                         |               | Mean | Std.deviation | Mean | Std.deviation | Mean | Std.deviation |
| Ecological value        | The healthy ecological environment | 4.00 | 1.131 | 4.29 | 0.923 | -1.439 | 0.153 | 4.15 |
|                         | Biodiversity | 3.65 | 1.146 | 3.96 | 0.958 | -1.500 | 0.137 | 3.80 |
|                         | Climate change (reduction of carbon dioxide and particulate matter) | 3.88 | 1.194 | 4.22 | 0.986 | -1.537 | 0.127 | 4.05 |
|                         | Eco-friendly food | 3.31 | 1.273 | 2.98 | 1.435 | 1.241 | 0.217 | 3.15 |
|                         | Subtotal      | 3.71 | 1.111 | 3.86 | 0.879 | -0.766 | 0.446 | 3.79 |
| Leisure and recreational value | Enjoying garden and resting | 4.00 | 1.166 | 4.33 | 0.952 | -1.581 | 0.117 | 4.17 |
|                         | Culture and experience program | 3.94 | 1.121 | 4.00 | 1.020 | -0.277 | 0.782 | 3.97 |
|                         | Play and education | 4.08 | 1.055 | 4.18 | 0.974 | -0.488 | 0.627 | 4.13 |
|                         | Health improvement | 3.71 | 0.986 | 4.02 | 0.141 | -1.588 | 0.116 | 3.87 |
|                         | Subtotal      | 3.93 | 0.988 | 4.13 | 0.878 | -1.085 | 0.280 | 4.03 |
| Symbolic value          | Landmark of Gangdong | 3.65 | 1.163 | 4.06 | 1.121 | -1.820 | 0.072** | 3.86 |
|                         | Hub of garden culture in Gangdong | 4.06 | 0.988 | 4.39 | 1.060 | -1.643 | 0.104 | 4.23 |
|                         | Platform of the local community in Gangdong | 3.69 | 1.086 | 4.20 | 0.960 | -2.512 | 0.014* | 3.95 |
|                         | Storage of cultural heritage in amsa | 3.41 | 1.080 | 3.41 | 1.021 | -1.507 | 0.135 | 3.41 |
|                         | Subtotal      | 3.70 | 0.876 | 4.09 | 0.878 | -1.515 | 0.034* | 3.89 |
| The Value of common resource commons | Active communication | 3.86 | 1.040 | 4.20 | 0.939 | -1.700 | 0.092** | 4.03 |
|                         | Trust between the government and the citizen | 3.65 | 0.934 | 3.78 | 0.986 | -0.722 | 0.472 | 3.72 |
|                         | Active of autonomy | 3.94 | 1.028 | 4.20 | 0.980 | -1.282 | 0.203 | 4.07 |
|                         | Community fellowship | 3.86 | 1.040 | 4.22 | 0.966 | -1.776 | 0.079** | 4.04 |
|                         | Opportunity of varied jobs | 3.45 | 1.101 | 3.12 | 1.143 | 1.500 | 0.137 | 3.29 |
|                         | Vitalization of local economy | 3.22 | 1.154 | 3.16 | 1.189 | 0.253 | 0.800 | 3.19 |
|                         | Equal chance of opinions | 3.67 | 1.052 | 4.16 | 0.987 | -2.426 | 0.017* | 3.92 |
|                         | Openness of using and participation | 3.96 | 1.148 | 4.29 | 1.006 | -1.559 | 0.122 | 4.13 |
|                         | Subtotal      | 3.70 | 0.939 | 3.88 | 0.842 | -1.068 | 0.288 | 3.80 |
|                         | Total         | 3.76 | - | 3.99 | - | - | - | 3.88 |

* Significant at p < .05 or 0.1 by t-test, respectively.

Table 4. Result of regression analysis

| Model Summary b |
|-----------------|--------------------|-----------------------|-------------------|------------------|
| Model | R | R Square | Adjusted R square | Std.Error of the estimate | Durbin-watson |
| 1 | .690a | 0.477 | 0.431 | 0.465 | 2.530 |

| Coefficients a |
|-----------------|--------------------|--------------------|-----------------|------------------|
| Model | Unstandardized Coefficients | Standardized Coefficients | t | Sig. | Collinearity Statistics |
|       | B | Std. Error | Beta |       |       | Tolerance | VIF |
| (Constant) | 2.669 | 0.334 | - | 7.988 | 0.000 | - | - |
| Ecological value | -0.110 | 0.143 | -0.157 | 0.447 | 0.273 | 3.667 |
| Leisure and recreational value | 0.285 | 0.173 | 0.406 | 1.646 | 0.107 | 0.187 | 5.351 |
| Symbolic value | -0.345 | 0.143 | -0.490 | -2.409 | 0.020** | 0.275 | 3.642 |
| The value of the commons | 0.592 | 0.169 | 0.810 | 3.511 | 0.001* | 0.214 | 4.677 |

* Significant at p < .05 or 0.1 by t-test, respectively.
all, they recognized “the value as a hub for local garden culture and a space for creating a healthy ecological environment” as important. It can be seen that the residents not only basically recognized that the community garden has social value, but also evaluated it highly as a physical space in which they can enjoy various leisure activities, as a base for local cultural activities.

**Comparison of social values between participating and non-participating resident groups**

The differences between the groups for social values are shown in Fig. 8 and Table 3. Overall, it was found that participating residents (3.99) evaluated the social values of the community garden more highly than non-participating residents (3.76), and that the participating residents perceived all the elements of the four social values as relatively high. Participating residents ranked the importance of social values in the order of the value of leisure and recreation, symbolic value, the commons value, and ecological value. Non-participating residents ranked it the value of leisure and recreation, ecological value > symbolic value = the commons value. The value of leisure and recreation was commonly recognized as high by both groups, while the importance of symbolic and ecological values was perceived relatively differently. In particular, the difference in perception of symbolic value (0.39) was relatively large, and that of ecological value (0.15) was relatively low, indicating that the participating residents perceived symbolism as more important, and non-participating residents perceived symbolism as relatively less important. This difference is considered to stem from the participants' recognition of the significance of participation activities as important.

Looking into detailed elements, as shown in Table 3, “A platform for the local community in Gangdong-gu” (significance probability $p = .014$) among symbolic values and “equal chance for opinions” (significance probability $p = .017$) among the commons values were found to be statistically significant in the independent samples T-test. This is judged to have occurred as the participating residents expected the community garden to serve as a resource representing the local community and perceived it as a space for realizing equity in which they can freely share their opinions; while non-participating residents perceived it as a representative resource as relatively low, and even lower than other elements, and as even in the presentation of opinions, their access of non-participating residents was limited, their awareness was low.

**Factors affecting satisfaction, and improvements**

**Factors affecting satisfaction**

Based on the results of a regression analysis performed to identify the major value factors that affected participating residents' satisfaction with the project, the adjusted R-squared was statistically significant at 0.431 ($p > .400$), and the perception of the value of the commons ($p < .01$) and the symbolic value ($p < .05$) had significant effects on their satisfaction Table 4. In particular, for the value of the commons, since the coefficients were derived as positive values, it is considered that the residents who perceived the value as higher were more satisfied. For symbolic value, the coefficients were derived as negative, so it is judged that those who perceived the value as higher were less satisfied. This seems to be because the participating residents had high expectations for symbolic value, but the tangible results did not meet their expectations. For this reason, it is necessary to come up with practical indicators that enable the realization of symbolic values in order to achieve high satisfaction among the residents participating in such activities.
Improvements for promoting social values

Combining the improvements recognized by the two groups to promote social values of the community garden, “expansion of opportunities for participation (20.0%)” was recognized as the most important, followed by “diversification of programs (18.0%)” and “increasing institutional and administrative support (17.0%).” Comparing by group, the participating residents perceived “expansion of institutional and administrative support (32.0%)” as the most important, followed by “expansion of opportunities for participation (28.0%)” and “increasing financial support (24.0%)”; while non-participating residents perceived the improvements in the order of “expansion of opportunities for participation (29.4%)” and “diversification of programs (29.4%).” Both groups recognized “expansion of opportunities for participation” as an important factor in enhancing social values, but there was a difference between the two groups in the improvements; non-participating residents prioritized the “diversification of programs,” placing importance on the physical conditions for their participation, while participating residents recognized institutional support including administrative and financial support as more important Fig. 9. Like the difference between the perception of the community garden and that of its social values, which was analyzed above, this difference appears to have arisen because non-participating residents valued physical values, including expanding the scope of leisure activities in the region through the community garden, while participating residents recognized that administrative cooperation was required to increase their satisfaction with community gardening activities and to promote symbolic values.

Conclusion

Summarizing the results of this study, the social values of community gardens were classified into 4 categories considering the function of space, and the characteristics based on the defense of pluralistic justice. They were grouped into physical aspects (ecological values, leisure and recreational values) and cognitive aspects (symbolic values, the commons values). In addition, a total of 20 evaluation indicators for the social values of the community garden were selected in consideration of feasibility for each category. The social values of community gardens were highly consistent, with 8 elements (jobs, health and welfare, support for the socially vulnerable, win-win cooperation, local economy, community restoration, environment, participation) out of the 12 elements suggested by the evaluation indicators and the Basic Act on Realization of Social Values by Public Institutions (draft). However, as some indicators were insufficient to be applied to current community gardens, 20 indicators were derived by expanding the indicators for the value of leisure and recreation and the value of the commons, based on previous studies on the social values characteristics of community gardens, and internal activity reports reflecting the field situation. In a survey performed that was focused on the Gangdong Community Garden (GCG) using the derived indicators, most of the respondents were found to be local residents or those who living near to Gangdong-gu, and their perception of the community garden as an urban green space in the area was assessed as follows.

**Fig. 9.** Improvement measures to promote social values.
First, there were differences between residents participating in GCG activities and non-participating residents in their perception of community gardens, as well as their perception of expected conflicts. The motivation for participating residents to participate in GCG activities, the reasons for their continued participation, and satisfaction factors were that they wanted to contribute to the local community by participating in such activities, indicating that they perceived the community garden as a space to enhance participation and sense of community. On the other hand, non-participating residents were more likely to perceive the community garden as a space for gardening, and had a stronger awareness of physical aspects, including expecting a variety of programs, than participating residents. To resolve expected conflicts, both groups responded that efforts through communication were necessary in common, but the participating residents highlighted the need for trust with the administration, and the non-participating residents wanted improvement in their physical environment, showing a difference between the groups. Therefore, it was found that administrative support that enables various programs and active communication is necessary for the continuous maintenance of the community garden.

Second, both groups recognized the social values of the community garden as important, and generally evaluated the value of leisure and recreation to be high. However, there was a difference between the groups when it came to the importance of each category of social values; participating residents ranked the categories in the order of symbolic value > the commons value > ecological value, while non-participating residents ranked them in the order of ecological value > symbolic value = the commons value. From this difference, it can be seen that although both groups agreed on the role of leisure and recreation of the community garden located in the park, each group recognized the importance of its symbolism and public nature as different. In particular, participating residents were more likely to recognize “a platform for the local community in Gangdong-gu,” a symbolic value indicator, and the “equal chance for opinions,” an indicator of the value of the commons, than non-participating residents. From this difference, it can be noted that the focus on the perception of spatial values could change from the physical aspect to the cognitive aspect depending on whether residents participated or not.

Third, both groups answered that it was necessary to expand opportunities for participation to promote social values. However, participating residents prioritized institutional support over expanding opportunities for participation, while non-participating residents recognized the diversification of programs as an equally important means of social value enhancement as the expansion of opportunities for participation, placing more importance on the physical conditions for their participation activities. In addition, participating residents perceived the value of the commons as higher the more they were satisfied, but they perceived the symbolic value as higher the less satisfied they were, suggesting that practicable strategies for realizing symbolic values are needed. Therefore, it was found that to promote the social values of community gardens, it is necessary to increase the number of participating residents through the expansion of opportunities for participation and programs, and to improve their satisfaction by strengthening the cognitive value factors.

In conclusion, both participating and non-participating residents recognized the community garden as important as a space for realizing social values, but there were differences in perception of the importance and improvements for each value category between the groups. Therefore, to realize social values in community gardens and successfully promote relevant projects, specific practical measures and strategies are needed to expand the physical value of community gardens, reduce differences between groups in their perception of social values through transparent and open communication and active participation, and enhance cognitive value through institutional support.

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