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Effect of Physical Environment and Programs on the Social Interaction of Youth Space Users in Seoul in the Case of Pilot Projects

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Abstract: The purpose of this study is to analyze the influence of the structure of a community space for local youth, called the Zero Gravity Zone, on the social interaction and satisfaction of its users. The factors of social interaction were influenced by the level of relationship, fellowship and participation. The research sites were the Youth Space G-valley (YS_G) and the Youth Space Daebang-dong (YS_D) in Seoul. As its research method, this study utilized partial least squares (PLS) structural equation modeling to analyze the influence structure. Results showed that YS_G, which is mainly used by office workers, has a significant effect on the overall satisfaction and social interaction of its users by providing physical space. On the other hand, YS_D, which is mainly used by college students and job-seekers, has a significant effect on the overall satisfaction and social interaction of its users by providing programs. Based on the above results, rather than standardizing operational spaces, it is necessary to plan and operate spaces such as these around the characteristics of the youth in each region to ensure frequent social interaction, which is the policy goal of the youth community.

Keywords: Seoul Youth Space; community space; social interaction; sustainable community

1. Introduction

The Seoul Metropolitan Government has opened Seoul youth spaces, called the Zero Gravity Zone, as pilot projects to revitalize youth communities and strengthen the individual abilities of local youth. The first youth space was opened in 2015 under the name of G-valley in Gaesan-dong (YS_G), and in the same year, the second youth space was opened in Daebang-dong (YS_D) as a pilot project. The Seoul Metropolitan Government operates four more youth spaces currently and has plans to build more.

The goal of the Seoul Youth Spaces is to activate 'social interaction' between young people for youth activities and communities. Previous studies in community spaces have focused on the role of social interaction and sustainable communities, which are the processes of activation of community spaces. If it is true that the creation of connections in local communities is necessary, it is also necessary to create opportunities to meet and encounter those who are not yet participants in the circle of community activities and to encourage them to interact and spend time together [1]. In order to build a sustainable community, it is necessary to create a well-designed built environment with services as significant characteristics [2].

Despite the diversity of the community in modern society, previous studies have still focused on neighborhood communities. Therefore, the studies on the communities and the social interaction of certain classes, such as in Youth Spaces, are insufficient.

The purpose of this study is to estimate the effect of the physical environment and programs of the Seoul Youth Space on the social interaction of young users, and to compare the influence of the physical environment and the programs of the two pilot projects where the user characteristics are different.

The physical environment, programs, and user characteristics are analyzed through manager interviews, observations and a questionnaire survey, and the effects of the physical environment and programs are estimated by the partial least squares structural equation model (PLS-SEM) with data from the questionnaire survey.

2. Theoretical Study and Literature Review

2.1. Community and Community Space

The concepts defined by scholars in community-related research are as follows. Hillery (1955) defined a community as that which consists of people engaging in social interactions within a certain geographical realm and with one or more common ties [3]. Volker et al. (2007) defined a community as a collection of multinational relationships, i.e., of relationships that help to achieve different aspects of well-being [4].

Based on the definition of community, several scholars conducted research on community spaces and facilities. Lee, W. (2007) [5] defined a community space as a facility that citizens can use continuously and efficiently in their everyday life, and which provides convenient access and a sense of local affiliation for its citizens. For Yang, S. (2004) [6], a community space is a facility that encourages contact among residents in the area and also allows them to share space.

In other words, a community space is a space in which citizens who live or work in the same area can share space, maintain mutual relations and develop the community. Its users can experience the sense of belonging and bond through the use of this community space and participate in work related to the community based on common values and interests.

2.2. Social Interaction and Its Factors

The concept of social interaction was studied together with the concept of community. First, Hillery (1955) [2] described the concept of social interaction as "the interaction of two or more people or groups of people interacting with each other, and this social interaction is empirically accumulated to form a community". Kim, K. (2005) [7] explained joint solidarity as a result of social interaction among members within a geographical scope: social interaction is a concept of the community formation process.

In other words, social interaction is an essential concept for community formation and consists of physical and non-physical interactions in which two or more people engage in social interaction with each other.

After examination of the factors that measure social interaction in the existing research (see Table 1 below), the study was redesigned based on measurements of community consciousness.

Based on the existing research, this study selected the measurement variables of social interaction as 'level of relationship', 'fellowship', and 'participation'. 'Level of relationship' refers to interactions with people and attitudes about relationships [8]. 'Fellowship' refers to the feeling of belonging or of sharing a sense of personal relatedness [9]. 'Participation' refers to the degree of a person's involvement in a particular endeavor or relationship.

2.3. Studies on Seoul Youth Spaces

Studies on the Seoul youth spaces are shown in Table 1. The studies defined the Seoul youth space as a co-working space and focused on it as a case study. Study on the space was conducted by drawing on qualitative research methods which consisted of interviews with users and management.

Table 1. Previous studies on Seoul youth spaces.

Researcher	Research Title	Research Method and Contents
Yu, S. (2017) [10]	Satisfaction analysis on characteristics of informal communication co-working space	The satisfaction analysis of co-working space, research on the space construction method for activating informal communication in the co-working space
Lee, Y. (2016) [11]	A study on co-working space for solving regional issues in East and South-East Asia	Analyzing the effect of the local settlement project of the Zero Gravity Zone on users and presenting the direction of future operation
Ryu, J. (2017) [12]	A study on youth culture space through expansion of its boundary	Youth Space Daebang-dong is a youth culture space; its interior design suggests suitability evaluation and interior design direction

2.4. Relationship between Community Space and Social Interaction

One of the key goals of a community space is to build a sustainable community of users, and social interactions between such users are of paramount importance to ensure this is achieved. The previous studies described that the physical environment and programs have a positive effect on social interactions between users of community spaces.

Choi, J. (2005) [13] concludes that community programs are needed for social interaction. Park, M. (2015) [14] also states that their satisfaction with the facilities affected social interaction. Kim, J. (2017) [15] analyzes the detailed factors affecting social interaction in the physical environment and programs and proposes the two critical factors influencing the community are welfare centers and community interaction programs. Sohn, S. (2009) [16] observed an increased level of satisfaction among residents of an apartment complex where substantial community facilities were offered.

The previous study shows that community space and social interaction are interconnected, and it is expected that the youth space, which is a community space for young people, will also have an impact on social interaction. In this study, measuring social interactions among users of community spaces is the same as prior studies, but it is different from prior studies in that it identifies the social interaction impact relationship of two community spaces considering the characteristics of users.

2.5. Different Objectives of This Research

The objective of this study is to verify the effectiveness of the Seoul youth spaces project aimed at revitalizing the youth community by promoting social interaction among young people [3]. This study analyzes the empirical evidence to determine whether the youth spaces in Seoul are achieving their policy goals. For this, the study estimates the effect of the physical environment and programs of the Seoul youth space on young users' social interaction, and derives policy implications by comparing the influences of the physical environment and the programs of the two pilot projects.

This study is different from previous studies in that it examines the influence of the relationship between the youth space and social interactions, while also considering the characteristics of users determined by a given region.

3. Analytic Frame

3.1. Selection of Location

YS_G is located in Gasan-dong, Geumcheon-gu, Seoul near Gasan and the Guro Digital Business District and opened in January 2015. The goal is the improvement of youth workplace culture. The physical environment provides workspaces, such as co-working spaces, and public spaces such as a shared kitchen (Table 2).

YS_D is located in Daebang-dong, Dongjak-gu, Seoul near the Noryangjin Academy district, where academies for college entrance are gathered, and opened in April 2015. The operational vision is to achieve 'vitality and recovery for everyday life'. The physical environment provides workspaces,

such as co-working spaces, and public spaces such as a shared kitchen. The program provides youth problem counseling and community support projects (Table 3).

Table 2. Physical environment and programs of Youth Space G-valley (YS_G).

Physical Environment		Program	
Working Space	Co-working space	Education and lecture	A lecture program to solve a company's problems and concerns
	Conference room	Community support	Support program for the community of young people
Public Space	Shared kitchen	Supporting of local youth	Project to discover space for the local youth; a program to discover attractive youth spaces in the neighborhood
	Resting space		Projects supporting community-based youth activities; a discussion of youth space
	Shared library, utility space	Youth group association	-

Table 3. Physical environment and programs of Youth Space Daebang-dong (YS_D).

Physical Environment		Program	
Working Space	Co-working space	Education and lecture	Pilot lecture program for beginners
			A lecture program to solve a company's problems and concerns
	Conference room	Community support	Support program for the community of young people
Public Space	Shared kitchen	Supporting of local youth	A program for discovering young artists
	Resting space		Project to discover space for the local youth; a program to discover attractive youth spaces in the neighborhood
	Interchanged resting space	Youth group association	A program that help young people start their own businesses

3.2. Summary of Questionnaire Survey

This study was conducted through a questionnaire survey for Seoul youth space users over the course of 12 days between 19 April and 30 April 2017 to avoid biases in the data. The questionnaires were implemented through using both direct face-to-face and online modalities by simple random sampling. After the survey, the manager and research team reviewed the survey results so that the survey data were not biased. The survey data, such as sex or occupation, were similar to the percentage of users who usually use youth space. The items in the questionnaire were measured using a 7-point Likert scale that measured physical environment satisfaction, program satisfaction, and the perception of social interaction factors. The authors was returned 52 individual surveys for YS_G and 43 for YS_D.

Regarding the survey results, the main surveyed users of YS_G were female office workers in their 20s (76.9% female, 50.0% in their 20s and 48.1% office workers). Also, it was found that most people use YS_G with their friends and that their travel to or from the center from home or the office takes 30 min by public transportation. The users of YS_D surveyed were 20-year-old college students or civil servants (62.8% female, 62.8% in their 20s, 25.6% college students, 20.9% civil servants). Most users used YS_G by themselves, and those using public transportation traveled from their home located 30 min away or less (see Table 4).

Based on the survey data, the difference test confirmed that the users of YS_G and YS_D are different groups. The demographic characteristics of users of YS_G and YS_D showed that there are statistically significant differences in period of use, companions and occupation.

Table 4. Demographic characteristics of community spaces.

Demographic Characteristic		YS_G (n = 52)	YS_D (n = 43)	X^2-Test	T-Test
		Ratio (%)	Ratio (%)		
Sex	Male	23.1	37.2	0.133	N/A
	Female	76.9	62.8		
Age	20s	50.0	62.8	N/A	0.131
	30s	46.2	37.2		
	Over 40s	3.8	-		
Frequency of use	Not more than 1 time a month	50.0	41.9	N/A	0.253
	2–3 times a month	17.3	9.3		
	Once a week	7.7	14.0		
	2–3 times a week	9.6	20.9		
	4–5 times a week	15.4	9.3		
	Everyday	-	4.7		
Period of use	Not more than 1 time a month	7.7	44.2	N/A	0.002 ***
	Not more than 6 times a month	36.5	27.9		
	Not more than 1 year	25.0	9.3		
	Not more than 1 year and a half	11.5	7.0		
	Not more than 2 years	19.2	11.6		
Companion	Friends	48.1	30.2	0.005 ***	N/A
	Alone	21.2	53.5		
	Colleagues	30.8	16.3		
Occupation (Job)	College student	7.7	25.6	0.001 ***	N/A
	Preparing civil servant	3.8	20.9		
	Job seeker	7.7	7.0		
	Preparing a business	11.5	4.7		
	Office workers	48.1	14.0		
	Freelancer	19.2	12.9		
	Not employed	1.9	7.0		

*** $p < 0.01$.

3.3. Hypotheses and Variables

Based on the literature and policy goal of Seoul youth spaces, seven hypotheses were set (see Table 5). The seven hypotheses were then tested.

Table 5. Research hypotheses of the social interaction and the factors influencing satisfaction in the youth spaces.

Hypotheses Mark	Hypothesis of Study
Hypothesis 1a (H1a)	Physical factors (working space, public space) will have a significant impact on social interaction.
Hypothesis 1b (H1b)	Physical factors (working space, public space) will have a significant impact on overall satisfaction.
Hypothesis 2a (H2a)	Programs (educational programs, community support projects, local youth support projects, youth group link projects) will have a significant impact on social interaction.
Hypothesis 2b (H2b)	Programs (education programs, community support projects, local youth support projects, and youth association projects) will have a significant impact on overall satisfaction.
Hypothesis 3a (H3a)	Individual characteristics will have a significant impact on social interaction.
Hypothesis 3b (H3b)	Individual characteristics will have a significant impact on overall satisfaction.
Hypothesis 4 (H4)	Overall satisfaction will have a significant impact on social interaction.

This study investigates a number of independent variables, such as physical environment, programs, and user characteristics; dependent variables were overall satisfaction and social interaction with the Seoul youth spaces. The dependent variables were selected by drawing on previous studies.

The independent variables of physical environment, programs, and individual characteristics were derived from previous studies, field research, and interviews with the managers of the space.

The factors of social interaction, which is a dependent variable, were 'level of relationship', 'fellowship', 'participation' and were selected through the analysis of previous studies. The variables of the previous studies of community spaces were as follows (see Table 6).

Table 6. Variables of previous studies on community spaces.

Researcher	Independent Variable	Dependent Variable	
Nasar, J. L. and Juian, D. A. (1995) [9]	Place: place attachment, block confidence and satisfaction; social: neighboring, participation, collective efficacy, informal social control, communitarianism	Sense of community	Social connections Mutual concern Community values
Kim, J. and Park, C. and Koo, J. (2017) [15]	Community facilities Non-physical factors	Social interaction	Level of relationship Participation Social Support
Choi, J. and Kwak, I. (2005) [13]	High-rise mixed-use apartment's common space	Common space of recognition and satisfaction	
Park, M. and Jo, J. and Yoon, D. and Hwang, H. (2015) [14]	Satisfaction with community facilities	Community spirit	
Lee, J. (2011) [8]	Natural environment of housing complex	Participation Sociality level Sense of fellowship Level of relationship	

This study investigated a number of variables based on the literature. The variables of the previous studies of community spaces were as follows (see Table 7). In this study, we derived 'level of relationship', 'fellowship', 'participation' as the factors of social interaction by considering the characteristics of young people who use youth spaces.

Table 7. Variables of the first-factor and second-factor models of youth spaces.

Variables		Metric	
Independent variable	Physical environment	Working space	YS_G *: Co-working space/conference room, YS_D **: Co-working space/conference room
		Public space	YS_G: Shared kitchen/resting space/shared library/utility space, YS_D: Shared kitchen/resting space/interchanged resting space
	Programs	Education and lecture	YS_G: Experiential lecture program, YS_D: Knowledge sharing program/program of visiting program
		Community support	YS_D: Community activity support project, YS_D: Community activity support project,
		Supporting of local youth	YS_G: Project to discover space for the local youth/Projects supporting community-based youth activities YS_D: Projects to promote local culture/Projects supporting community-based youth activities
		Youth group association	YS_D: Program that support value creation
	User characteristics	YS_G: Gender/duration of usage, YS_D: Duration of usage/travel time from departure	
Dependent variable	Social interaction	Level of relationship	The degree of physical interaction with young people
		Sense of fellowship	Emotional affinity with youth
		Level of participation	The degree of involvement in activities related to the youth community
	Overall satisfaction		
Demographic characteristic	Gender, age, frequency, duration of use, companions, origin, travel time, travel distance, transportation, education degree, occupation, average income (monthly)		

* YS_G: the Youth Space G-valley, ** YS_D: the Youth Space Daebang-dong.

The reason for selecting the variables was that the most aggressive behavior of social interaction was assumed to be 'participation' and the degree of interaction was determined in the order of 'level of relationship', 'fellowship' 'participation'. Three factors were asked of the user using a 7-point Likert scale (relationship level: after using the youth space, there are people who can talk about each other; sense of fellowship: the youth in the neighborhood are worried about similar problems; participation: after using the youth space, the users became interested in local youth issues and communities). Overall satisfaction, which is one of the dependent variables, encompasses perceptions of the physical

environment and program satisfaction in Seoul youth spaces. The organized variables of this study were as follows (see Table 7).

3.4. Method of Analysis

In this study, PLS-SEM is used to identify the causal relationships of variables. The causal model is divided into the maximum likelihood estimation (MLE)_structural equation and PLS_structural equation according to the estimation method. MLE_structural equations are used to estimate covariance between measurement elements using MLE and the PLS_structural equation uses ordinary least squares (OLS) to minimize prediction errors. This study analyzes two special target sites and does not survey all users. The analysis was done in a PLS-SEM to minimize prediction errors [17].

This study utilizes a two-step approach as a research model with multiple measurement variables. After verifying the validity and suitability of the first factor model, the second factor model is constructed and its validity is verified. Based on the results of the verification of the second factor model, a factor model for mediating effects is constructed and verified. A detailed study hypothesis (see Table 7, Figure 1) is below.

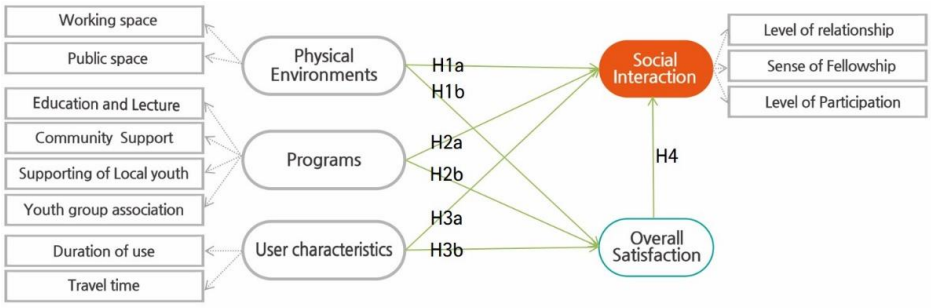


Figure 1. Path coefficient analysis of model.

4. Model Testing and Path Analysis Outcome

4.1. First-Order Factor Model Verification for Social Interaction

This PLS structural equation model was tested in a variable-testing step and a model-testing step. For the variable testing, confirmatory factor analysis, convergent validity, internal consistency, and discriminative validity were evaluated. Model testing was conducted by evaluating the overall goodness of fit of the structural model, average goodness of fit of the path model, and overall goodness of fit of the path model. In addition, the study constructed a high-order factor model, first testing the first-order factor model, followed by the second-order factor model. The results showed that the factor model and structural model were well-fitting (see Supplement Table S1).

4.2. Second-Order Factor Model for Social Interaction of Youth Space G-Valley (YS_G)

This study analyzes the path coefficient of the second factor model. A second factor model can simplify the complex structure of the relationship of influence and clarify the influence of the clustered variables with similar attributes. The results of the path coefficient of the overall satisfaction and social interaction model are shown in Table 7 and Figure 1. Hypotheses H1-1–H4 were verified based on the path coefficient and *t*-value of the second factor model.

The adopted research hypotheses for YS_G were that the "physical environment will have an influence on 'social interaction' (H1a)", "the program will have an influence on 'social interaction' (H2a)", "physical environment will have a significant impact on 'overall satisfaction' (H1b)", and "overall satisfaction will have a significant impact on 'social interaction' (H4)". The path coefficient of each model is positive (+), and the *t*-value satisfies more than a 99% confidence level.

The results of the second factor model for YS_G are as follows.

First, the results of the physical environments, programs, user characteristics, and social interaction influence analyses are as follows.

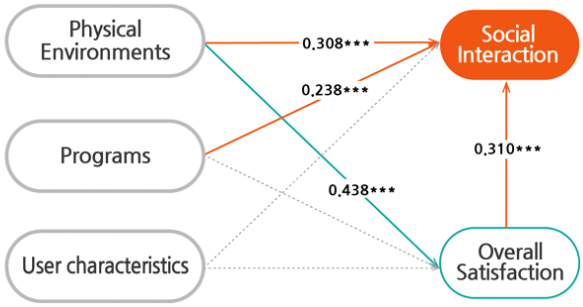
Hypothesis testing confirmed that physical environments and programs have a meaningful impact on social interaction. The path coefficient of physical environments and programs on social interaction were in the order of physical environments (0.439) and programs (0.288). In other words, it can be interpreted that the physical environments have a more positive effect on the social interactions of the users than the programs in YS_G. Forty-eight percent of users are office workers, who use the space for a short time, usually at lunch or during work breaks. For this reason, it seems that the use of the space (physical environment), rather than programs or user characteristics, has the most positive effect on social interactions and overall satisfaction.

In addition, potential values of social interactions were in the order of participation (0.852), relationship (0.848), and fellowship (0.654). This result can be interpreted to mean that the young people participate in the local and youth problem-related programs by using the physical environment of YS_G, which increases the relationships between local youth.

Second, the results of the effect analysis of physical environment, program, and user characteristics on overall satisfaction are as follows.

Hypotheses testing revealed that the physical environment had a significant effect on the overall satisfaction, and the satisfaction of the program did not lead to the overall satisfaction of YS_G.

Third, the path coefficient values of physical environment, programs, and overall satisfaction, which have a significant effect on social interaction, were in the order of overall satisfaction (0.310), physical environment (0.308), and program (0.238). This implies that overall satisfaction has a mediating effect on the social interaction influence model. In summary, the physical environment working space (co-working/meeting room, shared space: shared kitchen/resting room/shared library/multipurpose space) has the most significant influence on the social exchange and overall satisfaction of YS_G users. In addition, the higher the overall satisfaction, the more positive the social interaction between users (see Table 8, Figure 2).



*** $p < 0.01$ ($t > 2.58$)

Figure 2. Path coefficient analysis of the second-order model of YS_G.

Table 8. Path coefficient analysis of the second-order model of YS_G.

Path Separator (Hypotheses)			Coefficient	*t*-Statistics	Verification
Physical elements	→	Social interaction	0.3080	4.0805 ***	Accept
Programs	→		0.2381	3.6937 ***	Accept
User characteristics	→		0.1081	1.2008	Reject
Physical elements	→	Overall satisfaction	0.4376	4.7973 ***	Accept
Programs	→		0.1476	1.4637	Reject
User characteristics	→		0.0915	1.0815	Reject
Overall satisfaction	→	Social interaction	0.3097	3.5528 ***	Accept

*** $p < 0.01$ ($t > 2.58$)

4.3. Second-Order Factor Model for Social Interaction of Youth Space Daebang-dong (YS_D)

The research hypotheses adopted for YS_D were "the program will have an influence on ' social interaction' (H2a)", "user characteristics will have an influence on 'social interaction' (H3a)", "physical environment will have a significant impact on 'social interaction' (H1b)", "physical environment will have a significant impact on 'social interaction' (H1b)", "physical environment will have a significant impact 'overall satisfaction'(H2b)" and "physical environment will have a significant impact on 'social interaction' (H4)". The path coefficient of each model is positive (+), and the *t*-value satisfies at more than a 99% confidence level.

The second factor analysis results of YS_D are as follows.

First, the results of the analysis of physical environments, programs, user characteristics, and social interaction influence are as follows. Hypothesis testing has shown that program and user characteristics have a meaningful/significant impact on social interaction. The path coefficient of the programs and the user characteristics for social interaction were in the order of user characteristics (0.324) and programs (0.292). This means that the closer a given user lives to the Seoul youth space or the longer the period of use, the more social interaction between users can be expected.

In addition, the programs were found to have an impact on social interaction, although physical environments did not affect social interaction. The order of potential variables of social interaction factors was participation (0.911), fellowship (0.782), and level of relationship (0.495). In this way, youths' use of physical environments has increased their participation in programs related to local and youth issues and can be interpreted as an increase in the bond between local youths. However, the level of relationship has less potential value than other factors.

Therefore, it can be interpreted that the physical interaction between young people is actually not affected. This is revealed by the demographic using the space, as the majority of users are college students or job-seekers. Users often visited the Seoul youth space for private study, and there was no conversation or interaction between users except during the program. This can be interpreted to mean that the user feels satisfied with the physical environments but was not affected by social interactions. The program has a positive effect on the social interactions because most of the users are students, so there is plenty of time to participate in the program, and the program presented content that is useful and relevant, such that users desire to participate.

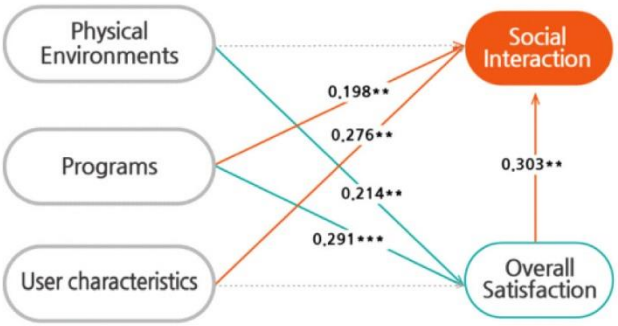
Second, the effects of physical environments, programs, and user characteristics on overall satisfaction are as follows. Hypotheses testing confirms that physical environments and programs have a positive impact on overall satisfaction. The path coefficients of physical environments and programs on social interaction were in the order of programs (0.287) and physical environments (0.218).

Third, the results of the analysis of the mediating effect of satisfaction are as follows. The path coefficients of the programs, user characteristics, and overall satisfaction affecting social interaction were in the order of overall satisfaction (0.303), user characteristics (0.276), and programs (0.198). This implies that overall satisfaction is an effect of the social interaction influence model (see Table 9, Figure 3). As a result, the programs (educational programs, community support projects, local youth support projects, youth group link projects) have the greatest influence on the overall satisfaction and social interaction of Seoul youth space users. In addition, the higher the overall satisfaction, the more positive the social interaction between users became.

Table 9. Path coefficient analysis of the second-order model of YS_D.

Path Separator (Hypotheses)			Coefficient	*t*-Statistics	Verification
Physical elements	→	Social interaction	0.0354	0.3949	Reject
Program	→		0.1980	1.9850 **	Accept
User characteristics	→		0.2762	2.4122 **	Accept
Physical elements	→	Overall satisfaction	0.2137	2.4648 **	Accept
Program	→		0.2908	3.5698 ***	Accept
User characteristics	→		0.0669	0.5990	Reject
Overall satisfaction	→	Social interaction	0.3033	1.9825 **	Accept

*** $p < 0.01$ ($t > 2.58$), ** $p < 0.05$ ($t > 1.96$).



*** $p < 0.01$ ($t > 2.58$), ** $p < 0.05$ ($t > 1.96$)

Figure 3. Path coefficient analysis of the second-order model of YS_D.

5. Conclusions

The purposes of this study were to estimate the effect of the physical environment and programs provided through Seoul youth spaces on the social interaction of young people. Also, we aimed to analyze the influence of the physical environment and the program between YS_G and YS_D, where the characteristics of the users are different.

For this purpose, the analyses of the facilities and program operation status and user characteristics were conducted through interviews with managers, observations and surveys, and the influence relationship was analyzed through the PLS structural equation model using the data obtained from the questionnaire.

Key findings of the research are as follows. First, the users of YS_G and YS_D had different occupations, hours of use, and so on. YS_G was mainly used by nearby office workers who used the space for a short time, usually at lunch or during work breaks. On the other hand, YS_D was primarily used by college students, job-seekers who live nearby, and many of its users participated in the programs.

Second, the results of the PLS-SEM showed the commonality of the two sites. Satisfaction with the program has a positive effect on social interaction, and the results are consistent with the study of Choi, J. (2005) [13] and Kim, J. (2017) [15]. Satisfaction with the physical environments affected overall satisfaction with the youth space.

Third, in the case of YS_G, the physical environment's effect on the social interaction is shown, and the result is consistent with the study of Sohn, S. (2009) [16]. On the other hand, in YS_D, satisfaction with the physical environment did not have a statistically significant effect on social interaction. The policy implications of the youth space derived from the research results are as follows. First, for the Seoul youth spaces to play an effective role as a core space for local youth, it is necessary to plan and operate the physical environments and programs while taking into consideration the

characteristics of the youth who live nearby. In future, YS_G needs to structure its program to increase the participation rate of youth, and YS_D needs to organize its space (physical environments) so it can enhance the satisfaction of youth.

Second, the physical environment of the youth space should be diversified to include spaces suitable for the characteristics of its users, and it is important for the program to support community events and activities for local youth.

Third, it is important to improve the overall satisfaction of the Seoul youth spaces to promote social interaction in the youth space.

Fourth, there is a need for measures to promote continuous social interaction among youth in the planning and operation of youth spaces. The youth space should be able to play a variety of roles including its use as a simple space and expansion of the core space into the surrounding area through the continuous social interaction of youth.

This study is important as it presents evidence that could inform the planning direction of the Seoul youth spaces, provided through analysis of the influence of social interaction, which is the operational goal of the youth space. This study considered only the users' perspectives, and there were only two study sites. These limitations can be improved in future research by selecting more cases and including other stakeholder groups. As further research, the effect of youth spaces on the surrounding area can be studied.

Supplementary Materials: The following are available online at http://www.mdpi.com/2071-1050/10/12/4515/s1, Table S1: Results of the verification of the first-order and second-order factor model for youth spaces.

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References

1. Nawata, K. Reconstruction and development of local communities through the creation of open communities. *Joyo ARC* **2011**, *43*, 6–13.
2. Colantonio, A.; Dixon, T. *Urban Regeneration & Social Sustainability: Best Practice from European Cities*; Wiley-Blackwell: Hoboken, NJ, USA, 2011.
3. Hillery, G.A. Definitions of Community: Areas of Agreement. *Rural Soc.* **1955**, *20*, 111–123.
4. Volker, B.; Flap, H.D.; Lindenberg, S. When are neighbourhoods communities? Community in Dutch neighbourhood. *Eur. Sociol. Rev.* **2007**, *23*, 99–114. [CrossRef]
5. Lee, W.; Lee, C. A Study on Classification and Evaluation of Future-Oriented Community Service Facilities. *J. Korea Plan. Assoc.* **2007**, *40*, 73–86.
6. Yang, S.; Kim, U. A Study of Public Library through the Spatial Concept of Relative Space. *Archit. Inst. Korea* **2004**, *24*, 283–286.
7. Kim, K.; Nam, J. An Empirical Evaluation on the Sens of Community in the Public Rental Housing in the Redevelopment Complex According the Site Layout Characteristic. *J. Korea Plan. Assoc.* **2005**, *40*, 73–86.
8. Lee, J. *A Study on Outdoor Space of Housing Complex to Promote Social Interaction of Residents: Focusing on Connection with Natural Environment*; Yonsei University: Seoul, Korea, 2011.
9. Nasar, J.L.; Juian, D.A. The Psychological Sens of Community in the Neighbourhood. *J. Am. Plan. Assoc.* **1955**, *61*, 178–184. [CrossRef]
10. Yu, S. *Satisfaction Analysis on Characteristics of Informal Communication Co-Working Space: Focusing on 5 Coworking Space Available for Free in Seoul*; Hansung University: Seoul, Korea, 2017.
11. Lee, Y. *A Study on Co-Working Space for Solving Regional Issues in East and Southeast Asia*; Tokyo Metropolitan University: Tokyo, Japan, 2016.

12. Ruy, J. *A Study on Youth Culture Space through Expansion of Boundary*; Konkuk University: Seoul, Korea, 2017.
13. Choi, J.; Kwak, I. The Perceptions and Satisfactions of High-Rise Mixed-Use Apqrtment's Common Space and Famil Community. *J. Korean Hous. Assoc.* **2005**, *16*, 29–38.
14. Park, M.; Jo, J.; Yoon, D.; Hwang, H. The effect relationship Analysis on the Spirit of Community for Community facilities Satisfaction—Focusing on First Apartment Complexes on Sejong City. *J. Korean Hous. Assoc.* **2015**, *13*, 149–164.
15. Kim, J.; Park, C.; Koo, J. A Study on Social Interaction of the Mixed Rents and Sales Housing Block—Comparative View with Physical and Non-Physical Factors in the Gang-il Housing District in Seoul. *J. Urban Des. Inst. Korea Urban Des.* **2017**, *18*, 91–103.
16. Sohn, S.; Kim, W. A Study on the Current Situation of Using Community Facilities and Its Proper Size in Apartment. *J. Korean Hous. Assoc.* **2009**, *20*, 145–155.
17. Fornell, C.; Bookstein, F. Two Structural Equation Models: LISREL and PLS applied to consumer exit-voice theory. *J. Mark. Res.* **1982**, *19*, 440–452. [CrossRef]