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A Study on the Relationship between Urban Residents' Perception of Recreational Sports and Their Participation in Recreational Sports: Based on Gender Differences

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Abstract: Background: The health of urban residents plays an important role in increasing the well-being of citizens, and therefore promoting the sustainable development of cities. Studies in Western countries have provided some evidence of the relationship between the urban residents' perception of the recreational sports (RS), including perception of industry, space, experience, type, and support affecting recreational behaviors. Yet, evidence in China is not sufficient and, particularly, gender difference has not been discussed anywhere. Objectives: The present study aimed to see urban residents' perception of RS and its effect on recreational sport participation by the residents. Method: The study was conducted in three big cities (Hangzhou, Chengdu, and Shanghai) of China to test the association between the urban residents' perception of RS and their RS participation, in which gender differences were discussed. After taking their consent, a total of 764 participants (397 male and 367 female) aged from 15 to 65 were approached between April and October, 2018. The participants were given a survey to assess their perception and behavior of RS. T-test and the structural equation modeling were used to analyze gender differences in association between perception and behavior of RS. Results: For females, industry perception ($\beta = 0.17$, p = 0.00), space perception (females: $\beta =$ 0.16, p = 0.00), and support perception (females: $\beta = 0.09$, p = 0.03) had a significant positive effect on RS participation. For males, industry perception (males: $\beta = 0.13$, p = 0.01) and type perception (males: $\beta = 0.23$, p = 0.00) showed a significant positive impact on participation of RS. However, space perception of males ($\beta = -0.12$; p = 0.01) and type perception of females ($\beta = -0.11$; p = 0.01) are negatively associated with their RS participation. The perception of experience was the most important factor influencing RS behaviors. Significant gender differences have appeared in all five different perception factors. The industry perception has significant and positive effects on both males and females' RS participation. The type perception has significant positive effects on the male but negative on the female RS, while the space perception is just the opposite. The support perception has significant positive effects on the female RS practice but the influence is not obvious in the case of males. Conclusion: By adopting some measures, perception of RS may improve urban residents' participation in RS.



Keywords: recreational sport; perception; participation; gender difference; structural equation modeling

1. Introduction

Recreational sports (RS) is defined as the sport practiced through all layers of society on an amateur level, which includes various kinds of sport except top-level [1]. Regular participation in RS has many benefits, such as reducing obesity rate, postponing premature mortality and decreasing the development of chronic diseases [2]. The social and economic change has been taking place over the last few decades in China, and it is undergoing a swift transition from rural to an urban society. It is expected that by 2050, more than one billion Chinese will be urban residents [3]. The urban resident is defined primarily in social settings as a person who lives in a particular place of cities (including migrant workers without household registration). Although rapid urbanization may be associated with a higher prevalence of diabetes, cardiovascular disease, colorectal cancer risk, and dramatic decreased physical activity levels [4–7], it can provide more favorable conditions for individual participation of RS than before, e.g. sidewalks, parks, and greenway. Besides, the health of urban residents plays an important role in increasing the well-being of citizens and therefore promoting the sustainable development of cities. The Chinese government provides a physical and social environment for RS participants, but, at present, community inhabitants' participation in RS is not actually ideal [8]. Some studies have pointed out that people's social perception of sports has an influence on their sports participation [4,9,10]. By using self-report and objective measures of physical activity, Phillips and his co-authors found that self-efficacy via goals, outcome expectations, and social support influenced physical activity of breast cancer survivors [9]. White and colleagues studied the middle-aged and older adults' physical activity behaviors and discovered that self-efficacy was directly related to outcome expectations, disability limitations, and goals [10]. The present study was designed to determine the effects of RS perception on RS participation behavior in the urban general population. RS perception or cognition is how people perceive recreational sport.

The RS industry is comprised of companies engaging in a diversity of activities, from the manufacturing of RS goods, provision of RS services, media, to the construction of RS facilities [11]. In recent years, some researchers have focused on the study of the RS industry [4]. Radicchi discovered that RS industry aims, policies, choices, and brand equity would be analyzed and strategically chosen in the process of marketing [12,13]. For example, the internet, interactive tools, and social media play crucial roles in the development of sports RS companies. By studying the lifestyle sports delivery and sustainability, King found out that lifestyle sport communities depend on the work of clubs to gain access to funding and resources [14].

Each sport has its own unique character and set of values, so the inherent characteristics of different types of RS affect the preference of its participants in a different manner [15]. Recently, sports draw a large crowd of people with no field restrictions, more free, various and novel style. Haudenhuyse proved that less formal and more flexible activities were beneficial for socially vulnerable youth [16]. King and Church pointed out that lifestyle and informal sports may offer opportunities to attract new participants who may be less interested in traditional sports [14].

Dyck thought that psychosocial attributes of adults may moderate the associations of perceived environmental characteristics with RS and finally influence their physical activity [17]. Including motives for participation and withdrawal from sports, RS experience has come from the perspective of participants [18]. As a positive experience, RS focus on the physical and mental benefits of sports practice. Baños et al. studied urban residents' perception of leisure impact and experience satisfaction of the urban park, and found that recreation space and facility were critical for the perception of the community parks [19].

The definition of RS space is places for physical activity and sport that include sports parks, playgrounds, neighborhoods, and green areas [20]. Parsons pointed out that neighborhood surrounding parks are important for urban residents' health, and unhealthy characteristics of parks should be reduced to encourage the use of community settings [21]. The development of sports space is limited; governments and organizations should support construction of newly formal projects of RS that use less space. The support of RS not only includes financial support from national and local government, sport lottery, and sponsors, but also the formulation, implementation, and evaluation of RS policy. Policy development is known as a vital step in creating environments that support individuals adopting healthy behaviors [22]. The amount of public investment adopting, both direct and indirect (through lottery), is of essential need [23]. Therefore, the urban residents' perception of the RS factors, such as industry, space, experience, type, and support policies may affect their recreational behaviors.

Although RS participation has a lot of health benefits, 83.8% of Chinese adults are physically inactive [24]. Thus, it is worth examining the urban residents' perception of the industry, space, experience, type, and support policies of RS in Chinese cities. The results could provide evidence for the necessity and urgency for Chinese urban residents to pay more attention to perception and participation of RS.

Godin et al. found that perceptions of physical activity had a significant positive impact on physical activity participation of overweight and obese individuals [25]. Rhodes discovered that neighborhood aesthetics and walking infrastructure may affect walking behavior through attitudes [26]. Bigné et al. examined the impact of experiential consumption perceptions on leisure activities consumption, and found that sports pleasure was positively linked to both satisfaction and loyalty behaviors [27]. Yet, these studies did not consider gender differences. On the other hand, previous studies show that there are differences in RS between men and women [4]. It is interesting to know the gender differences in the association of urban residents' perception of RS with their participation in RS.

Figure 1 summarizes the direct paths of influence in a hypothetical model. This model is developed by integrating the concepts of the Theory of Self-perception (TSP) [28], the Social Cognitive Theory (SCT) [29], and the Embodied Cognition (EC) [30]. The TSP suggests that people adopt their attitudes partly by observing their own behavior and the possible causes and highlights that individuals' cognitions serve as outcomes of their actions or behaviors. The SCT describes sociostructural factors that operate through psychological mechanisms of the self-system to produce behavioral effects. EC suggests that cognitive activity occurs in the environment and involves perception and action. The hypothetic model postulates a dynamic relationship between perception and behavior. No study has yet to examine the relationship between RS perception and RS behavior among urban residents. Perception is essential for people to comprehend their environment but rather is ultimately in the service of functional behavioral responding to the surroundings. We hypothesized that perception of RS sports directly affects RS practice. This study aims to examine the effect of perception about RS on urban residents' participation, in which gender differences were discussed. In this process, the effects of the five factors of perception of RS on behaviors were systematically considered, and the differences of gender variables were also discussed. The major objective of this research is to determine whether the perception of RS sports directly affects RS practice. After a careful review of the literature, we have formulated the following hypotheses:

Hypothesis 1 (H1). There are significant gender differences in RS practice by urban residents.

Hypothesis 2 (H2). There are remarkable gender differences in the RS perception by urban residents.

Hypothesis 3 (H3). There is a significant association between RS perception and RS practice by urban residents.

Hypothesis 4 (H4). *There are significant gender differences in association between RS perception and RS practice by urban residents.*



Figure 1. Hypothetical model.

2. Methods

2.1. Participants of Study

The percentage, number of people, variance, and significance for all variables are presented in Table 1. A sum of 850 residents including males (n = 430) and females (n = 420) were approached. Some of them refused to participate because they were either too busy or not interested. A total of 764 people (397 males and 367 females) participated in survey with their consent. The response rates were 92.32% for males and 87.38% for females. Respondents' age ranged from 15 to 65 years old, with a mean age of 31.0 years. The most common education level was a bachelor's degree, followed closely by junior college, senior high school, and a master's degree or above. Personal monthly incomes ranged between below 2000 RMB to over 8000 RMB, with the majority of respondents earning less than 6000 RMB per month. The chi-square test results showed that male and female respondents differed significantly in education (p < 0.01), marital status (p < 0.01), and occupation (p < 0.02), income (p < 0.00), but not study sites (p < 0.36) and education (p < 0.06).

	Variables		Male% (N)	Female% (N)	x2 (p)	
		Hangzhou	20.00 (153)	17.9 (137)		
	Study sites	Chengdu	20.00 (153)	17.0 (130)	2.00 (0.36)	
		Shanghai	11.9 (91)	13.1 (100)		
		<18 years	9.7 (74)	5.2 (40)		
		18–25 years	10.3 (79)	8.8 (67)		
	Ago	26–35 years	10.2 (78)	8.9 (68)	14.36 (0.01)	
	Age	36–45 years	9.3 (71)	9.0 (69)		
		46–55 years	6.0 (46)	8.1 (62)		
Sociodemographic		≥56 years	6.4 (49)	8.0 (61)		
conditions		Single	22.6 (173)	15.4 (118)	11 11 (0.01)	
		Married without child	4.8 (37)	4.6 (35)		
	Marital status	Married with child	22.4 (171)	25.7 (196)	11.11 (0.01)	
		Divorced or widow	2.1 (16)	2.4 (18)		
		Managerial/professional	11.7 (91)	10.3 (79)		
	Occupation	White-collar	14.7 (109)	14.1 (105)	0.87(0.02)	
	Occupation	Blue-collar	9.4 (69)	12.2 (93)	9.67 (0.02)	
		Unemployed or student	16.1 (128)	11.5 (90)		

	Variables		Male% (N)	Female% (N)	x2 (p)	
		Junior high school	5.1 (39)	5.0 (38)		
	T. J C 1	Senior high school	9.2 (70)	7.1 (54)		
	background	Junior College	7.7 (59)	10.7 (82)	9.42 (0.06)	
	Dackground	Bachelor's degree	22.6 (173)	20.4 (156)		
		Master's degree or above	7.3 (56)	4.8 (37)		
	Income (RMB,	<2000	16.6 (127)	13.1 (99)		
		2000 < 4000	8.1 (62)	12.2 (93)		
		4000 < 6000	16.8 (128)	17.1 (131)	20.59 (0.00)	
	per monun)	6000 < 8000	7.7 (59)	4.8 (37)		
		<8000	2.7 (21)	0.90 (7)		

Table 1. Cont.

2.2. Measure for Data Collection

To date, there has been a lack of standardized instruments to measure the RS perception. Through investigating previous studies, we discovered that some items measuring the industry, space, experience, type, and support dimensions of perception on RS were adopted by different researchers [4]. The industry perception includes the perceptions of sports brand, skills training, service personnel, internet consulting, establishing industry base, insurance market, and stimulate consumption [4]. Past studies have demonstrated that the perception of public space has an effect on people's physical activity [11,16]. Thus, the space perception of RS should include perceptions of community sports space, road side, grass space, city parks, residences surrounding, and sports parks. For the experience perception in RS, it comprises perceptions of items' funny, enhance one's inner self, realizing the value of life, and positive psychological effects [20,31]. Besides, the type perception contains perceptions of extreme sports, video games, chess and card games, sports games, spectating sports [32]. The support perception refers to perceptions of local plan, community events, funds from the government, introducing social capital, supervising private organizations in previous Chinese studies [33].

In light of previous literature, we have developed a survey by adopting items on RS perception from different studies. The survey was in the Chinese language. In the first part of the survey, participants were first asked about five dimensions of the RS perception, including the industry factor (e.g., I perceive some brand strategies of sports industry), space factor (e.g., I perceive recreational sports spaces in your community), experience factor (e.g., I find my inner self is enhanced in recreational sports), type factors (e.g., I prefer Yoga or square dancing) and support factor (e.g., I perceive local government the push development of recreational sports). Each item was measured by a 5-point Likert scale (1 = 'strongly disagree' to 5 = 'strongly agree').

The second part of the survey was designed to know the attitude of participants towards RS practice. Participants were asked about the frequency, duration [34,35], and intensity of recreational sports [32]. First, respondents were asked how many times they participated in these recreational sports per week during the past-month (i.e., frequency; the options were 0–2 times, three-four times, four times and above). Then, respondents were asked how many minutes they spent in each session (i.e., duration; the options were 30–59 min, 60–89 min, 90–119 min, 120 min or above). Finally, respondents were asked what intensity of recreational sports they often took part in: (a) low-intensity activity, such as housework and fishing; (b) moderate-intensity activity, such as brisk walking; or (c) high-intensity activity, such as running, swimming, or fast biking.

The Recreational Sports Perception Research trust approved this study and all participants gave consent on the spot. We pre-tested our tool in November 2017. The measure yielded good internal reliability values, with Cronbach alpha coefficients of 0.75, higher than Nunnally's (1994) [36] recommended minimum level (0.70).

2.3. Data Collection Procedure

The survey developed was pretested in November 2017 and data were collected by the group of interviewers, during April and October 2018. Respondents were randomly selected by a group of trained interviewers from 10:00 a.m. to 6:00 p.m. on weekends, because there were more people in the parks at that time. The purpose of the study was explained to the participants in a face-to-face meeting and then they were invited to fill in the survey. We informed the respondents that participation was voluntary and responses would be confidential. Hangzhou, Chengdu, and Shanghai were chosen as study sites. The respondents were approached at three community parks (Jiu Lian, Huang Long, and Qiu Shi) in Hangzhou in the months of April, March, and May; three parks (Wuhou Shrine Park, Baihuatan Park, and Wangjiang Park) in Chengdu during June, July, and August, and two parks (Jing'an Park, Daning Park) and Jing'an community street offices in Shanghai during the months of September and October. Explanatory correlates included were gender (male; female); study sites (Hangzhou; Chengdu; Shanghai); age (i.e., <18 years; 18–25 years; 26–35 years; 36–45 years; 46–55 years, and \geq 56 years); marital status (single; married without child; married with child; divorced or widow); occupation category (i.e., managerial/professional, white-collar, blue-collar, unemployed, or student) [37]; educational background (i.e., junior high school; senior high school; junior college; bachelor's degree; master's degree or above); and monthly income (i.e., <2000 RMB; 2000 < 4000 RMB; 4000 < 6000 RMB; 6000 < 8000 RMB; 6000 < 8000 RMB).

2.4. Data Analysis

For analyses, exploratory factor analysis (EFA) and confirmatory factor analyses (CFA) were applied first. Correlation was computed for relation between RS practice and five components of RS perception. Chi-squared test was used to compare the results of sociodemographic variables and participation in RS, and *t*-test was employed to contrast the average values of perception of RS between male and female urban residents.

The structural equation modeling (SEM) was used to create a model of association between the perception of RS and participation in RS. To explore the observed distribution of the variables in the model, statistical analyses were carried out using IBM SPSS version 20 and AMOS graphics version 22. Structural parameters were estimated by the maximum-likelihood method, and the results have been described by standardized regression coefficients. There was no statistical correction for the missing information since all of the records were complete.

Evaluation of the overall model fit was conducted by employing five common parameters: x2/df index (the ratio of chi-square value to the degree of freedom), RMSEA (root mean square of approximation), SRMR (standardized root mean square residual), GFI (goodness of fit index), AGFI (adjusted goodness of fit index), CFI (comparative fit index). Acceptable goodness-of-fit was defined by the following criteria: value <5 for x2/df, <0.08 for RMSEA, <0.05 for SRMR, >0.90 for AFI, GFI, and CFI according to Schmidt [38].

3. Results

3.1. Descriptive

Table 2 indicates mean values and gender-wise bivariate correlations among all the study variables. For males, there is strong relationship between TP (type perception) and EP (experience perception) (0.67, p < 0.05), between IP (industry perception) and SpP (space perception) (0.64, p < 0.05), and between TP and SuP (support perception) (0.72, p < 0.05); medium relationship for EP and SpP (0.36, p < 0.05) and for EP and SuP (0.27, p < 0.05); while a small relationship between PRS and IP (0.16, p < 0.05), PRS and SpP (0.17, p < 0.05), TP and SpP (0.19, p < 0.05) and between SpP and SuP (0.17, p < 0.05); TP and SpP (0.19, p < 0.05) and between SpP and SuP (0.17, p < 0.05); and TP and EP (0.67, p < 0.05); it is medium for PRS with TP (0.23, p < 0.05) and with SpP (0.29, p < 0.05); and for EP with SpP (0.36, p < 0.05).

Variables	Gender Comparison for Mean				Ger	der-Wise	Correlat	ions	
	Males (N = 397)	Females (N = 367)	Total (N = 764)	1	2	3	4	5	6
1 PRS	0.26 (0.65)	-0.20 (0.60)	0.00 (1.00)	-	0.16 *	0.12	0.07	0.17 *	0.11
2 IP	3.81 (0.58)	3.61 (0.67)	3.70 (0.63)	0.19 *		0.19	0.15	0.64 *	0.63 *
3 TP	3.56 (0.76)	3.40 (0.74)	3.46 (0.77)	0.23 *	0.12		0.67 *	0.19 *	0.72 *
$4 \mathrm{EP}$	3.69 (0.72)	3.77 (0.72)	3.72 (0.72)	0.13	0.07	0.67 *		0.36 *	0.27 *
5 SpP	3.57 (0.75)	3.65 (0.63)	3.61 (0.71)	0.29 *	0.64 *	0.19 *	0.36 *		0.17 *
6 SuP	3.26 (0.64)	3.16 (0.70)	3.19 (0.67)	0.12	0.11	0.17	0.27	0.17 *	

Table 2. Gender-wise comparison of mean values and correlations.

Note. * p < 0.05. males are above diagonal while females are below the diagonal. PRS: perception of recreational sports participation scale; IP: Industry perception; TP: Type perception; EP: Experience perception; SpP: Space perception; SuP: support perception.

3.2. EFA and CFA Results

EFA and CFA for all variables have been illustrated in Table 3. The measures of RS perception and RS practice displayed acceptable internal reliability values, as all of the scale's Cronbach coefficient alpha were above Nunnally's (1994) [36] recommended level. Thus, it was decided to retain this scale in future data analyses. EFA and CFA results were also according to accepted values by Schmidt [38].

Table 3. Factor loadings, internal consistency, and model fit statistics of study variables and model.

Study Variables	Items	Factor Loading	α	x^2 (df)	x^2/df	CFI	GFI	AGFI	SRMR	RMSEA	95%CI
RS Participation (RSP)	3	0.68–0.72	0.85	146.50 (33)	4.45	0.910	0.89	0.89	0.040	0.05	(0.059, 0.071)
PRS	29	0.81-0.90	0.82	394.97 (94)	4.20	0.953	0.90	0.91	0.034	0.06	(0.052, 0.061)
IP	9	0.75 - 0.88	-	-	-	-	-	-	-	-	-
TP	5	0.55 - 0.81	-	-	-	-	-	-	-	-	-
EP	4	0.56-0.77	-	-	-	-	-	-	-	-	-
SpP	6	0.67-0.83	-	-	-	-	-	-	-	-	-
SuP	5	0.75 - 0.84	-	-	-	-	-	-	-	-	-
SEM for males (Model 1)	-	-	-	617.50 (307)	2.00	0.88	0.91	0.89	0.041	0.037	(0.035 <i>,</i> 0.038)
SEM for females (Model 2)	-	-	-	599.11 (183)	3.27	0.99	0.91	0.90	0.05	0.04	(0.041, 0.063)

Note: x2/df index: the ratio of chi-square value to the degree of freedom, RMSEA: root mean square of approximation, SRMR: standardized root mean square residual, GFI: goodness of fit index, AGFI adjusted goodness of fit index, CFI: comparative fit index. PRS: perception of recreational sports participation scale; IP: Industry perception; TP: Type perception; EP: Experience perception; SpP: Space perception; SuP: support perception. RS Participation (RSP).

3.3. Gender Differences in RS Participation

Table 4 presented gender differences in RS participation or practice. The results showed that males and females are significantly different in their practice of RS (frequency: 6.20 (0.04); duration: 10.46 (0.00); intensity: 9.35 (0.00)). It supports Hypothesis 1.

Table 4. Chi-square test of frequency, duration, and intensity of RS by gender.

	Variables		Male% (N)	Female% (N)	x2 (p)	
	Frequency	0–2	35.76 (142)	30.24 (111)		
	(times/week)	3–4	43.57 (173)	41.96 (154)	6.20 (0.04)	
	(111105/WCEK) >4 20.65 (82) 27.79 (1 20 50 min/time 48.86 (194) 25.42 (1	27.79 (102)				
		30–59 min/time	48.86 (194)	35.42 (130)		
RS participation	Duration	60–89 min/time	21.91 (87)	35.96 (132)	10.46 (0.00)	
		90–119 min/time	20.65 (82)	19.34 (71)		
		≥120 min/time	8.64 (34)	9.26 (34)		
	Intensity of RS	Low-intensity	53.90 (214)	64.30 (236)		
		Moderate-intensity	34.50 (137)	25.06 (92)	9.35 (0.00)	
		High-intensity	11.58 (46)	10.62 (39)		

3.4. Gender Differences in RS Perception

Results regarding RS perception were given in Table 5. Five kinds of perception of the total sample showed that experience (M = 3.72, SD = 0.72) had high perception, followed by industry perception (M = 3.70, SD = 0.63), space perception (M = 3.61, SD = 0.71), type perception (M = 3.46, SD = 0.77), and finally support perception (M = 3.19, SD = 0.67). This pattern also held true when male and female participants were examined separately. Independent sample t-test results showed that males and females were significantly different in their perception of industry and type, while they are not statistically different in experience, space, and support perception. It partially supports hypothesis 2.

Total Sample (N = 764)		Males (N = 397)	Females (N = 367)		
Variables	M (SD)	M (SD)	M (SD)	<i>t</i> -value	d
PERCEPTION OF RS	3.55 (0.61)	3.58 (0.63)	3.52 (0.58)	1.05	0.05
Industry perception	3.70 (0.63)	3.81 (0.58)	3.61 (0.67)	3.92 ***	0.39
Develop sports brand	3.77 (0.64)	3.95 (0.59)	3.61 (0.76)		
Skill training	3.64 (0.58)	3.72 (0.60)	3.55 (0.77)		
Sports media	3.71 (0.32)	3.85 (0.54)	3.57 (0.58)		
Internet consulting	3.67 (0.57)	3.77 (0.71)	3.58 (0.72)		
Development industry	3.47 (0.65)	3.53 (0.51)	3.41 (0.56)		
Quality of service	4.02 (0.72)	4.26 (0.59)	3.78 (0.65)		
Insurance market	3.78 (0.76)	3.85 (0.57)	3.71 (0.66)		
Stimulate consumption	3.81 (0.69)	3.86 (0.50)	3.76 (0.69)		
Scientific management	3.56 (0.73)	3.53 (0.62)	3.60 (0.65)		
Type perception	3.46 (0.77)	3.56 (0.76)	3.40 (0.74)	2.72 ***	0.27
Walking	3.44 (0.79)	3.44 (0.73)	3.44 (0.75)		
Yoga or square dancing	3.42 (0.73)	3.46 (0.74)	3.39 (0.72)		
Tai chi or jogging	3.45 (0.78)	3.57 (0.74)	3.33 (0.73)		
Playing ball sports	3.55 (0.79)	3.70 (0.79)	3.40 (0.70)		
Running or cycling	3.56 (0.78)	3.64 (0.78)	3.48 (0.79)		
Experience perception	3.72 (0.72)	3.69 (0.72)	3.77 (0.72)	1.07	0.07
Funny of sports participation	3.82 (0.73)	3.80 (0.76)	3.84 (0.70)		
Enhance one's inner self	3.73 (0.57)	3.77 (0.64)	3.69 (0.69)		
Realize the value of life	3.60 (0.83)	3.54 (0.69)	3.67 (0.77)		
Positive psychological effect	3.78 (0.74)	3.64 (0.77)	3.93 (0.72)		
Space perception	3.61 (0.71)	3.57 (0.75)	3.65 (0.63)	1.81 **	0.18
Community sports space	3.63 (0.65)	3.67 (0.79)	3.58 (0.50)		
Roadside	3.50 (0.77)	3.47 (0.74)	3.53 (0.70)		
Urban greenway	3.65 (0.60)	3.70 (0.79)	3.60 (0.61)		
Parks	3.66 (0.73)	3.54 (0.70)	3.78 (0.66)		
Residences surrounding	3.59 (0.73)	3.46 (0.71)	3.71 (0.65)		
Sports stadiums	3.68 (0.78)	3.61 (0.76)	3.74 (0.68)		
Support perception	3.19 (0.67)	3.26 (0.64)	3.16 (0.70)	1.89 **	0.19
Integrate into the local plan	3.21 (0.68)	3.27 (0.66)	3.15 (0.70)		
Invest in community events	3.12 (0.74)	3.16 (0.73)	3.07 (0.76)		
The government provides funds	3.33 (0.55)	3.38 (0.59)	3.29 (0.72)		
and support Introduce social capital	3.21 (0.68)	3.25 (0.62)	3.17 (0.64)		
Supervising private organizations	3.18 (0.70)	3.26 (0.62)	3.10 (0.68)		

 Table 5. Descriptive statistics, Cronbach Alpha and t-test results for perceptions of RS.

Note. *** *p* < 0.001; ** *p* < 0.01. **PERCEPTION OF RS**: perception of recreational sports.

3.5. Gender Differences in Association Between RS Participation and RS Perception

The association between perception factors and RS participation of males and females is described in Figure 2. The structural models achieved satisfactory adjustments. Urban residents' perception of RS attributes displayed significant and direct associations with recreational sports participation. However, experience perception (males and females) and support perception (males) had no significant relationship with RS practice of urban residents. For females, industry perception ($\beta = 0.17$, p = 0.00), space perception (females: $\beta = 0.16$, p = 0.00), and support perception (females: $\beta = 0.09$, p = 0.03) had a positive, significant effect on RS. On the other hand, for males, industry perception (males: $\beta = 0.13$, p = 0.01) and type perception (males: $\beta = 0.23$, p = 0.00) also showed a statistically significant positive impact on participation of RS. However, space perception of males ($\beta = -0.12$; p = 0.01) and type perception of females ($\beta = -0.11$; p = 0.01) are negatively associated with their RS participation. Goodness-of-model fit for both models (males and females) has also been given in Table 3.



Figure 2. Structural model for association between RS participation and perception factors in male and female urban residents. Note: β value for females are in parentheses, while for males, these are outside and bold. Solid lines represent statistically standardized path coefficients. Dashed lines represent nonsignificant standardized path coefficients. * p < 0.05, ** p < 0.01, *** p < 0.001.

4. Discussion

It was aimed in this study to find out the effect of perception about RS on urban residents' participation in RS, in which gender differences were discussed. In this process, the effects of the five factors of perception of RS on RS behaviors were systematically considered; gender differences were also discussed.

The major findings of the present research are as follows: (1) Significant gender differences exist in RS behaviors of urban residents; (2) There are remarkable gender differences in all five RS perceptive factors of urban residents; and, (3) There exists correlation between urban residents' perception of RS and their participation in RS with gender difference.

Generally speaking, more than half of participants (male, 64.2%; female, 59.8%) take part in RS more than three times per week, so they have a healthy exercise habit according to the amended version of the Alameda 7 Index [35]. Among them, the percentage of males participating in RS more than three times a week is higher than that of females, which is consistent with the results of the previous research, where men were more active than women [39]. Influenced by traditional Chinese culture, females may spend more time on family and childcare besides work. That is why they have a lower frequency (times/week) than males.

The duration of most RS participants is approximately an hour each time (Table 4). The percentage of men engaged in RS within an hour is higher, but lower in duration than that of women. The result showed that, as long as women have plenty of time to participate in RS activities, they are more likely to engage in RS activities for a longer duration than men. It may be related to the intensity of physical activity which is chosen by male or female participants.

It can be seen from the activity intensity analysis shown in Table 4 that 53 percent of males and 64.4 percent of females prefer to participate in low-intensity activity. On the contrary, more men (34.5%) than women (25%) like to do moderate-intensity activity. Surprisingly, little difference was found between

men (11.6%) and women (10.6%) in performing high-intensity activity, which is opposite to the result of the previous research [39]. Mäkelä et al. (2017) reported that the mean MET (Metabolic Equivalent of Energy) values for males and females were 4.25 (SD: 3.56) and 3.86 (SD: 3.43) MET-h/d, which means that males are more likely to engage in vigorous activities than women [39]. The moderate-intensity sport generally expends more energy than the low-intensity in the same time, which can explain why the duration of men engaged in RS is generally shorter than that of women.

The present study reveals the effect of the perception of RS for urban residents on their participation. As shown in Figure 2, the industry perception of urban residents has positive and significant effects on both males' ($\beta = 0.13$, p = 0.01) and females' ($\beta = 0.17$, p = 0.00) RS participation. The reason is that the RS economy in China is developed so fast that various kinds of RS industry are emerging in cities [40]. People recognize the development of the RS industry and, therefore, promote themselves to participate in RS. Especially noteworthy is that the perception of quality of service is the greatest impact on urban residents participating in RS, which is in line with previous studies in Korea [41]. Lee discovered that the service quality of sports centers positively influences the intention to adhere to exercise [41].

The type perception has significant and positive effects on the male urban residents' RS participation ($\beta = 0.23$, p = 0.00). Men are generally willing to participate in playing ball sports, jogging, and cycling. Being different from male, the type perception of female is significant but has a negative effect on RS participation. The majority of women like to engage in gentle sports activities, such as yoga and square dancing [42]. The reason might be that most Chinese women who have to work and do most of the housework do not have enough time and energy to participate in RS, so they have chosen the items which can be done at home or in their community.

Space perception has significant and positive effects on females' ($\beta = 0.16$, p = 0.00) but negative on males' ($\beta = -0.12$, p = 0.01) RS participation. Sport space is an important physical condition for RS practices. Nowadays, sports facilities and places are still insufficient and scattered in Chinese urban communities [43]. Therefore, men's perceptions of the deficiency constrain their participation in sports and leisure activities. Especially, men prefer playing ball sports (e.g. basketball, table tennis, football, badminton), which need strict space requirements [43]. Women may prefer the gentle sports, which do not need a huge space and more facilities to play, and can be done elsewhere. Besides, women participate more in walking or jogging because they realize the improving greenways in Chinese cities. The perceived quality is a better predictor of visit frequency to sport space than objective quantity of sport space, and the perception of sport space plays an important role in people's sport participation [44].

Support perception has significant and positive effects on the female urban residents' RS participation ($\beta = 0.09$, p = 0.03), yet not an obvious influence on the male urban residents' RS practice ($\beta = 0.05$, p = 0.07). One possible reason is that the national fitness program strategy has been worked in China since 2014. Compared with men, women are generally more interested in sports on the grass roots [45]. They may be more likely to believe government policies and measures of health and fitness [46]. Another possible reason is that women work outside the home more frequently than before and have the desire for equality with men in sports opportunities. Hence, it is easier for females to recognize the development of RS policy than males. On the other hand, the government should attach importance to the health education of male urban residents, through which they are exposed to the opportunity to participate in new activities, helping to develop a taste for physical activity, and thereby forming a desire for a physically active lifestyle [47,48]. Also, it is likely that the better-educated individuals are more aware of the health benefits of physical activity and are, therefore, more likely to participate in RS [49].

The experience perception was found to have no significant effect on RS behavior for both males ($\beta = 0.07$, p = 0.06) and females ($\beta = 0.05$, p = 0.08). Possibly, the reason for our finding is that the experience we measured (e.g., funny, value of life, and positive psychological effect) were influenced by the connotation of the Chinese culture (euphemistic expression). Other reasons may include less RS places and facilities, monotonous sport programs, as well as unsatisfactory service quality of the RS

industry. It is expected that highly satisfied individuals with a positive experience will have more positive attitudes towards participating in the RS event again, while the negative experiences influence urban residents' participation in RS [50]. Therefore, only by offering plenty of places and facilities, enriching activity items, and improving service quality, residents may receive positive experiences and then participate in RS actively.

5. Theoretical and Practical Implications

Our study has important theoretical implications. our findings are consistent with the self-perception theory in that urban residents' attitudes toward RS influenced by their own RS behaviors and, in turn, significant impacts on their RS behaviors. Our findings agree with the social cognitive theory in that residents' choices and behaviors of RS significantly depend on their cognition of sociostructural factors, such as RS industry, type, experience, space, and support. Our findings support the embodied cognition theory in that residents' cognition of RS occurs in the environment of RS and affects their participations of RS. Our study also adds to the existing knowledge by providing the empirical evidence for literature in the field of recreational sport. Similarly, we confirmed the sociodemographic variables determining the use of RS as age and gender. Besides, similar to earlier work [51], we can conclude that gender difference influences the relationship between urban residents' perception of RS and their RS behaviors, because gender differences are substantial, influenced by evolutionary/biological forces, and culturally universal [51].

Our study also has important practical implications. As a developing country, China will continue to undergo rapid urbanization. In order to promote urban residents participating in RS, some measures should be adopted to enhance their perception and experience of RS, such as constructing and maintaining sport places and greenways, offering more recreation facilities, enriching the types of RS sports, improving RS skill training, perfecting the network of the RS information query system, and improving the quality of services. For the local government, recreational sports of residents should be properly included in urban planning. It is necessary to provide policy and financial support for development of the RS industry. On the other hand, the related policies and measures should be established and implemented to ensure that women have more free time to learn and be involved in more types of RS. For the community, by providing the public space and training programs, sustainable recreation sports such as walking, jogging, yoga, Tai-chi, or square dance could be participated in by most Chinese people. These support measures and their practical effects will draw more and more urban residents to participate in recreational sports.

6. Limitations

The present study has some limitations. First, this research only examines the effect of the perception on the participation of RS. However, the interaction of both sides should be studied, so the effect of the RS behavior on the perception should be considered in future research. Second, the participation of RS has been measured via survey, which might affect the results of reliability and validity due to possible recall bias [52,53]. Thus, future research should overcome this problem by using more objective measures of RS, such as accelerometers.

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