

RGC Ref. No.: UGC/FDS24/H05/16 <hr/> (please insert ref. above)
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**RESEARCH GRANTS COUNCIL  
COMPETITIVE RESEARCH FUNDING SCHEMES FOR  
THE LOCAL SELF-FINANCING DEGREE SECTOR**

**FACULTY DEVELOPMENT SCHEME (FDS)**

**Completion Report**  
(for completed projects only)

<p><b><u>Submission Deadlines:</u></b></p> <ol style="list-style-type: none"> <li>1. Auditor's report with unspent balance, if any: within <b>six</b> months of the approved project completion date.</li> <li>2. Completion report: within <b>12</b> months of the approved project completion date.</li> </ol>
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**Part A: The Project and Investigator(s)**

**1. Project Title**

The Use of Urban Green Spaces (UGS): The Impacts of Perceived UGS Characteristics and Socio-psychological Factors

**2. Investigator(s) and Academic Department(s) / Unit(s) Involved**

Research Team	Name / Post	Unit / Department / Institution
Principal Investigator	WAN Kar-ho / Senior Lecturer	PolyU SPEED
Co-Investigator(s)	SHEN Qiping / Chair Professor	Department of Building and Real Estate, PolyU
Others	CHOI Wai Fan / Research Assistant	PolyU SPEED

**3. Project Duration**

	Original	Revised	Date of RGC/ Institution Approval (must be quoted)
Project Start Date	1 Jan 2017	N/A	N/A
Project Completion Date	31 Dec 2019	N/A	N/A
Duration (in month)	36 months	N/A	N/A
Deadline for Submission of Completion Report	31 Dec 2020	N/A	N/A

## **Part B: The Final Report**

### **5. Project Objectives**

#### 5.1 Objectives as per original application

1. *To identify important UGS characteristics in Hong Kong and examine their influences on behaviors of users*
2. *To examine the impact of socio-psychological factors on the use of UGS*
3. *To draw policy and design implications for encouraging the use of UGS*

#### 5.2 Revised objectives

Date of approval from the RGC: N/A

Reasons for the change: N/A

1. N/A

2. N/A

3. N/A

#### 5.3 Realisation of the objectives

*(Maximum 1 page; please state how and to what extent the project objectives have been achieved; give reasons for under-achievements and outline attempts to overcome problems, if any)*

All objectives of this research project have been achieved. To address Objective 1, the research team has conducted a systematic literature review to synthesize findings of past studies regarding important UGS characteristics and their impact on behaviors of green spaces visitors. The team has also analyzed a large volume of social media data from Instagram to find out citizens' preferences for UGS characteristics and associated values in Hong Kong (Objective 1 & 2). Using quantitative data collected from a face-to-face questionnaire survey, UGS characteristics and socio-psychological factors identified from a literature review and content analysis of social media data were empirically tested to examine their impact on various people-environment relations (Objective 1 & 2). Policy and design implications were drawn based on findings of each research activity (i.e., systematic literature review, content analysis of social media data, quantitative data research) to inform urban green spaces planning (Objective 3).

## 5.4 Summary of objectives addressed to date

<b>Objectives</b> <i>(as per 5.1/5.2 above)</i>	<b>Addressed</b> <i>(please tick)</i>	<b>Percentage Achieved</b> <i>(please estimate)</i>
1. To identify important UGS characteristics in Hong Kong and examine their influences on behaviors of users	P	100%
2. To examine the impact of socio-psychological factors on the use of UGS	P	100%
3. To draw policy and design implications for encouraging the use of UGS	P	100%

## 6. Research Outcome

- 6.1 Major findings and research outcome  
(Maximum 1 page; please make reference to Part C where necessary)

### **Part C / Section 8 / Publication 1**

A systematic literature review was conducted with the aim of ascertaining impact of urban green spaces on social cohesion (i.e., positive interactions and relations with others in neighbourhood settings). It was found that UGS physical characteristics, users' perceptions, and use patterns of green spaces directly influence social cohesion. Meanwhile, these three dimensions of green spaces may influence each other and determine social cohesion through single or serial mediation. The team has proposed a model to conceptualize the complex relationships between the three dimensions of green spaces and social cohesion. The review advances the understanding of relationships and underlying pathways between green spaces and social cohesion. Identification of factors accounting for the development of social cohesion among visitors in green spaces provides useful information to city planners to promote human health and well-being. Implications for green spaces planning and policy interventions were recommended based on the findings of systematic literature review.

### **Part C / Section 8 / Publication 2**

The research team has extracted physical characteristics which are frequently mentioned by UGS visitors and values / experiences / perceptions associated with these physical characteristics by analyzing social media data collected from Instagram. Natural features were more well-received than non-natural features (71.7% vs. 27.3%). Most associated values / experiences / perceptions extracted from social media data carry positive feelings. Aesthetics, happiness, and restoration are dominant feelings of visiting urban parks in Hong Kong. In addition, the team has found several significant associations between physical features and values. Park visitors tend to associate playground, lawns, and wildlife with the feeling of happiness. Restorative experience was primarily induced by natural physical features including lawns, plants, trees, water features, and open views. Facilities were the only non-natural features that contribute to restoration. Man-made structures, flowers, and public art could stimulate aesthetic experience. It was concluded that more emphases should be given to planning and design of physical features as well as communication campaigns for encouraging park visitation. Besides, strategical practices should stress on the potential values that urban parks would bring to users.

### **Part C / Section 8 / Publication 3**

A quantitative study based on findings of the literature review and analyzing Instagram data was conducted. Perceived physical and psychological factors were simultaneously examined for their impact on people-environment relations, including attitude toward UGS, use patterns, physical activity, psychological benefits, and social cohesion. Perceived facilities and management in physical dimension and perceived accessibility among psychological factors are variables that are most strongly associated with these relations. Moreover, psychological factors added explanatory power of regression models. However, the inclusion of psychological factors crowded out physical factors as significant variables. Mediation test suggested that psychological factors may play a mediating role in the associations between physical factors and the people-environment relations. The results informed urban planning by that merely concentrating on physical features planning is insufficient for urban parks turning into green spaces that effectively promote utilization and health-related outcomes. To meet the needs of citizens and maximize multiple health benefits, policy strategies which account for perceptions of urban green areas and tie to personal values and experiences are highly recommended.

## 6.2 Potential for further development of the research and the proposed course of action (*Maximum half a page*)

Relationships between perceived accessibility and socio-psychological factors such as attitudes need further exploration. Perceived accessibility was found to be the only significant variable of all people-environment relations in UGS (i.e., attitude toward UGS, use patterns, physical activity, psychological benefits, social cohesion) (Part C / Section 8 / Publication 3). The impressive predictive power of perceived accessibility has raised attention on questions such as whether impact of socio-psychological factors on behaviors differs due to the differences in perceived accessibility among individuals and across communities. In other words, whether perceived accessibility could strengthen or weaken effects of other factors (e.g., perceived safety and perceived naturalness) on behaviors in UGS remains underexplored. The investigation is expected to shed new light on underlying mechanism of perceived accessibility of UGS behaviors.

Besides, an indirect relationship (i.e., mediation) between physical characteristics of UGS and social cohesion was established by the current literature (Part C / Section 8 / Publication 1). However, whether impact of the physical characteristics is partially or fully mediated by a single mediator, by multiple mediation or by serial mediation has received little empirical support. Though the team has found multiple mediation between some of the physical characteristics and attitudes, use patterns and outcomes of using UGS including social cohesion (Part C / Section 8 / Publication 3), the question would be the main direction of investigation and needs in-depth examination in future research.

Regarding research methods, future studies are recommended to replicate the current project to address some limitations. Notably, future research may move beyond and seek to take advantage of traditional research data and social media data to explore the issue rather than analyzing either type of research data. For example, qualitative research such as focus group interview enables researchers to collect data from a board range of age groups, for addressing the limitation that social media data may fail to include older group of people (Part C / Section 8 / Publication 2).

## 7. Layman's Summary

(*Describe in layman's language the nature, significance and value of the research project, in no more than 200 words*)

The research project aims to fill the knowledge gap regarding the impact of urban green spaces characteristics and socio-psychological constructs on users' behaviors in Hong Kong. The systematic literature review gives insights into how different dimensions of green spaces (e.g., physical characteristics, psychological factors, use patterns) interact with each other and shape social behavior and relationships among citizens. The project is the first study which identifies significant associations between physical characteristics and associated values regarding urban green spaces. The findings yield a more complete understanding of what kind of values or experiences that physical characteristics of UGS could induce. Analyzing citizen-driven social media data also enables decision-makers to include a broad spectrum of citizens' opinions, facilitating the practice of public participation and open government. The simultaneously examination of impact of perceived physical and psychological factors highlights salient factors of urban parks on people-environment relations. It advances our understanding of complex relationships between important UGS characteristics, environment-shaped psychological factors, attitudes toward UGS, use patterns, physical activity, and various well-being of users. Findings of research outputs are expected to inform decision-making regarding UGS planning and design in Hong Kong.

## Part C: Research Output

### 8. Peer-Reviewed Journal Publication(s) Arising Directly From This Research Project

(Please attach a copy of the publication and/or the letter of acceptance if not yet submitted in the previous progress report(s). All listed publications must acknowledge RGC's funding support by quoting the specific grant reference.)

The Latest Status of Publications				Author(s) (denote the corresponding author with an asterisk*)	Title and Journal /" Book (with the volume, pages and other necessary publishing details specified)	Submitted to RGC (indicate the year ending of the relevant progress report)	Attached to this Report (Yes or No)	Acknowledged the Support of RGC (Yes or No)	Accessible from the Institutional Repository (Yes or No)
Year of Publication	Year of Acceptance (For paper accepted but not yet published)	Under Review	Under Preparation (optional)						
		ü <sup>1</sup>		Calvin Wan*, Geoffrey Qiping Shen, Stella Choi	Underlying relationships between public urban green spaces and social cohesion: A systematic literature review. <i>City, Culture and Society</i>	2018	Yes	Yes	No
		ü <sup>2</sup>		Calvin Wan*, Geoffrey Qiping Shen, Stella Choi	Eliciting users' preferences for and perceptions of urban park: Evidence from analyzing social media data. <i>Journal of Social Marketing</i>		Yes	Yes	No
2020				Calvin Wan*, Geoffrey Qiping Shen, Stella Choi	Effects of physical and psychological factors on users' attitudes, use patterns, and perceived benefits toward urban parks. Vol. 51. <i>Urban Forestry &amp; Urban Greening</i>		Yes	Yes	Yes

<sup>1</sup> This manuscript originally titled as "Exploring the relationship between urban green space and social cohesion: A systematic literature review" was submitted to "Landscape and Urban Planning" as reported in the Mid-Progress Report but was rejected by journal. The manuscript has been revised and submitted to "City, Culture and Society" in March 2020, it is currently under review.

<sup>2</sup> This manuscript was submitted in February 2020. Major revision was made and submitted to the journal in July 2020 for further review.

**9. Recognized International Conference(s) In Which Paper(s) Related To This Research Project Was / Were Delivered**

*(Please attach a copy of each conference abstract)*

<b>Month / Year / Place</b>	<b>Title</b>	<b>Conference Name</b>	<b>Submitted to RGC</b> <i>(indicate the year ending of the relevant progress report)</i>	<b>Attached to this Report</b> <i>(Yes or No)</i>	<b>Acknowledged the Support of RGC</b> <i>(Yes or No)</i>	<b>Accessible from the Institutional Repository</b> <i>(Yes or No)</i>
07/2019/ Okinawa, Japan	Bringing personal inclination back in: Connectedness to nature and its relationships with perceived restorativeness in predicting use of urban green spaces	2019 International Conference on Education, Economics, Psychology and Social Studies		Yes	Yes	No
12/2019/ Phuket, Thailand	Users' preferences on urban green spaces in Hong Kong: Initial findings from a social media analysis	2019 International Academic Conference on Social Sciences		Yes	Yes	No

**10. Whether Research Experience And New Knowledge Has Been Transferred / Has Contributed To Teaching And Learning**

*(Please elaborate)*

Since the PI has been teaching subjects on research methodology and environmental psychology, the research experience and findings would contribute to the teaching and learning. Students would be provided with more solid examples in research design and implementation, and more latest findings in the area of environmental psychology.

**11. Student(s) Trained**

*(Please attach a copy of the title page of the thesis)*

<b>Name</b>	<b>Degree Registered for</b>	<b>Date of Registration</b>	<b>Date of Thesis Submission / Graduation</b>
N/A	N/A	N/A	N/A

**12. Other Impact**

*(e.g. award of patents or prizes, collaboration with other research institutions, technology transfer, teaching enhancement, etc.)*

N/A

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**13. Statistics on Research Outputs**

	<b>Peer-reviewed Journal Publications</b>	<b>Conference Papers</b>	<b>Scholarly Books, Monographs and Chapters</b>	<b>Patents Awarded</b>	<b>Other Research Outputs (please specify)</b>	
<b>No. of outputs arising directly from this research project</b>	3	2	0	0	Type	No.
					0	0

**14. Public Access Of Completion Report**

*(Please specify the information, if any, that cannot be provided for public access and give the reasons.)*

<b>Information that Cannot Be Provided for Public Access</b>	<b>Reasons</b>
N/A	N/A