

A Study of Mental Restoration and
Preferences for Specific Urban Blue
and Green Spaces

特定の都市の青と緑の空間に対する精神的回復と好みの
研究

2022年7月

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環境園芸学専攻 緑地環境学コース

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(千葉大学審査学位論文)

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Abstract

Urban green and blue spaces have many health and aesthetic benefits that have been highlighted in previous studies. However, most of the current research is general and there is still relatively little research addressing specific blue (e.g., urban park blue spaces) and green spaces (e.g., specific green environmental settings in urban parks) in cities. Therefore, this thesis makes efforts in these research gaps.

This thesis discusses the mental recovery and preference of specific green and blue spaces in urban environments through five experiments: The first study used virtual reality to create a simulation of people sitting in a pavilion, to evaluate the preferences and mental restoration of nine pavilions in Tokyo. The results showed that VR viewing effectively promoted mental restoration. The enclosure of the pavilion did not significantly affect people's preferences and perceived mental restoration in the environment setting. Moreover, the regression analysis revealed that the prospect and serene dimensions significantly influenced preferences; for restoration, the dimensions of "richness in species" and "serene" were significant predictors. The second study used the Du Fu Thatched Cottage Museum as the subject region and employed a convenience sampling method to analyze the preference and mental restoration of different road settings of Chinese classical gardens. According to the findings, the majority of visitors

felt that the road settings in these classical gardens provided psychological recovery, and half of the roads received a preference score of five or above. The regression results indicated that nature, culture, space, refuge, and serene were found to be important predictive dimensions for both mental restoration and preference. The third experiment involving 10 different urban park blue spaces in Huanhuaxi park was conducted to assess urban park blue spaces' aesthetic preference and restorative potential. The results indicated that (1) a water body with good water quality and natural visual form may be more attractive and have restorative potential; (2) blue spaces with high vegetation diversity are preferred, and artificial elements should be evaluated more carefully when added to the scene to avoid disharmony and conflict with the surrounding environment; (3) in practical design, the proportions of plants, buildings, topographical changes, and water should be coordinated to maintain the blue space's landscape heterogeneity; (4) more leisure activities and interactions should be considered for better recovery; and (5) designers need to emphasize the balance of natural and man-made elements to enhance the visual quality of the water feature. The fourth study involved a field survey of blue spaces in three cities. In this survey, users' perceptions of the environmental quality (physical and aesthetic quality) of each blue space were assessed using a questionnaire. Afterwards, a regression model between the environmental quality of the blue spaces and the users' preferences was developed. The last study empirically investigated the restorative benefits of "viewing" behaviors in urban blue spaces and urban green spaces and compared the features of the two restorative environments using the Improved Restorative Components Scale. The results showed that: 1) 15 min

viewing in UGS significantly enhanced subjective vitality, while the improved results in UBS were not significant; 2) UGS exhibited higher Fascination and Compatibility attributes; 3) the restorative experience in UGS was multisensory, leading to a stronger restorative effect; and 4) the results of the analysis revealed that the restorative experience of UBS could be enhanced.

These findings increase understanding of how specific blue and green spaces in urban environments provide direct health benefits, and have theoretical and practical value for the future design and planning of "healthy cities".

Keywords: Specific blue and green spaces, Urban environment, health benefits, aesthetic benefits, Management and planning