

# Perceived Effect Of Urban Park As A Restorative Environment For Well Being In Kuala Lumpur

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## Abstract

A restorative environment tells how certain types of environment help heals people mentally and physically, and many studies in the related field have drawn connection that natural and green places are more likely to be restorative to a person's health, especially when compared those living in cities. In Kuala Lumpur, rapid urbanization and previous poor city planning result in residents becoming increasingly susceptible to mental fatigue and urban stress. Residents frequent for the very few urban parks available as a place to restore themselves, thus the restorative qualities of the urban parks are critical to elevating the quality of life. This study investigates the theory of restorative environment and highlighting its criteria in the context of Kuala Lumpur, by analyzing an existing urban park as a case study: the Perdana Botanical Garden. The methods used include site observation, interview, and a questionnaire to evaluate the quality of the environment as well as user perception. Data from finding confirms the restorative theories as perceived by users and its suggested space criteria and shows that most users come to the park as green therapy and to relieve stress and relax, as they find that the natural scenery and engaging landscaping inside the park are restorative to their overall well-being.

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## 1. Introduction

Numerous studies have shown that natural environment, commonly associated with green spaces and blue spaces can be restorative to a person's well-being and heal their daily stress and mental fatigue (Cooper Marcus & Barnes, 1995; Kaplan, 1995; Mazuch & Stephen, 2005; Völker & Kistemann, 2011; Jiang, 2014; Finlay et al., 2015; Akpinar et al., 2016; Wood et al., 2017).

In urban settings, access to nature is limited due to the rapid rise of the concrete environment. People become increasingly susceptible to many urban stressors with no way to negate resulting in mental fatigue and related problems such as stress, depression and anxiety which nowadays has become an arising issue for city dwellers (Finlay et al., 2015; Wood et al., 2017; Founder, 2018; Curry, 2018; "Environmental Stressors," n.d.). Thus, the existence of a breathing space in the city, specifically urban park is essential to tackle this problem.

### 1.1 Urban Setting and the Need for Urban Park

Previous studies by Finlay et al., (2015) and, Wood et al., (2017) mentioned that the existence of breathing space in the cities, specifically urban parks, as a means for rejuvenating and healing oneself is vital for these users. Kaplan (1995), Volker & Kistemann (2010), and Finlay et al., (2015) agreed on the idea that green and blue spaces, as well as specific facilities in the park, can offer a place where one can be active physically and mentally. Such areas can promote a sense of self of self-restoration and rejuvenation, reduce mental stress, and offer a place for social well-being.

Hartig et al., (2011), in his findings, agreed that with a concentrated urban population, naturally, people often feel the need to escape overwhelming human-made concrete jungles of the cities. Nature, especially urban parks, often involve getting away from those urban settings, besides being an exciting and engaging experience. Furthermore, elements of green and blue spaces in the urban park can promote a sense of well-being and restoration that does not tax the mind by offering pleasantness, tranquil, and calmness (Finlay et al., 2015; Hartig et al. 2011).

### 1.2 Restorative Environments

The restorative environment in the context of environmental psychology is referring to the process of recovery of both psychological or physiological being that is mainly due to specific elements or configuration in the environment, thus, the term restorative environments (Steg et al., 2013).

The term associated with this research of restorative settings such as healing garden, therapeutic landscape, has been coined to refer to how a space with natural affinity can improve human well-being and their daily lives. Kaplan and Kaplan (1989), one of the pioneers in the field of restorative environment, have concluded from their findings that humans that have access to a close natural environment are comparatively healthier overall than others with no access to the natural environment.

Finlay et al., (2015) supported the concept of therapeutic landscape and well-being indicate that nature plays a nuanced and influential role in the everyday lives of an older adult. They draw these conclusions based on an interview with the participant aged 65-86 years old who described their daily experience with green and especially blue space in Vancouver, Canada.

Additionally, Hartig et.al (2003) talked about restoration in natural and urban field settings and their comparison and found out that walking in nature fostered a blood pressure change that indicates a reduction in stress than afforded by walking in urban environments.

Similarly, Wang et al., (2016) also take a further look at stress recovery effects of different videotaped scenes of six urban parks and urban roadway scenes in efforts to study the natural environment benefits to human health and well-being. They described urban parks as a human-made environment with components from nature, such as shrubs, lawns, trees, and many

more. His study further confirmed previous findings that nature-based urban park scenes restored stress and attention level.

### 1.3 Historical Background of Restorative Environment and Its Related Theories

Collective research that delves into the topic of the restorative environment has primarily been guided by two theoretical explanations, each with its own set of ideas and definitions of what is meant by restoration.

**Stress Recovery Theory (SRT: Ulrich, 1983; Ulrich et al., 1991)**, which is primarily focused on restoration due to the stress that occurs when an individual encounters with least favourable and threatening situations to his or her well-being. Ulrich (1999) proposed that when humans perceived a natural environment that is peaceful, relaxing, and safe such as a forest or a garden, stress is reduced. The environment then affords users of five factors:

1. Sense of security
2. Sense of control
3. Capacity to increase social support
4. Provision for physical movement and exercise, and
5. Access to nature and other positive distractions.

These five factors thus are essential to make humans feel comfort and aids in restoration.

**Attention Restoration Theory (ART: Kaplan, 1995; Kaplan & Kaplan, 1989)**. This theory gives focuses on the restoration from attentional fatigue that occurs after prolonged engagement in a task that is mentally exhausting and fatiguing. Mental fatigue, according to Kaplan et al., (1998) is a situation that wears down one's mind and attention, as a result of directed attention, a mental effort to focus, as agreed by Herzog et al., (2003). Attention Restoration Theory (ART) by Kaplan et al., (1998) proposes that after a period of continuous use of directed attention, the capacity of a person to fend off distractions become depleted. An attentional fatigue person suffers from difficulty in concentrating, becomes impulsive in action and easily irritated, and also prone to errors on the task that require cognitive abilities (Kaplan et al., 1998).

By contrast, viewing or being in a natural setting that does not require reliance on directed attention, allows the mind to effortlessly rest and recover from the exhausting attention capacity and thus help to reduce mental fatigues and restore their overall well-being (Kaplan et al., 1998; Herzog et al., 2003; Staats et al., 2003 (Akpinar et al., 2016; Allison et al., 1998)

As described in ART, to recover from mental fatigue, a setting should have four qualities; being away, extent, fascination, and compatibility (Kaplan et al., 1998).

Being away qualities refers to a personal sense of being taken away from his or her everyday monotonous or hectic environment into some other geographical place that is either soothing or calming. (Herzog et al., 1997; Hartrig & Staats, 2003; Staats et al., 2003). Extent is the quality of settings that

are rich and interesting enough in contents that engage the mind and promoting exploration, effortlessly, and involuntarily.

Fascination is where an environment can automatically grab and engaged an individual's attention effortlessly without requiring cognitive effort from stressful demands. Studies by Herzog et al., (2002), suggest how ordinary natural environments to be highly effective in restoration, where they engage soft fascination that allows viewers to attain two restorative benefits; attention and reflection (Herzog et al., 1997, Said, 2008). Soft fascination allows directed attention a moment of pause, giving room for mental reflection, which is put, the ability of a person to find out what is bothering his mind (Kaplan et al., 1998, Said 2008). Compatibility refers to how a setting can accommodate what a person wants to do, must do, and can do in the environment. In other words, the setting fits for a user's purpose, inclination, and activities. (Staats, et al., 2003; Steg et al., 2013).

According to restoration theory, any environment or settings that have one or more of these restorative properties can thus be said to be restorative (Kaplan and Kaplan 1989). The natural environment has proven to be consistent in positively affecting human well-being and are preferred for restoration. Additionally, Kaplan & Kaplan & Ryan (1998) also described a restorative environment as spaces with the following characteristics.

1. Quiet fascination
2. Wandering in small spaces
3. Separation from distraction
4. Wood, stone and old
5. View from window

These characteristics of spaces, as highlighted by Kaplan & Kaplan & Ryan (1998), are effortlessly found in nature and any natural settings that are designed to take one's mind off of things. Even by having a window view towards nature can be as beneficial. There also exists the culture of 'ikigai/ forest bathing' in Japan, where one spends time outdoor in woods to recharged and be healed. These thus relate back to the above-hypothesized relationship between environment and health by Parsons, Ulrich, & Tassinary, (1994), whereby one perceived natural environment, immediately their mental and physical are improved as their stress level decreased.

ART and SCRT, are theories that focus on human perception towards viewing and exploring natural environments.

However, though literature looked into the restorative environment and its related theory, few works of literature focused on how the theory pan out, its validity, and if it is perceived by users in real-life situations, especially in Malaysia. Therefore, this study aims to address that gap and understand the criteria of a restorative environment and user' perception in the urban park as a medium for healing and restoration. In conjunction, the objectives of this research are to investigate the characteristics and qualities of outdoor settings that give the effect of healing and restoration to human well-being, focusing

on an urban park as a case study that has a combination of both natural and built environment. This study will be beneficial to assist professionals to design a better restorative space.

## 2. Methodology

### 2.1 Case Study Method

Based on Robert K. Yin (2014), a single case study method was best used to investigate the theory of restorative environment within an existing and real-life context, especially when the gap between the restorative phenomena and context is not specified, specially in terms of scientific numbers. Hence for this study, the case study method would be imperative in investigating whether the restorative element theory exists in real life and relate to urban park context and if its effect perceived by the user.

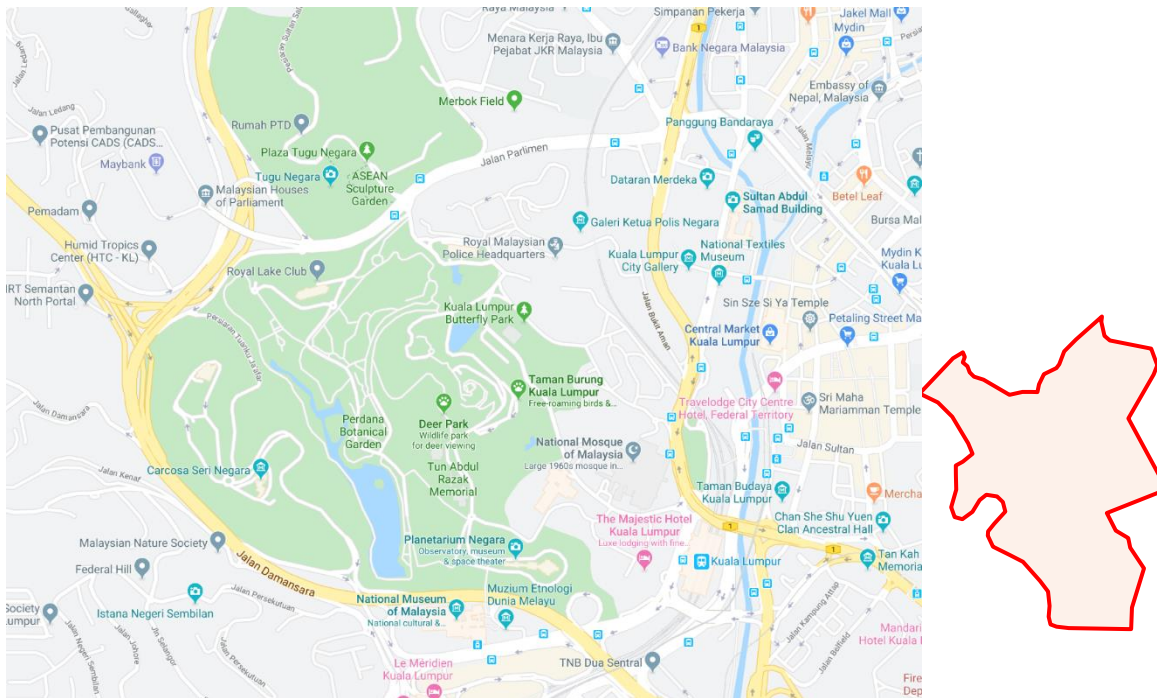
Furthermore, this research aims to understand the theory of restorative environment. Thus, only one case study was used. One of the main rationalities in choosing one single case study rather than a multiple-case study is when that single cast study represents the critical test of a significance theory (Yin, 2014). Since this study is mainly to confirm, challenge, and or extend the theory, the single case study meeting all the conditions for testing was used to determine the validity of the theory and its relevancy.

### 2.2 Case Study Selection & Justification

Perdana Botanical Garden in Kuala Lumpur was chosen as a case study based on its location, functional value, the community around, and design criteria. It is located in a strategic urban centre that is easily accessible and the park amenities are adequate to study the restorative elements ( see Figure 1).

### 2.3 Observation

Based on the studied theory, the case study park displays qualities and criteria that make for a successful healing and restorative environment with its well thought out spaces and amenities around. There are many species of trees and plants planted around to create an extensive botanical collection complete with the info on each species. The park upon observation is also well maintained and free from rubbish. The overall impression of the facilities surrounding the park also shows the parks are regularly maintained as there is no broken facilities insight (see Figure 2). These findings, however, do not show the users perception towards the park, thus findings from the survey were analysed thoroughly to relate to the successfulness of the park as a medium for healing and restoration.



**Figure 1** Figure showing the location of case studies in Tun Abdul Razak Heritage Park. (source: (Maps.google.com, 2019).

## 2.4 Questionnaire Survey

The questionnaire was developed from the set of criteria of a restorative environment and its theories, as previously discussed. Some points that were deemed relevant to be studied that were not initially listed in the literature review were also taken to study. The questions are constructed to test the hypothesis and theory of the restorative environment in the urban park and to validate and identify user behavior and perception of the place concerning space quality.

The respondents were randomly recruited based on random techniques approach; users are chosen based on their willingness to partake in the survey, their availability in the vicinity as well as their ability to respond to the questions (Rea & Parker, 1997). Similarly, this research data collection was completed through questionnaire surveys self-filled out by park users.

### i. Structure of the Survey Questions

The survey was divided into sections to find out users' use, activity, preference, and perception of the parks as a medium for healing and restoration. Users were given brief information on the survey aim to help them thoughtfully answer the questions on what they perceived.

Two-level of measurements: nominal and ordinal were used to find out user response and perception. Nominal measure was used to measure either a two-way question or multiple-choice question and adjective checklist question to determine the variables (Said, 2013). Some of the questions were open-ended

or close-ended to give users more freedom to express their perception, satisfaction, and opinion.

Ordinal measure, the Likert scale was used to measure the agreement of users on five ordinal response categories, which are;

- 1: Disagree
- 2: Slightly Agree
- 3: Moderate
- 4: Considerably Agree
- 5: Extremely Agree

Said (2013) stated that, to discover users' perception, impression, beliefs, feeling, and attitudes on certain experiences and environments, the Likert scale was appropriate and suitable to be used. Thus, some of the questions on the constructed questionnaire apply the method of Likert scale as well to get a measure of people's responses.

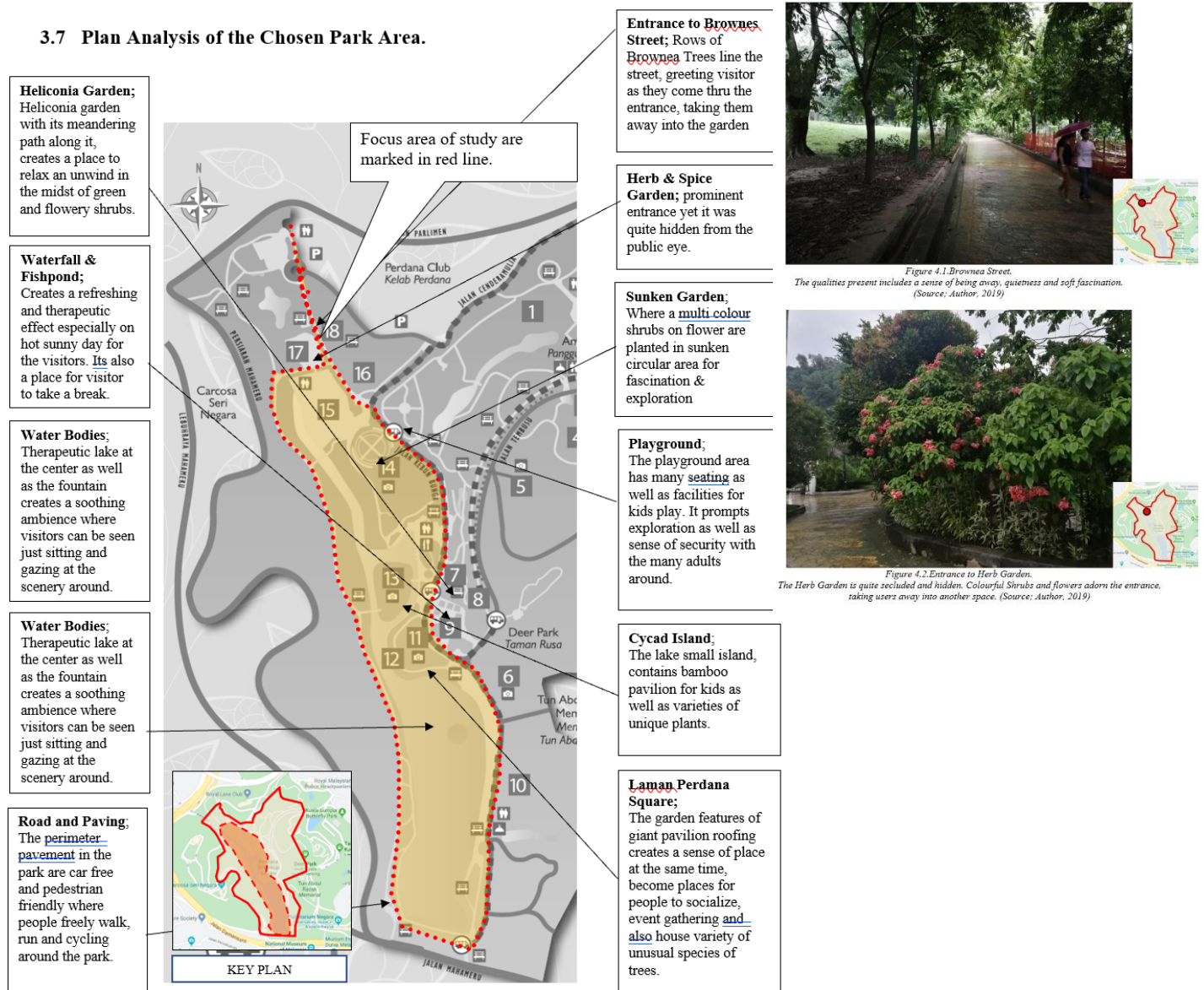
Nominal measure, for example, in Section A was to find out the demographic info of the respondent such as their gender, age, occupation, and their primary purpose in coming to the park, as well as the preference of time and frequencies of them coming to the park. It will also give an in-depth review of who the park most often serves as well as the primary purpose of the users who come to the park. Section B investigated the general perception of users in an urban park from their perspective, their most favourite elements as well as the activities they normally do. Section C looked into the validity of the restorative elements, as stated in the ART theory and whether the users of the park agree and feel the restorative effect. This is to prove if the theory is relevant and felt by the users. The

hypothesis is that since the case studies possess all the qualities as stated in the ART theory (validated by observation finding), would the end-user be able to feel restored as per suggested in theory?

Section D investigated users' perception of the park concerning the SCRT theory. From the literature review, SCRT proposed that stress is reduced when the environment affords the users

these five elements: sense of security, sense of control, capacity to increase social support, provision for physical movement and exercise, and access to nature and other positive distractions. Therefore, the questions in these sections were designed accordingly to attest to the validity of the elements and whether users of the park agree with the statement that reflects the theory

### 3.7 Plan Analysis of the Chosen Park Area.



**Figure 2.** Summaries of plan analysis of the chosen park area for study, highlighting the perceived effect of restorative qualities felt during field observation. (Source from <http://de.maps-kuala-lumpur.com/perdana-botanical-garden-anzeigen> 2019)

## 2.5 Interview

A structured interview is conducted to gather more supplementary information on the case study, its design and intention, problems, and to support the primary data collection. These interviews are conducted towards the authorities and the landscape architect who is responsible for the case study chosen through a phone call, email, and face-to-face interview.

## 2.6 Data Analysis

Data collected from the survey, interview, and site observation over three weeks on a randomized date includes weekday and weekend. These data were then categorized accordingly to each question to focus on the response of each to give a brief overview of data discovered. This method of analysing data provides a triangulation between data gathered survey questionnaire, in observation (using field notes and photos), interview with authority. Data then was cross-referenced with the literature review to confirm if the findings coincide with what the literature theorizes on the restorative environment and urban park as a medium for restoration, which will be discussed in the next session.

## 3. Results & Discussion

### 3.1 Findings from Questionnaire Survey

#### Section A | General Background Information

There were a total of 77 respondents ( 64.9% female and 35.1% male). These large number of the female, which is 29.8 % more than male may be contributed to the number of female ratios that is higher than men. Furthermore, females are more likely to seek stress reliever by taking a stroll in a green urban park as compared to men.

Most respondents (40.3%) were from the 19-25 years group. This group of people was primarily of college and university students and recent graduates. They have allocated the majority of their time for recreation and relaxations when compared to other age groups. The second-largest number of respondents (22.1%) is from the age group of 25 to 30 years old. The survey also revealed that most of them 42.9% work in the private sector. 40.3% are still studying, which ties back to the number of age groups between 19-25 years old.

Most of them (41.6%) came to the park to take a break and as a stress reliever. The second most popular choice of the answer at 26%, is recreations, exercise and to train their bodies. This data strongly ties back to the theory that people are more relaxed, less stressful, and feel restored when being in contact with nature, thus the reason they come to the park. A few respondents voiced out that recreations and exercise in the park are better compared to other urban areas due to the cleaner air and green surrounding. Sightseeing in the park is also a form of restoration for some people where they can change sceneries, unwind, and gather back their thoughts.

In terms of the frequency of users coming to the park, 39% seldom come to the park. 26% answered that this is their first time coming to the park, and 18.2 % answered that they come to the park monthly. This shows that most of the people who come to the park are seldom there, which may be due to the burden of hectic daily tasks and responsibilities and stress. This finding is also may be due to the distance between their house and the park is quite far, in addition to the lack of parking area and public transport. Some of them who stated that this is their first time might be due to not being a local. During data findings, a few respondents are foreigners and come to the park as part of their exploration in Kuala Lumpur.

53.2%, prefer to come to the park during the evening, which is between 5 pm to 9 pm. This is because the evening being a popular time to relax after work and socializing with the sun shining less hot. Meanwhile, 33.8 % of them prefer to come in the morning. From observation, there are considerably fewer people, and the sun is still shining, but the air is colder and less hot as compared to during the afternoon time when the sun is high. Nevertheless, they are still 13 % of them who prefer to come during noontime, which ranges from 12 pm to 5 pm. This number is in accordance with the types of activity they carry out there, which suits the noon times, for example, picnic, social gathering, and photography that are best enjoyed at noon.

#### Section B | User Perception in Urban Park

Section B investigates user perception in an urban park.

50.6% choose greenery and shady trees as their most preferable element in the park. 18.2 % of them choose the lake as their second most preferred element of the park. Another 11.7% choose the playground area. This data revealed that people mostly prefer greenery and shady trees as a component in the restorative environment, with soothing blue elements such as lake and water feature coming in second. This data may reflect our innate need for biophilia, which is the desire to connect with nature, as innately nature soothes.

When in the park, 53.2% of the respondents stated that relaxing was their usual activity, 44.2% prefer enjoying scenery and greenery, and 33.8% favour physical activities like exercising. This data further proves that the park has the restorative qualities that attract people to relax, exercise, and perform other activities while enjoying the scenery and greenery at the same time for maximum self-restoration.

When talking about positive mood change, the majority of the respondents with 61% pinpoint that fresh air in the park is the factor that triggers their mood to change for the better. 55.8% choose greenery and trees, and 33.8% of them prefer nature sound such as birds singing, tree leaves rustling, and water stream sound as the trigger for positive mood change. The other significant factor that users choose includes water bodies and plants with colourful flowers. This data may be because people are already weary to the polluted city air and the urban noise such as car horns and construction sound in everyday life. Therefore, being in a park with greenery, fresh air, and natural sound is an effective therapy that gives a mood boost.

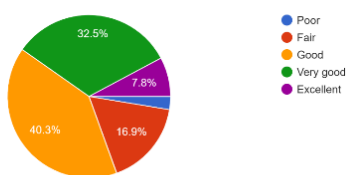
The next question asks whether users agreed with the statement that urban park could be a medium for healing and restoration. They are to state the reason for their answer. From finding, only 1.3% of the respondent stated 'No' as they did not agree with the statement given. The rest of the respondents agree, and some of them have given their reason. Below is a list of some of their detailed out and interesting reasoning;

- (i) Yes, because we always **feel relax** when in the garden.
- (ii) Yes, because I find my **inner peace and relaxing while being surrounded by nature**
- (iii) Yes, personally, humans are **part of nature**. When we are in a place where we are part of it, we **feel belonged, and this sense of belonging makes us comfortable**.
- (iv) Yes, because it allows people who live in the urban city to **escape from urban stress** by having the chance to connect with nature.
- (v) Yes, because I can **create inner peace and relax** while being surrounded by nature.
- (vi) Yes, because it symbolises of **zen mood, which causes calming nature and positive vibes** energy.
- (vii) Yes, because people tend to like to see beautiful things and **sceneries as they calm people naturally**.
- (viii) Yes, because **greenery has a relaxing effect, especially to our eyes, that have been exposed to blue light** regularly in a massive amount that may be damaging them.

These opinions have generated few common keywords related to the theories of restoration, such as 'relaxing effect', 'calming', 'inner peace', 'a sense of belonging in nature', 'biophilia', 'escape and being away', 'positivity', and others. These respondents' answers gave light on their self-perception of the urban park that were strongly related to the theory discussed. It can be agreed that these users have indeed perceived the calming and healing effect of nature in the urban park that they are all saying the same things in agreement, which in fact, related to the theory of restoration discussed.

7. In general, what are your thought about the current park design in being a medium for healing and restoration?

77 responses



**Figure 3** The percentage of user rating on the current park design.

This question aims to understand user ratings on the current park qualities and if they are satisfied with the current design. The majority (40.3 %) of users give a rating of "Good", a fair number (32.5 %) of people give a rating of "Very good", and 16.9 % gives a rating of fair (see Figure 3).

7.8 % of the respondents give a rating of excellence, and very few give the lowest rating, which is considered weak. This considerably high rating shows that most of the users are generally very satisfied with the current park design as a

medium for healing and restoration, as it fulfilled their desires and objectives in the park, as it can be seen in earlier question findings. Thus, this can be perceived that the park is a good medium for healing.

### Section C | Attention Restoration Theory (Art)

Section C investigates the validity of attention restoration theory related to the urban park. The question is designed to reflect the component, as stated by the Attention Restoration Theory. (see Figure 4)

Component: **being away qualities**. Most respondents (46.8%) Component: **Extensive rich and engaging to both the mind and body**. The majority of the respondents (40.3%) put on a rating of 4, which indicates that they agree considerably with the statement. 31.2% of the respondents placed a rating of 3, which indicates a moderate level of agreeableness, whereas 26% of them placed a rating of 5, which indicates extreme agreeableness. Since the educational botanical garden exhibit a wide variety of plant species, settings, and environment, most users feel a sense of put a scale rating of 4, which indicates that they considerably agree with the statements. 25 respondents (32.5%) indicated that they wholly agree with the component that they feel at ease and being away from their daily stress. This high number of positive scales gives an idea that most users feel at ease and being away when dwelling in the park. This may be due to the huge difference in their daily urban living context and the park environment. Furthermore, it is easier to relax in nature, especially when one is away from daily stress.

Component: **Extensive rich and engaging to both the mind and body**. The majority of the respondents (40.3%) put on a rating of 4, which indicates that they agree considerably with the statement. 31.2% of the respondents placed a rating of 3, which indicates a moderate level of agreeableness, whereas 26% of them placed a rating of 5, which indicates extreme agreeableness. Since the educational botanical garden exhibit a wide variety of plant species, settings, and environment, most users feel a sense of exploration and wonder to explore the park around due to the many natural stimulus. Moreover, the park also educates and engage the users with new information as each type of plant species are labelled.

Component: **abilities to effortlessly grab and engage user's attention in a positive and relaxing way**. 40.3 % of the respondents considerably agree that the park can grab and engage their attention effortlessly. 28.6% of them choose to extremely agree with this component. This high level of agreeableness may be due to the various elements in the park that are fascinating enough to grab the user's attention. For example, the sunken garden is filled with varieties of colourful flowers, massive unique

Component: the **environment is compatible and accommodating to the users' need**. 53.2% of the respondents considerably agrees that the park is accommodating to his or her users need, and 27.3% of them are exceptionally agreed on this. Most users come to the park to relax, de-stress, and do some

exercise and recreations. The users also felt that the park designs are considerably decent and compatible to do their intended

biophilic design around the park, the bamboo playhouse structure, and many other elements around the park.

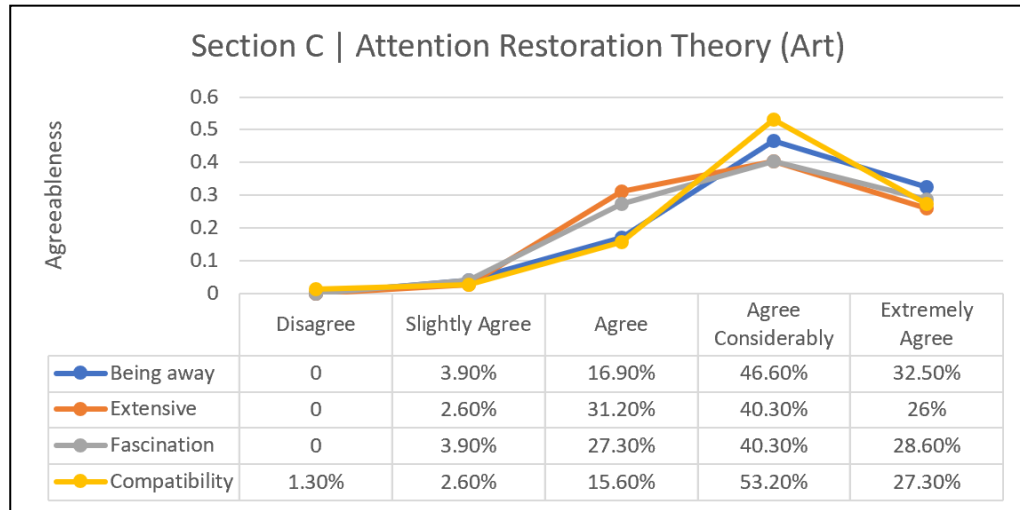


Figure 4. Showing the summary of data findings collected in Section C regarding ART theory. (Source: Author)

### Section D | Stress Coping Restoration Theory (SCRT)

Section D investigates the stress-coping theory. In SCRT, it states that stress is reduced when the environment affords these factors, Sense of security; Sense of control; Social support; Physical movement and exercise; Access to nature and other positive distractions (see Figure 5).

Factor: *sense of security*. (42.9% of the respondents) gave a rating scale of 3, which moderately agrees with the statement. It seems most users are quite wary and give a medium rating in terms of safety. This is probably due to the park being so vast and open for the public that results in the data above, as not all people feel safe when being out in the open, no matter how safe the place is.

Factor: *sense of control*. 33.8% of the respondent gave a medium scale that indicates they moderately agree with the statement. 31.2% of them perceived they considerably agree with the statement, and 20.8% of them agree entirely with such statement. This indicates that most users still have a sense of control while being in the park, probably due to the park at the time of the research are sparsely filled with people. In addition, there were several places and facilities that could have given them this sense of control such as Pavilion and the benches around the park as observed.

Factor: *sense of privacy*. 40.3% of the respondents considerably agree that the park still offers a sense of privacy at some of the areas, for example, in the pergola, Pavilion's premise and the seating scattered across the park. Some 14.3 % of them even agree entirely with the statements. Sense of privacy is essential to feel a sort of peacefulness when seeking

calmness and quietness for a person to sort out their thought, meditate, and de-stress. The park offers some sense of privacy in specific spaces where people can seek their quiet place if they so desire.

Factor: *social support element afforded by the park*. Most of them responded are considerably agree that the park makes them comfortable to socialise with friend's families and even stranger at some point. Thus, it can be concluded that they are comfortable to socialize inside the park, and only some of the respondents feel uncomfortable when inside the park. When the respondents are comfortable to socialise inside the park, they are more open and feel more relax, thus enhancing the restoration process. Those who agree might be in the group whose primary purpose when coming to the park is to de-stress, relax, and enjoy time with their friend and family.

Factor: *comfortable and inclined to do physical movements and exercise when inside the park*. 45.5% of the respondents considerably agree, 23.4 % of them agree entirely with the statement, and some 26% moderately agree with the statements. This data also shows indirectly explain that when facilities are in excellent condition and well maintained, people feel more comfortable and inclined to do physical movement and exercise. When people see others exercising, henceforward, they also socially influenced to be active and moving.

Factor: *Perception when being engaged with the natural environment inside the park*. The graph chart shows that the majority agree, considerably agree, and extremely agree with the statements. This answer backs the theory that when people are being engaged with nature and greenery, they feel less stress and could restore in terms of mental and physical well-being. Easy access to the natural element from all five senses of the



human body has long been known to make a person happy and relax and henceforth less anxious and stress. Engaging with the natural environment also tends to make people forgot their worries and trouble for a moment before coming back with a refreshed mind.

Factor: *users' agreeableness that their stress level decrease when being engaged with the natural park elements.* 41.6%

of the respondents are entirely agreeing, 37.7% of them are considerably agreeing, and 16.9% moderately agree with the question. Nature has some biophilia connection to humans, that just by being in nature, a person can be at peace and feel some restoration. Biophilia is the innate human desire since long ago to connect and be at peace with nature.

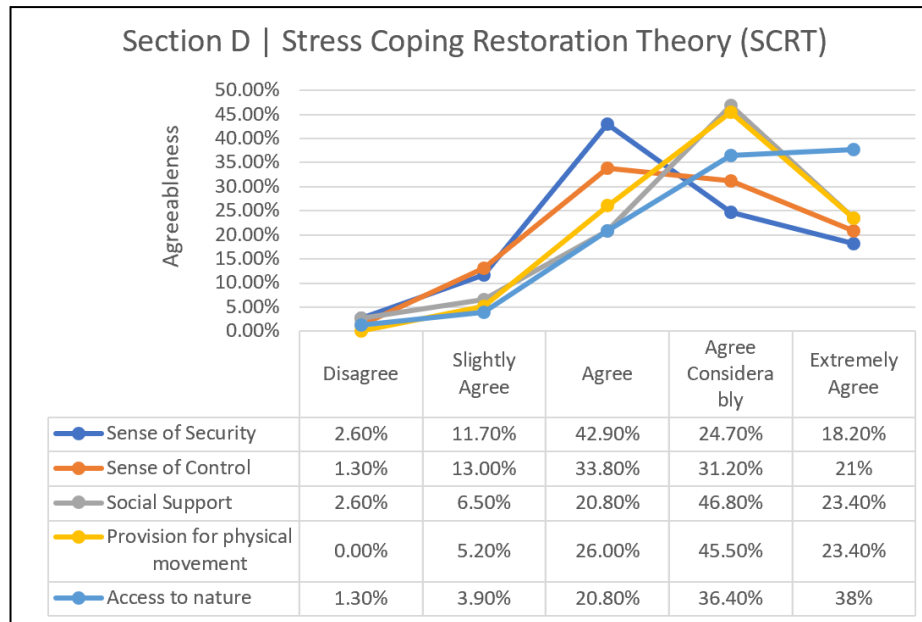


Figure 5 . Showing the summary of data findings collected in Section D regarding SCRT theory. (Source: Author)

### 3.2 Analysis And Findings From Interview With The Authority And Landscape Architect

The interview revealed few main concerns regarding the design and implementation of the park studied, these are:

1. Conserve and protect the environment and local species.
2. Showcase the natural local environment plant and species
3. To give knowledge and create environmental awareness and education to the public

One of the main objectives of the implementation of the park was to create a botanical garden that conserves the local plant and unique species. Thus, many plant species from all around were gathered in the park. Therefore, the multitude of the park's element and species adds *an extensive richness and diversity that is part of the restorative element.*

Another vital role for the park was to be a park that is *fulfilling* and environmentally educational to the visitor, and the designers and planners achieve this by showcasing the varieties of natural and local plant species as well as a unique plant from overseas, complete with informative and educational boards at each plant.

Visitors can thus explore the park with their family and friends and *form a sort of social connection to nature by having fulfilling recreational activities.*

The park was also *designed to promote exploration and wander by having many different themes garden inside*, to give visitors knowledge and creating environmental awareness. These varieties of different elements inside *the park create a sort of wonder and fascination to the visitors that this, in effect, reduces stress and gives a sense of restoration.*

The availability of the park and opportunities for *recreational activities and social interaction cause the users to perceive them as beneficial for self-restoration and rejuvenation for individuals and families.* Plus, the additional value of the urban park as part of an educational tool to increase the public's environmental awareness can be seen as added benefit aside from being a restorative and healing environment.

When asked if the planners and designers believe in the therapeutic garden stated, planners stated that *"... when talking about the therapeutic garden, usually it was a garden in hospitals, but, yes, it is common knowledge that when looking at the element of greenery, one's stress can be reduced and thus result in the said healing process- "* while designers opinion is that...-*"When a person is looking at or being involved with greenery; the stress hormone in one's*

*body will be reduced. It is like horticulture therapy where when one plays with earth and greenery, one naturally forgot all their troubles and daily stress, and a sense of relaxation and satisfaction overcome them. Certain elements in the park such as colorful flowers, informative trees, and engaging natural stimulant are the elements that make the park a healing garden."*

Thus, it can be summarized from their opinion that both agree and believe that urban parks can be a medium for healing and restoration.

### 3.3 Synthesis Of Data Finding

The survey revealed that most of the respondents are the young generation from 30 below. This generation is of those who are still pursuing their studies, young adults and young families with kids. They come to the park mostly for stress reliever and recreational activities. Interview with the authority and landscape architect revealed the concept for the park as a botanical garden that is educational to the public as well for recreation. Thus, the users can learn, explore, and be fascinated by the plant species they never encountered. Learning new things that are vastly different from their everyday life can be some form of therapeutic experience that takes their minds away from daily habits and usual lifestyle. This concept ties back to the Attention Restoration Theory (ART), where a place that takes you away from daily living and separates from usual distraction can be restorative.

Additionally, the survey revealed that the most preferable element in the park is greenery and shady trees, in contrast with the urban concrete environment. The landscape architect also supported the answer by saying that when one looks at greenery, the body relaxes due to stress negating hormone being release and thus prompt a sense of relief and relaxation. This is further supported by the type of activities being done by users in the park, with the majority of them come with the purpose of relaxing. This data indeed shows how the park has a restorative quality that attracts people to relax and rejuvenate, as it is being surrounded by nature. With the majority of the users living in an urban environment, being in the middle of nature is one way to be away from daily stress (see ART theory), and this urban park provides them easy access to nature (SCRT Theory).

However, the park is not perfect and found some problems as the survey revealed. Some of the users expressed their opinions that the park did not make them feel completely safe; through observation, the park was too broad and vast with so little people and did not emulate a sense of protection. This was supported by the landscape architect herself, in which she stated that for a garden to be therapeutic, a clear perimeter such as hedges or fences must be put and secured in place so that the users feel more comfortable and secure without feeling they might be attacked at any seconds, thus easing them to relax and be rejuvenated (see SCRT theory). From the findings, the design of certain places in the park such as herb garden and conservatory garden are most comfortable for healing as these parts have a well-defined perimeter and plenty of natural stimulation.

To summarize, most of the survey questionnaire results have revealed that though not everyone consciously aware of the restorative environment, they all come to the park majorly for a restoration effect and it was agreed by majority that they all indeed felt that they park are very restorative to their overall well-being, reduce stress and depression, and this was supported by the finding from the interview with the authority that shows the planning of the park was geared towards a fulfilling experience for the users.

### 4. Conclusion

Previous research pointed out how a restorative space is beneficial due to the way they impact a person's body and well-being, such as renewing a person's cognitive abilities, produce a fulfilling restorative experience, increase the rate of recovery from illness, and encourage physical movements for physical and mental well-being (Mitchell, n.d.). Research also indicates among qualities of a restorative space are: quiet and, secluded is small and enclosed with natural elements (Mitchell, n.d.). This is supported in findings that show that when a park is too wide and open, users do not necessarily feel safe and secure. Interview with the landscape architect also supports the research that to create a fully healing garden, a park needs to feel safe and secure by implementing certain kinds of perimeters around it such as hedges and fencing.

Since today fast-paced urbanisation brings a wealth of positive impact as well as many challenges in terms of urban planning, urban park as a restorative environment plays a tremendous role in being a place for self-regeneration and restoration for city dwellers to reduce stress, increase well-being and promotes happiness. By taking a walk in green areas, viewing blue spaces, and listening to the sound of nature as compared to walking in cities, it can boost a person's mood and reduce stress and blood pressure, as proven by studies done by (Stigsdotter, Corazon, Sidenius, Kristiansen, & Grahn, 2017), whereby they compared the effects of walking in the forest to an urban area by measuring blood pressure and heart rate; psychological measures were also performed.

In Malaysia, it seems the term restorative environment is not widely adopted by the current designers and landscape architect as they are more familiar with therapeutic garden terms used for gardens in hospitals and such, based on the findings revealed by the relevant authorities. Thus, there is huge potential to be tapped if planners and designers also learn and apply the theory of healing environment when designing parks and even inside of building spaces and such, to maximise the healing outcome to the visitor. Since urban dwellers have limited exposure and time to nature, their visit outcome to the park should be maximised.

User perception in the park shows that there is still room for improvement, which suggests that if the planners and designers carefully considered and applied the theory of healing environment and its characteristic to the design implementation, users' perception could potentially increase positively.

## References

- Akpinar, A., Barbosa-Leiker, C., & Brooks, K. R. (2016). Does green space matter? Exploring relationships between green space type and health indicators. *Urban Forestry & Urban Greening*, 20: 407–418. <https://doi.org/10.1016/j.ufug.2016.10.013>
- Allison, P. C., Barnes, M., Burnett, J., Crisp, B., Delaney, T., Kamp, D., ... Ulrich, R. S. (1998). The anatomy of a healing garden. *Journal of Healthcare Design: Proceedings from the Symposium on Healthcare Design. Symposium on Healthcare Design*, 10: 101–112.
- Cooper Marcus, C., & Barnes, M. (1995). *Gardens in the healthcare facilities: uses, therapeutic benefits, and design recommendations*. Berkeley, Calif.: University of California.
- Curry, A. (2018, June 14). Why Living in a Poor Neighborhood Can Change Your Biology. Retrieved May 6, 2019, from Nautilus website: <http://nautil.us/issue/61/coordinates/why-living-in-a-poor-neighborhood-can-change-your-biology-rp>
- Finlay, J., Franke, T., McKay, H., & Sims-Gould, J. (2015). Therapeutic landscapes and well-being in later life: Impacts of blue and green spaces for older adults. *Health & Place*, 34: 97–106. <https://doi.org/10.1016/j.healthplace.2015.05.001>
- Founder, D. E. G. (2018, July 18). Environmental Stress: How it Affects Your Health. Retrieved May 6, 2019, from Dr. Group's Healthy Living Articles website: <https://www.globalhealingcenter.com/natural-health/what-is-environmental-stress/>
- Gross, R. (1998). Healing Environment in Psychiatric Hospital Design. *General Hospital Psychiatry*, 20(2): 108–114. [https://doi.org/10.1016/S0163-8343\(98\)00007-3](https://doi.org/10.1016/S0163-8343(98)00007-3)
- Hartig, T., Evans, G. W., Jamner, L. D., Davis, D. S., & Gärling, T. (2003). Tracking restoration in natural and urban field settings. *Journal of Environmental Psychology*, 23(2): 109–123. [https://doi.org/10.1016/S0272-4944\(02\)00109-3](https://doi.org/10.1016/S0272-4944(02)00109-3)
- Hartig, T., & Staats, H. (2003). Guest Editors' introduction: Restorative environments. *Journal of Environmental Psychology*, 23(2): 103–107. [https://doi.org/10.1016/S0272-4944\(02\)00108-1](https://doi.org/10.1016/S0272-4944(02)00108-1)
- Herzog, T.R., M. Black, A., A. Fountaine, K., & J. Knotts, D. (1997). Reflection and attentional recovery as distinctive benefits of restorative environments. *Journal of Environmental Psychology*, 17: 165–170. <https://doi.org/10.1006/jevp.1997.0051>
- Jiang, S. (2014). Therapeutic landscapes and healing gardens: A review of Chinese literature in relation to the studies in western countries. *Frontiers of Architectural Research*, 3(2): 141–153. <https://doi.org/10.1016/j.foar.2013.12.002>
- Kaplan, R., & Kaplan, S. (n.d.-b). *A Psychological Perspective*. 6.
- Kaplan, S. (1995). The restorative benefits of nature: Toward an integrative framework. *Journal of Environmental Psychology*, 15(3): 169–182. [https://doi.org/10.1016/0272-4944\(95\)90001-2](https://doi.org/10.1016/0272-4944(95)90001-2)
- Mazuch, R., & Stephen, R. (2005). Creating healing environments: humanistic architecture and therapeutic design. *Journal of Public Mental Health*, 4(4): 48–52. <https://doi.org/10.1108/17465729200500031>
- Mitchell, D. R. (n.d.). *Characteristics Of Restorative Spaces*. 63.
- Parsons, R., Ulrich, R. S., & Tassinary, L. G. (1994). Experimental Approaches to the Study of People-Plant Relationships. *Journal of Home & Consumer Horticulture*, 1(4): 347–372. [https://doi.org/10.1300/J280v01n04\\_06](https://doi.org/10.1300/J280v01n04_06)
- Relf, P. (2008). Renewing the relationship between people and plants in the 21st century. *Acta Horticulturae*, 790: 45–52. <https://doi.org/10.17660/ActaHortic.2008.790.4>
- Robert K. Yin. (2014). *Case Study Research Design and Methods* (5th ed.). Thousand Oaks, CA: Sage. 282
- Said, Ismail (2008) *Garden As Restorative Environment For Hospitalised Children*. Penerbit UTM, Skudai, Johor Bahru. ISBN 978-983-52-0489-0
- Staats, H., Kieviet, A., & Hartig, T. (2003). Where to recover from attentional fatigue: An expectancy-value analysis of environmental preference. *Journal of Environmental Psychology*, 23(2): 147–157. [https://doi.org/10.1016/S0272-4944\(02\)00112-3](https://doi.org/10.1016/S0272-4944(02)00112-3)
- Steg, L. (2013). *Environmental Psychology; An Introduction* (1st ed.). BPSBlackwell.
- Stigsdotter, U. A., & Grahn, P. (2003). *Experiencing a Garden: A Healing Garden for People Suffering from Burnout Diseases*. 12.
- Stigsdotter, U. K., Corazon, S. S., Sidenius, U., Kristiansen, J., & Grahn, P. (2017). It is not all bad for the grey city – A crossover study on physiological and psychological restoration in a forest and an urban environment. *Health & Place*, 46: 145–154. <https://doi.org/10.1016/j.healthplace.2017.05.007>
- Ulrich, R. S. (1983). Aesthetic and Affective Response to Natural Environment. In I. Altman & J. F. Wohlwill (Eds.), *Behavior and the Natural Environment*. 85–125. [https://doi.org/10.1007/978-1-4613-3539-9\\_4](https://doi.org/10.1007/978-1-4613-3539-9_4)
- Völker, S., & Kistemann, T. (2011). The impact of blue space on human health and well-being – Salutogenetic health effects of inland surface waters: A review. *International Journal of Hygiene and Environmental Health*, 214(6): 449–460. <https://doi.org/10.1016/j.ijheh.2011.05.001>
- Wang, X., Rodiek, S., Wu, C., Chen, Y., & Li, Y. (2016). Stress recovery and restorative effects of viewing different urban park scenes in Shanghai, China. *Urban Forestry & Urban Greening*, 15: 112–122. <https://doi.org/10.1016/j.ufug.2015.12.003>
- Wood, L., Hooper, P., Foster, S., & Bull, F. (2017). Public green spaces and positive mental health – investigating the relationship between access, quantity and types of parks and mental well-being. *Health & Place*, 48: 63–71. <https://doi.org/10.1016/j.healthplace.2017.09.002>