



THE PSYCHOLOGICAL IMPACT OF BIOPHILIC DESIGN: THE CASE OF TAMAN LITERASI MARTHA TIAHAHU, JAKARTA

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Introduction

Background:

- The quality of a built environment tremendously affects the quality of human health.
- Fast-paced lifestyle combined with a lack of access to and connection with the green environment potentially causes nature deficit disorder, which contributes to the increasing number of stress-related illnesses and mental disorders.

Objective:

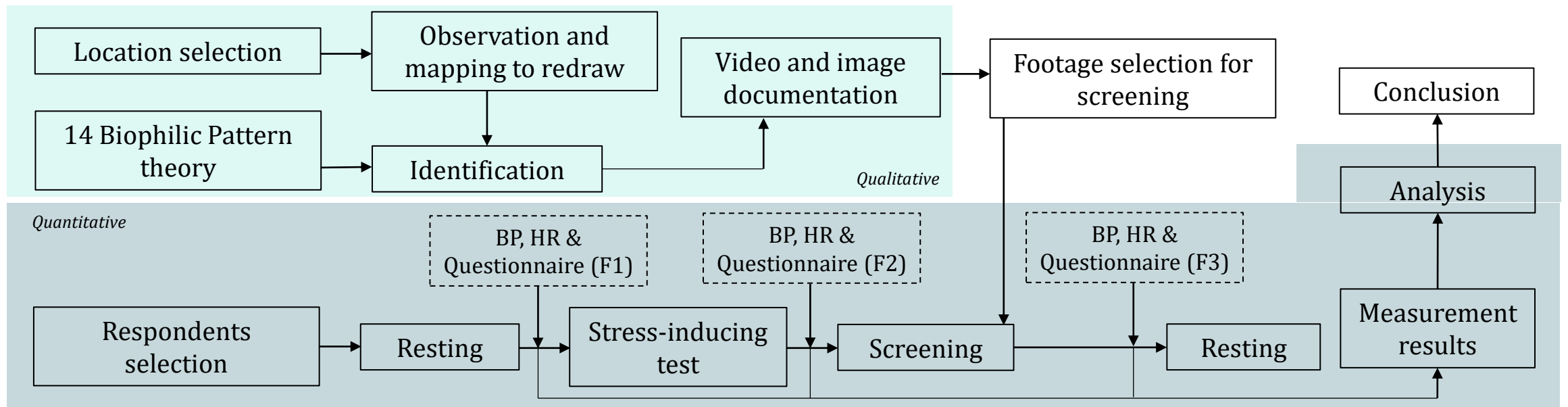
- To study the psychological effect of the biophilic concept employed in the Martha Christina Tiahahu Literary Park, inside and outside the Park complex by means of physiological and psychological measurements.

Working theses:

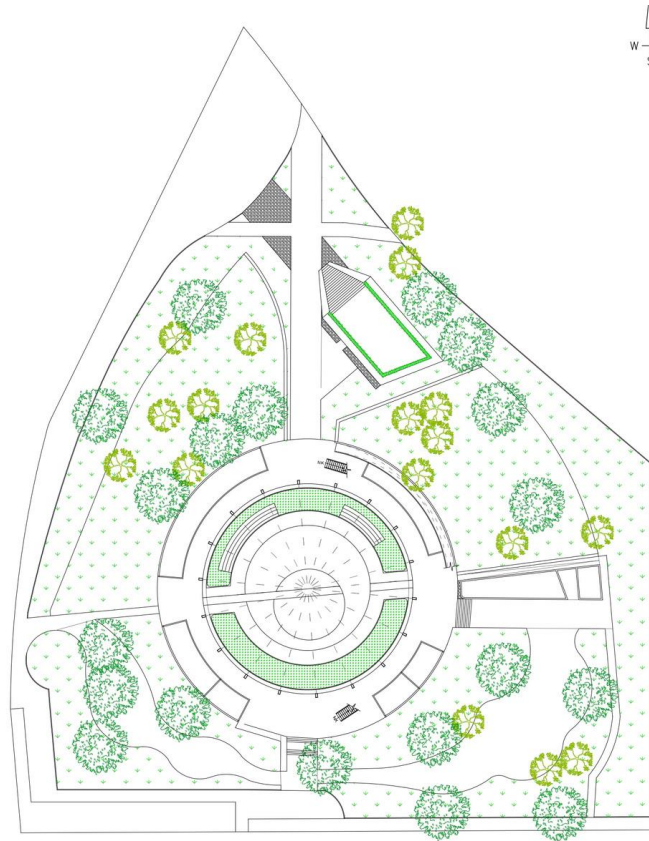
- Biophilic design, with its close connection to nature, is believed to have a restorative effect on the psychological state of the built environment users.

Method

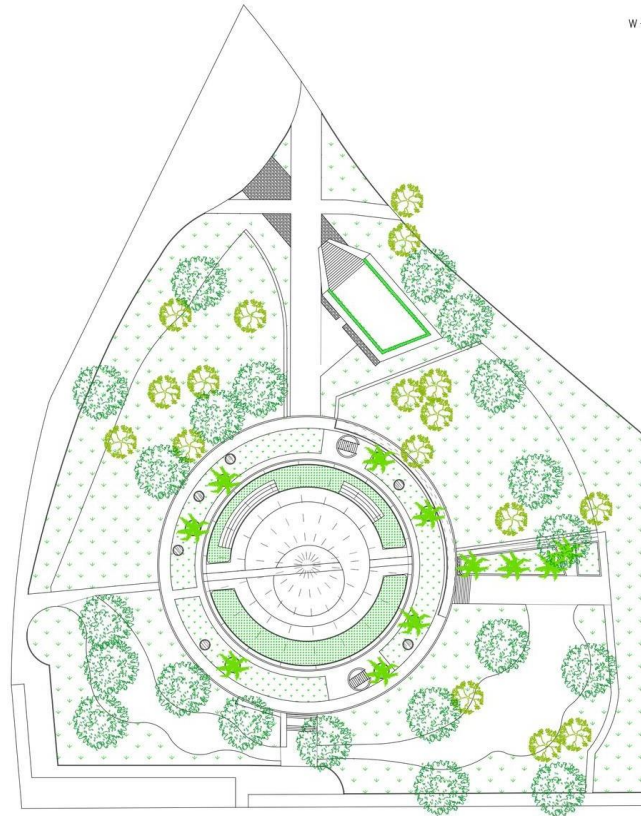
- Locus selection requirement: a newly renovated (only over one year) and easily accessed public space with vast greenery in Jakarta – Martha Christina Tiahahu Literary Park
- Mixed approach and methods: qualitative (observation and documentation of the research locus to map biophilic design patterns) and quantitative (measurement of respondent's physiological and psychological reactions)



Result and Discussion



Key plan - Ground Floor (NTS)

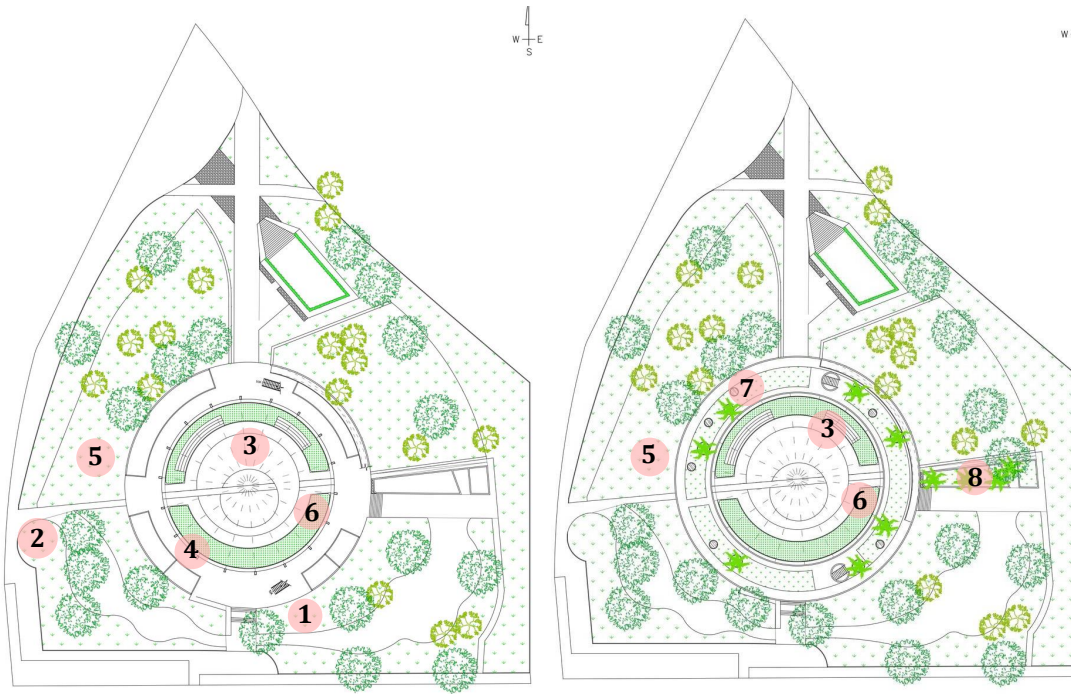


Key plan - Upper Floor (NTS)

Context	Item	Pattern
Nature in the Space	P1	Connection with nature
	P2	Non-visual connection with nature
	P3	Irregular sensory stimulations
	P4	Thermal and air circulation variability
	P5	Waterbody
	P6	Dynamic and diffused lighting
	P7	Connection to the natural system
Natural Analogues	P8	Biomorphic form and patterns
	P9	Material connection with nature
	P10	Complexity and order
Nature of the space	P11	Prospect
	P12	Refuge
	P13	Mystery
	P14	Risk and threats

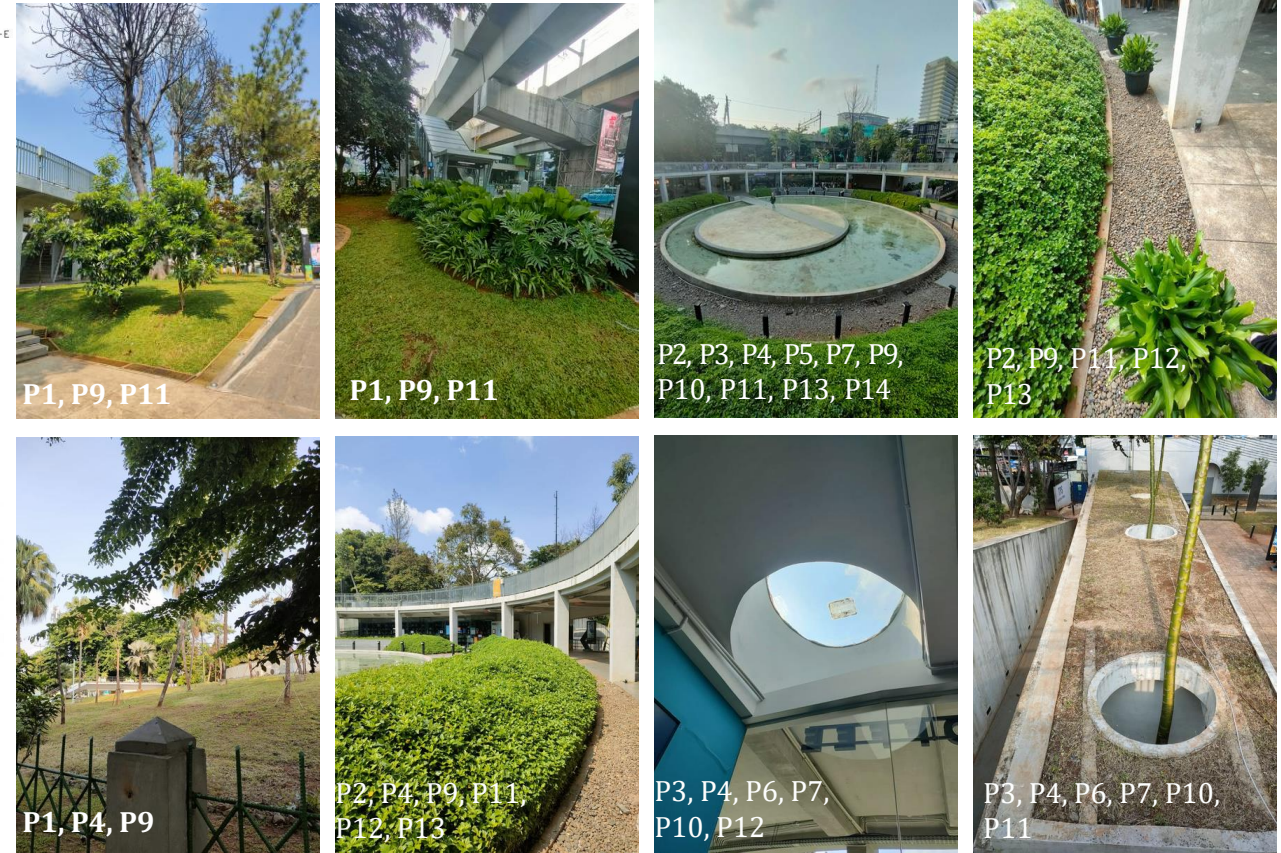
Result and Discussion

Samples of Biophilic Pattern Identification at the Location



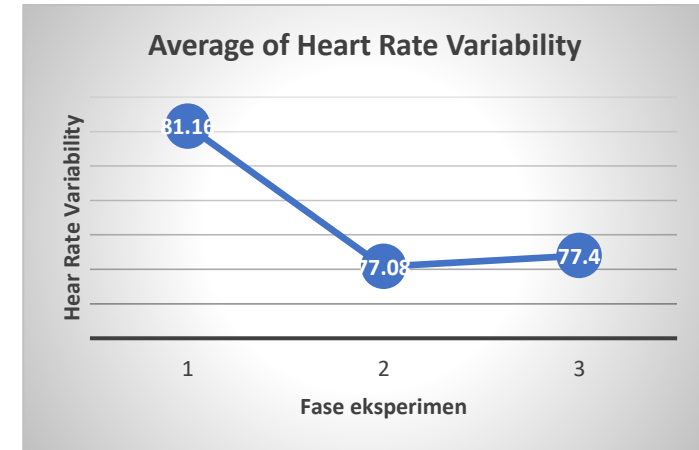
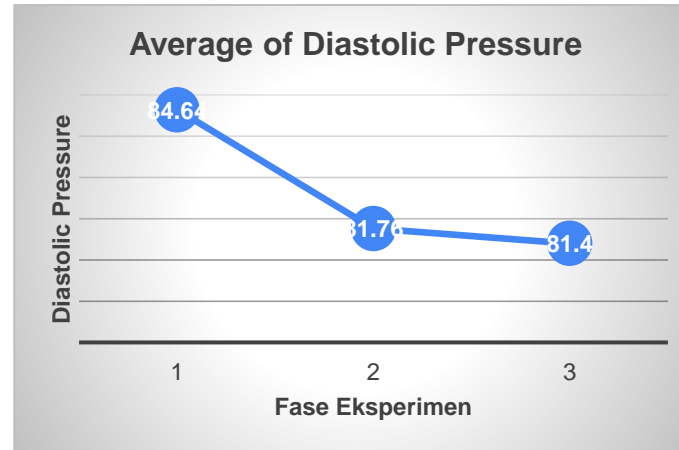
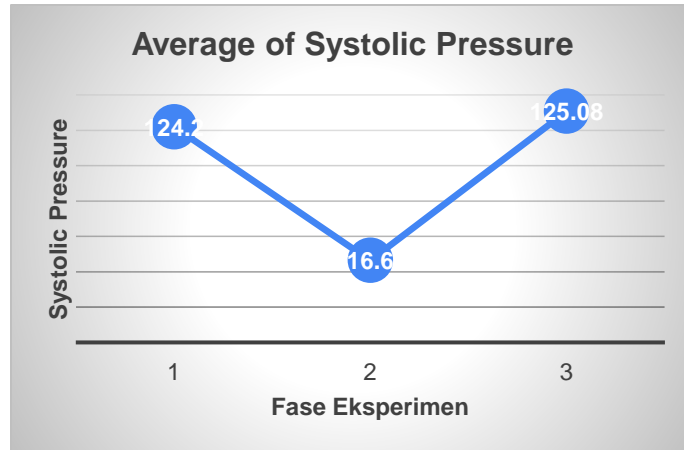
Key plan - Ground Floor (NTS)

Key plan - Upper Floor (NTS)



Result and Discussion

Physiological Measurement Test Result



- Respondent profile (30 people): 20 M and 10 F; aged 20 to 45 years old; 26 students and 4 lecturers
- Activity prior: class (teaching and studying) – higher stress level due to courses taken
- Stress-inducing test: Grade-level mathematics – lower stress level due to a more relaxed atmosphere
- Final measurement shows higher SP, lower DP. and no significant difference in HRV
- Mostly have slept for 6-8 hours prior to the day of test and generally are in good health condition

Result and Discussion

Psychological Measurement Test Result

- State Anxiety test with 10 questions, i.e. “I feel calm”, “I feel confused”, “I feel upset”, etc.
- Linkert scale 1-5: 1 as “not at all” and 5 as “very much so”.
- Emotional impression on Taman Literasi Martha Christina Tiahahu

Emotion	Phase 1	Phase 2	Phase 3
Calm	3,48	3,32	3,67
Comfortable	3,64	3,44	3,85
Safe	3,80	3,52	3,80
Relaxed	3,60	3,32	3,76
Happy	3,48	3,32	3,76
Tense	2,60	2,80	2,00
Upset	2,28	2,36	1,18
Worried	2,20	2,21	1,71
Confused	2,32	2,44	1,95
In-doubt	2,20	2,32	1,85

Overall Emotional Impression on the Park

- Outside/ Surrounding:
20% Positive; 80% negative
“busy, loud, pollution, unsafe, uncertain”
- Ground greeneries:
93% Positive; 7% negative
“silent, birdsongs, shaded, green views”
- Ground corridors:
56% Positive; 44% negative
“open, breezy, shaded, social, crowded”
- Center island/ pond:
56% Positive; 44% negative
“open, breezy, centralized, too focused”
- Rooftop area:
50% Positive; 50% negative
“good view below, breezy, unshaded, hot”

Conclusions

- The Martha Christina Tiahahu Literary Park provides a combination of a hard concrete building and a natural landscape
- The biophilic patterns presented in the Park are varied and located in different areas
- Respondents are presented with the Park situation visually and audibly via video screening
- The physiological and psychological measurement results somewhat support the emotional impression about the Park
- The physiological result needs evaluation regarding the respondents' preliminary relaxing time, activities prior to, and the stress-inducing test
- More research settings toward respondents needed to adapt to the research needs
- More senses need to be involved in further research, and with more methods and instruments

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