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The Role of Psychological Distress in Gender Differences of Perceived Relaxation within Urban Open Spaces

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Abstract

Rapid urbanization has intensified mental health challenges in cities, highlighting the growing importance of urban open spaces as perceived relaxation environments. Although relaxation qualities have been widely examined, conventional assessments frequently generalize user characteristics, overlooking the influence of baseline mental health. Consequently, environmental literature often assumes uniform restorative outcomes, neglecting how psychological distress varies across genders. This study investigates gender differences in perceived relaxation of urban open spaces, with a particular focus on psychological distress. This research conduct a cross-sectional study with a semi-structured online questionnaire involving 101 adult participants. The data of psychological distress was assessed using the World Health Organization's Self-Reporting Questionnaire (SRQ-20). Relevant environmental elements were identified through word-frequency analysis on semi-open-ended description, and then examined using analysis of variance and correspondence analysis. The results indicate that psychological distress has a more direct association with perceived relaxation than gender. While psychological distress influences how individuals perceive the experience, gender differences shape how those experiences are enacted. This study also reveal that natural greenery and coherent spatial design act as primary relaxation elements, whereas facilities and social interaction serve as secondary elements, utilized differently across gender. These findings highlight the importance of incorporating users' internal conditions into the design process to enhance the relaxation potential of urban open spaces. Design approaches must move beyond the uniform assumptions that often characterize current practice in order to create inclusive and relaxing urban environments that support everyday mental well-being.

Keywords : Urban Open Space, Perceived Relaxation, Mental Health, Gender, Psychological Distress

Peran Gender dan Distress Psikologis pada Pengalaman Relaksasi di Ruang Terbuka Kota

Abstrak

Urbanisasi yang pesat meningkatkan tantangan kesehatan mental di perkotaan dan menekankan pentingnya ruang terbuka sebagai lingkungan untuk relaksasi sebagai bagian upaya restorasi mental. Meskipun kualitas relaksasi sebagai bagian restorative telah banyak dikaji, evaluasi konvensional sering kali menyamaratakan karakteristik pengguna dan mengabaikan kondisi kesehatan mental awal mereka. Akibatnya, studi ruang terbuka kota cenderung mengasumsikan dampak restoratif yang seragam tanpa mempertimbangkan variasi distress psikologis antar gender. Penelitian ini menganalisis perbedaan gender dalam perasaan relaksasi di ruang terbuka perkotaan dengan fokus pada distres psikologis. Studi ini menggunakan pendekatan cross-sectional melalui kuesioner daring semi-terstruktur yang melibatkan 101 partisipan dewasa. Distres psikologis diukur menggunakan SRQ-20 dari WHO. Elemen lingkungan diidentifikasi melalui analisis frekuensi kata pada jawaban semi-terbuka dan dianalisis menggunakan analisis varians serta analisis korespondensi. Hasil menunjukkan bahwa distres psikologis memiliki hubungan lebih langsung dengan persepsi rileksasi dibandingkan gender. Distres memengaruhi cara individu memaknai pengalaman, sedangkan gender memengaruhi bagaimana pengalaman tersebut dijalankan. Vegetasi alami dan desain spasial yang koheren menjadi elemen relaksasi utama, sementara fasilitas dan interaksi sosial berperan sebagai elemen sekunder yang digunakan berbeda menurut gender. Temuan ini menunjukkan pentingnya mempertimbangkan kondisi internal pengguna dalam perancangan agar ruang terbuka lebih inklusif dan mendukung kesejahteraan mental sehari-hari.

***Kata-kunci** : Ruang Terbuka Kota, Rileksasi, Kesehatan Mental, Gender, Distress Psikologis*

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Introduction

Rapid urbanization has created dense and complex environments that influence human well-being, including psychological and emotional health. Therefore mental health has emerge as a critical concerns in contemporary urban context. In 2021, an estimated 14% of the global population–more than one billion individuals–were living with a mental disorder, particularly anxiety and depressive conditions [1]. Urban environments influence mental health through a combination of social, economic, and environmental mechanism, such as socio-demographic factors, social inequality, perceived insecurity, environmental pollution, and limited access to natural settings [2], [3].

In Indonesia, mental disorders were reported as the second leading cause of Years Lived with Disability (YLDs) in 2019, reaching 1,304.36 YLDs per 100,000 people. This indicates the need to strengthen mental health awareness and improve its management at the national level [4], [5], [6]. Indonesia government has launched a free mental health screening program on SATUSEHAT Mobile application and increase facilities in Puskesmas (Community Health Centers) as part of the strategy [7]. Nevertheless, besides clinical interventions, expert consensus increasingly emphasizes the role of everyday environments in supporting psychological well-being. This includes the creation of restorative settings within urban areas as part of broader public mental health strategies [4].

Urban open spaces, particularly green spaces are widely acknowledged for supporting mental health and psychological restoration [8], [9], [10], [11], [12], [13]. One of the factor is feeling of calmness and relaxation in certain settings [14]. Study said that there is a strong positive correlation between the restorative quality of a place and the level of relaxation perceived by an individual [15]. Perceived relaxation is a fundamental indicator of an environment's restorative potential. Before individuals experience cognitive restoration, they must first achieve a state of emotional relaxation to reduce the levels of over-stimulation [16]. Study through EEG measurements claimed that perceived relaxation effectively reduce anxiety and stress levels among urban populations [17].

Previous studies have examined perceived relaxation potential from multiple perspectives, including spatial availability and accessibility [8], environmental quality [18], [19], spatial configuration [16], [20], and experiential character [21]. Environments facilitate mental recovery by allowing psychological detachment, capturing effortless attention, offering spatial coherence, and aligning with user needs and activities [10], [11], [22]. Despite a robust theoretical foundations, the understanding of context-sensitive user characteristics remains relatively understudied.

The experience of relaxation in urban open space, however, is not determined solely by spatial attributes. Internal individual conditions significantly shape how its qualities are perceived and utilized. Empirical studies suggest that relaxation responses vary according to demographic and behavioral factors such as age, gender, and activity patterns [23], [24], [25]. While some studies report no significant gender differences in the perception of perceived relaxation to environmental elements [26], [27], others emphasize gender-specific experiences related to safety, comfort, and social expectations in public spaces, specifically among women [16], [28], [29], [30], [31]. These inconsistencies need further investigation to better understand the influence of gender on perceived relaxation experience.

Figure 2. Ci

Another internal individual attribute related to perceived relaxation experience is psychological distress. It represent a spectrum of mental vulnerability which may shape how individual experience urban open spaces [32], [33]. Several urban environmental elements such as architectural features, quality of neighborhood, and the amount of green space have been associated with psychological distress [20], [32]. Most discussions, however, focus on place geographically around the home or administrative area of residence, and rarely associated with urban open space where people encounter in daily life [20], [32]. Although the prevalence of pyschological distress varies by gender, little attention has been given on how these two internal individual factors interact in shaping perceived relaxation experience in urban open space, especially in developing country setting.

The Self-Reporting Questionnaire-20 (SRQ-20) used as a screening instrument for measuring psychological distress, effectively capture primary neurotic symptoms, including anxiety and depression. Within clinical practice and research context in Indonesia, the commonly accepted cut-off point is a score of $\geq$ 6, which indicates individual experiencing psychological distress or mental health challenges [34], [35], [36]. Individuals with higher levels of distress often exhibit a greater need for calming environments. In this

regard, urban open spaces function as environmental interventions that mitigate over-stimulation which allows highly distressed user to reduce their emotional tension.

Therefore, this study examines how perceived relaxation experience in urban open spaces are jointly shaped by gender and psychological distress. By integrating psychological distress into gender-based analysis, the study aims to explore how these two factor interact to clarify inconsistencies in previous findings and contribute to a more comprehensive understanding of how to designing inclusive and mentally supportive urban open spaces.

Research Methodology

This research uses a quantitative-qualitative approach to investigate gender and psychological distress difference in perceived relaxation experience in urban open space setting. The approach integrates pyschological screening using SRQ-20 with environmental element preference and perceptual assessment derived from semi-structured questionnaire. Environmental qualities were assessed through a semi-structured framework that prioritized established parameters while simultaneously allowing respondents to articulate additional qualities. Figure 1 shows the sequential process of profiling participant, psychological assessment, and environmental preference analysis, to synthesize perceived relaxation on spatial qualities.

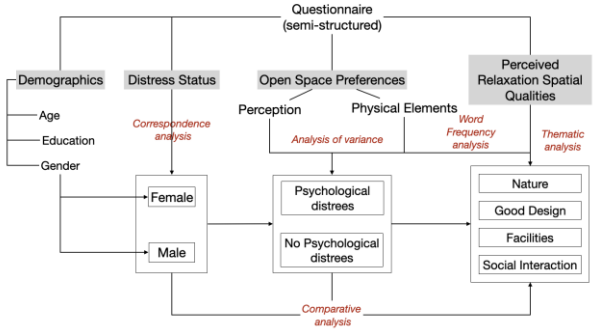

Figure 1. Research Methodology

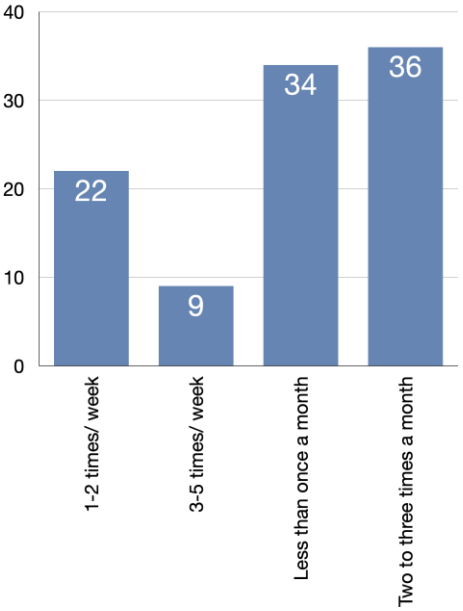

Figure 4. Visit frequency to urban open space

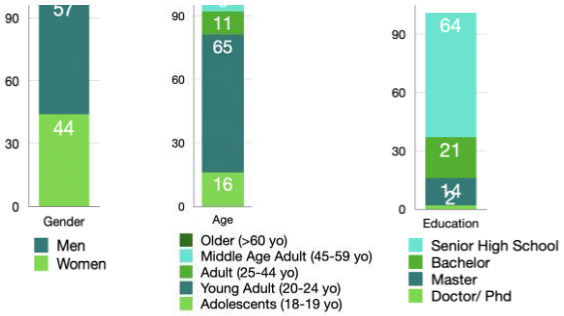

Figure 3. Demography profile of respondents

Participant

The study included 101 adult participants from several cities across Indonesia. As shown in Figure 2, the majority of respondents are from Palembang, Bandung, and Indralaya. Demographic data in Figure 3 indicate that most participants are female young adult with senior high school educational. Figure 4 and figure 5 illustrate visitation patterns with most of participants visit urban park two or three times per month.

Data Collection

The questionnaire was disseminated through social media and distributed to students from several universities to broaden participant reach. Using purposive sampling, data were collected between January and March 2025 using a semi-structure questionnaire as shown in Appendix. Respondents were first provided with an informed consent

statement and were required to agree before proceeding to complete the survey. The survey included three components: (1) demographic characteristics (age, gender, and city of residence); (2) psychological distress screening using the World Health Organization's Self-Reporting Questionnaire-20 (SRQ-20) [37]; and (3) perceptual ratings of open space preferences and perceived relaxation spatial qualities adopted from prior literature [11], [38], [39], [40], [41], [42]. In this study, open spaces were defined as public outdoor areas such as city parks, town squares (alun-alun), and other places where people can gather and engage in social or recreational activities. Participants were classified into distress and non-distress groups based on validated SRQ-20 cut-off scores. The SRQ-20 score is calculated by assigning a value of 1 to every 'Yes' response and 0 to every 'No' response, with a maximum possible total score of 20. In regards with the standard threshold used in Indonesia, a cut-off point of 6 is applied [34]; scores of > 6 are categorized as the distress group, while scores of <6 are categorized as the non-distress group. Based on the study of 101 respondents, 44.5% have psychological distress and 55.5% with no psychological distress [34], [35], [43].

Data Analysis

Analyses were conducted sequentially. Correspondence Analysis (CA) was applied to explore associations among gender, psychological distress status, and perceived environmental elements related to relaxation experience. Analysis of Variance (ANOVA) was then used to assess group differences in open space preferences across gender and distress categories. In addition, word-frequency analysis was conducted on responses embedded within the semi–closed-ended questionnaire to identify environmental elements associated with relaxation experiences. Respondents were asked to select which elements they sought in an urban open space from a list of predefined options which adopted from [11], [40], [41], [42], while an additional open-ended field allowed them to mention other elements not included in the list. The open-text responses were subsequently coded into thematic categories based on predefined option as shown as in table 1 and the frequency of the mentioned elements was calculated to identify the most frequently reported descriptors supporting perceived relaxation experiences. This description used to support interpretation of the quantitative patterns. Potential confounders, including city context, and frequency of urban open space use, were assessed descriptively; although not statistically controlled due to sample size limitations, the multi-city sampling strategy helped reduce location-specific bias.

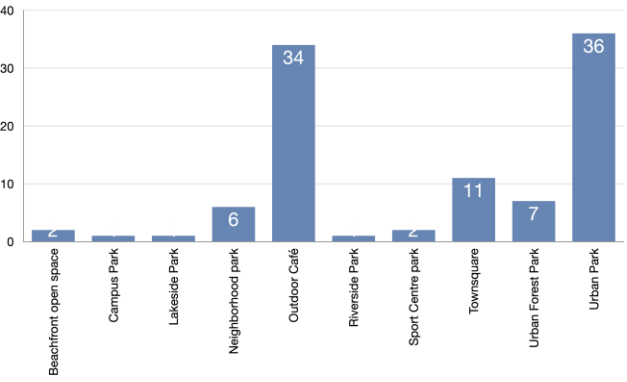

Figure 5. Type of urban open spaces visited

Table 1. Categorization of Environmental Element

Predefined Element categories	Example of the Open-text Responses	Category
Calm and comfortable atmosphere	*I particularly like the open space around the Yogyakarta Monument. The atmosphere of Yogyakarta feels very strong there.*	*Atmosphere*
Spaces for social interaction	*I enjoy blending with the flow of daily life. The view represents the urban life of Yogyakarta.*	*Social Interaction*
Natural scenery or green elements	*The GBK Urban Forest is a favorite choice because it provides an extensive and comfortable green area for relaxation*	Nature
Areas with recreational or physical activity facilities	*Presence of dining facilities..*	*Facilities*
Aesthetic and attractive spatial design	*A public space that does not overly expose its users.*	*Good Design*

Result and Discussion

Result

Internal Condition Influence on The Relaxation Qualities Perception

The Pearson's chi-square tests and correspondence analysis showed significant associations between internal attributes and psychological distress status. Internal attributes–including gender (Figure 6: $X^2(1)=7,11$; P=0,0077), age (Figure 7: $X^2(4)= 10,8$; P= 0.0288), and education level (Figure 8: $X^2(3)= 11,52$;

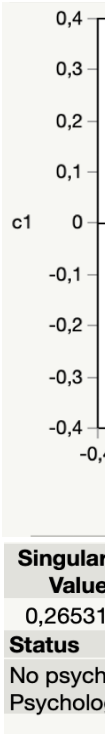

Figure 6. C
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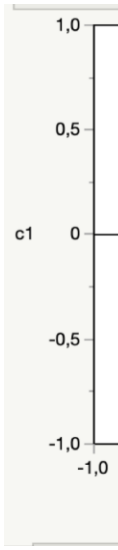

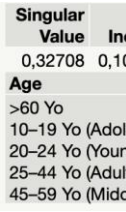

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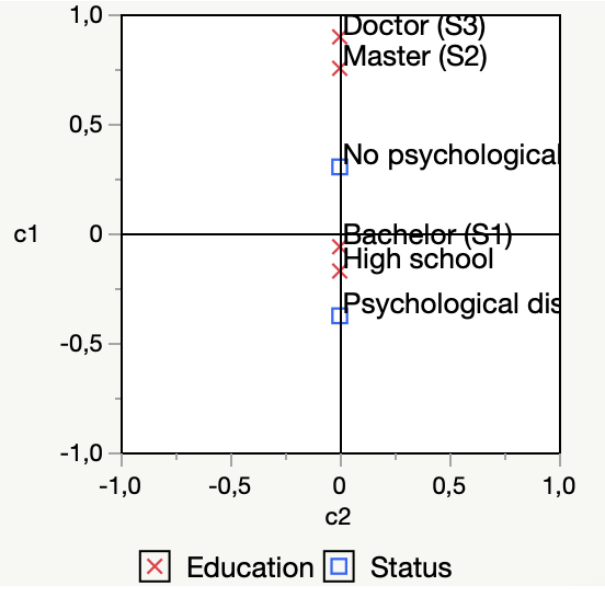


Singular Value	Inertia	Portion	Cumulative
0,33776	0,11408	1,0000	1,0000

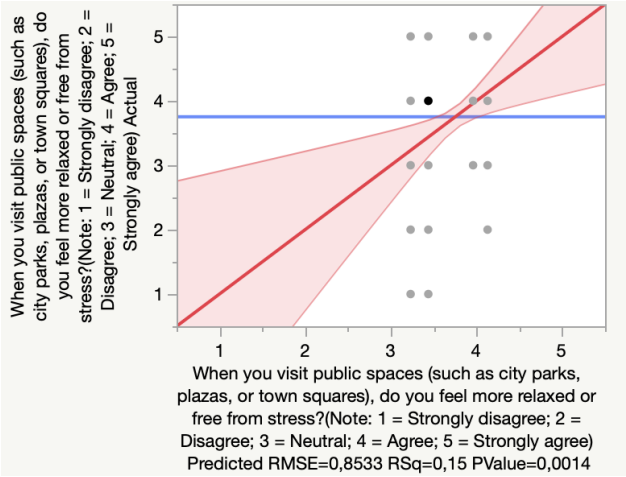
Education	c1	Status	c1
Bachelor (S1)	-0,0617	No psychological distress	0,3028
Doctor (S3)	0,8964	Psychological distress	-0,3768
High school	-0,1724		
Magister (S2)	0,7527		

Figure 8. Correspondence analysis of psychological distress condition to Education

P=0.0092) show meaningful associations with participant' psychological distress status. Women, younger respondents, and individuals with lower educational attainment tend to cluster more closely with the psychological distress category. While non-distress categories were positioned closer to male respondents, older age groups, and higher educational attainment.

Relaxation and Comfort Across Psychological Condition and Gender

A two-way ANOVA was conducted to examine the effects of gender and psychological distress status on the perceived feeling of relaxation in public spaces as shown as in figure 9. The overall model was statistically significant, $F(3, 97) = 5.58$, $p = .0014$, explaining approximately 14.7% of the variance ($R^2 = .147$). Specifically, the analysis revealed a significant main effect for Distress Status, $F(1, 97) = 15.37$, $p < .001$, indicating that psychological distress significantly impacts relaxation levels. However, there was no significant main effect for Gender, $F(1, 97) = 0.01$, $p = .917$, and the Gender*Status interaction was also not statistically significant, $F(1, 97) = 1.07$, $p = .302$. These results suggest that while psychological distress status is a key predictor of relaxation in open spaces, this effect is consistent across both male and female respondents.



Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	3	12,185318	4,06177	5,5785
Error	97	70,626563	0,72811	Prob > F
C. Total	100	82,811881		0,0014*

Effect Tests

Source	Nparm	DF	Sum of Squares	F Ratio	Prob > F
Gender	1	1	0,007877	0,0108	0,9174
Status	1	1	11,187468	15,3651	0,0002*
Gender*Status	1	1	0,782558	1,0748	0,3024

Figure 9. Relax feeling in open space across phychological distress status

Perceived of Crowd Psychology on User Moods in Public Open Spaces

In Appendix, participants were asked about how their perceived crowds and active open space influence their mood. The analysis of variance results highlight clear distinctions in relaxation responses between distress and non-distress groups. Figure 10 shows individuals experiencing distress report significantly express heightened discomfort in crowded or highly active environments. In contrast, individuals without psychological distress tend to respond more positively to crowds in open space $F(1,99)= 4,69$, $P=0,03$. This means that individual psychological states play a crucial role in how people perceive and experience density in open space.

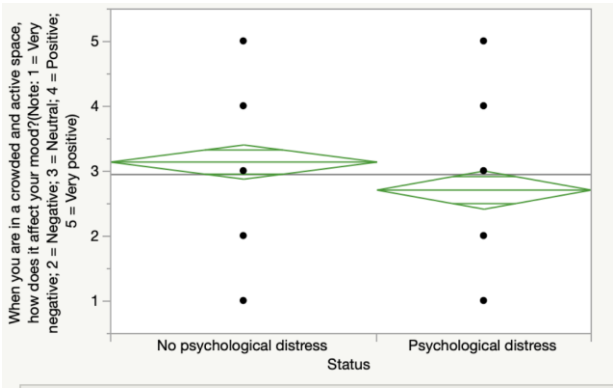


Figure 10. Mood responses in crowded and active public spaces by psychological distress status

Most Frequently Mentioned Perceived Relaxation Elements: Nature and Spatial Design

Word-frequency patterns provide further insight into how participants conceptualize perceived relaxation environments. Across all groups, nature and good design consistently emerge as dominant themes as shown as in table 2. Participants frequently referenced vegetation, natural acoustics, and open vistas as key contributors to relaxation. Facilities include dining facilities, seating place, and pedestrian paths. Good design include sub categories such as aesthetics, ambiance, and cleanliness. Social interaction mention about share space and sense of safety.

At the overarching category level, data were aggregated using an non-overlapping, respondent-based approach ensuring each individual contributed a maximum of one count to maintain independent representation. This method reveals distinct gender preference in the non-distress group as showns as in table 3. Women prioritize facilities, such as recreational areas, seating, and sports amenities, while men place greater emphasis on opportunities for social interaction and social presence. In contrast, individuals in the distress group, regardless of gender, frequently rely on the environment as a passive source of support. They avoid active engagement and prefer calm, predictable settings that facilitate psychological withdrawal from overstimulation.

Table 2. Category and sub category of environmental elements

Category	Sub Category	F	Illustrative quotes
Social Interaction	Availability of Shared Spaces	11	"An ideal place to gather with friends in a laid-back and casual atmosphere."
	Sense of Safety	8	"The family-friendly atmosphere of the park makes me feel safe and calm, even when sitting alone."
Nature	Vegetation & Natural Cooling	68	"The abundance of trees and greenery makes the air feel fresher and much cooler."
	Sensory Stimulation (Acoustics)	14	"The quiet atmosphere accompanied by the sound of birds chirping in the morning is truly relaxing for the mind."
	Open Vistas	12	"The expansive lawn views and the clear sky help in relieving stress and fatigue."
Facilities	Supporting Facilities (Dining)	31	"Adequate dining facilities are available, allowing for a relaxing experience while enjoying culinary options."
	Physical Comfort (Seating)	24	"There are many shaded seating areas under the trees, perfect for resting for long periods."
	Accessibility & Pedestrian Paths	19	"Wide and clean pedestrian paths make a casual stroll very comfortable."
Good Design	Aesthetics & Spatial Layout	22	"The modern park design and tidy layout provide great visual satisfaction."
	Lighting & Ambiance	15	"The afternoon sunlight filtering through the trees creates a very peaceful atmosphere."
	Orderliness (Cleanliness)	18	"The area is clean and litter-free, making one want to linger longer."

Discussion

Which Matters More? Gender and Psychological Distress in Relaxation Experience in Urban Open Space

While gender is biological embeded in individual body, the relaxation perception in this study was measured as subjective feelings of in urban open space. The analysis shows distinct pathways of influence by these two aspects. Both gender and psychological distress function as internal conditions that shape restoration experience in urban open space, but the result suggest psychological distress exerts a stronger and consistent influence.

Psychological distress plays a central role in shaping perceived relaxation benefit capacity by influencing how environmental qualities are interpreted and experienced. Research on residential proximity to urban open spaces report individuals living nearer to such environments tend to exhibit lower levels of

Table 3. Frequency of environmental element on perceived relaxation

Condition	Faciliticies		Nature		Good Design		Social Interaction	
	Women	Men	Women	Men	Women	Men	Women	Men
Without Pyschological distress	17	9	15	18	14	14	4	14
With Psychological distress	8	2	16	6	15	6	5	3

psychological distress [33]. This implies that perceived relaxation benefit outcomes are shaped not only by environmental characteristics but also by the psychological baseline individuals bring into the space.

Conversely, gender difference in the aspects of perceived relaxation environments do not show a statistically significant in this study, which is consistent with other findings [26]. However, a reassesment suggest subtle significance when evaluated via certain perceived relaxation benefit aspects and sensory preferences [44]. Women prefer settings that provide cover and protection, while males seem to gain more from the social aspects of urban open areas [45]. Significant gender-based disparities in access to and benefits from relaxation in open spaces are further supported by broader reviews [46].

When taken together with gender, different psychological distress state seem to place differing values on environmental characteristics in aiding perceived relaxation experience. These findings imply that while gender affects the processes by which relaxation experiences are created, psychological distress has a more direct and rigid impact on relaxation perception. This emphasizes the necessity to take into account the layered interaction into urban open space design as part of daily mental healing support.

Psychological Condition and the Role of Facilities in Women's Perceived Relaxation Experiences

This study shows that facilities contribute to women's relaxation experiences in public open spaces, but their significance appears to depend on psychological state. In this study, only minor differences were observed between women with and without psychological distress in their overall value facilities as shown as in table 3. However, the importance of facilities as relaxation elements differed between the two groups. Women not experiencing psychological distress more frequently linked facilities for recreational and sports with a stronger sense of relaxation. These facilities support active engagement, physical movement, which have been shown to contribute positively to stress reduction and well-being when psychological resillience relative intact. Conversely, women experiencing psychological distress showed a greater reliance more strongly on passive environmental qualities, particularly natural greenery and coherent spatial design. Such features demand less cognitive and emotional effort and provide a more immediate sense of calm [26], [47].

This differentiation explain the mixed or inconsistent statistical associations reported in previous studies. Rather than indicating the absence of gender effects, such variability suggests that women across different psychological conditions assign different weights to environmental elements that support perceived relaxation. For instance, while recreational facilities may enhance feeling of compatibility and fascination for women without distress, those experiencing distress prioritize environments that support being away and perceptual ease through nature and legible design [10], [22].

These findings suggest urban open space design should incorporate facilities that enhance safety, security and comfort for women user. Furthermore, facilities need to be combine with natural elements and coherent spatial organization to accommodate varying perceived relaxation needs among women.

Men's Perceived Relaxation Experiences: The Role of Psychological Distress and Social Aspect

Men experience relaxation qualities in urban open spaces differently depending on their psychological condition (Tabel 3). Those without psychological distress tend to perceive social interaction as an important component of relaxation experience. Social presence, opportunities for interaction, and moderate

activity levels contribute to feelings of comfort and positive stimulation for this group [45].

Conversely, men with psychological distress show a clear shift toward passive relaxation preferences. Instead of seeking social interaction or active engagement, this group relies more on low-stimulation environmental elements to support restoration. This in line with study of 953 stress individual, which reported a preferrence for passive activities in green open space [48]. Elements such as greenery, coherent spatial design, and low-intensity activities allow distressed users to regulate stress without imposing cognitive and emotional demands [26], [47].

Urban open space design as relaxation space should provide opportunities for social interaction, especially for men. The interaction can be active (direct involvement with others) and passive (observing other activities). It also need to ensure the transisition and integration between modes not to disturb each other. Though social interaction play important role for active relaxation experience, natural element and spatial design still have primary role as physical element in relaxation experience. To contain diverse user of urban open space, the design process should involve this layered dynamic as fundamental aspect .

Design Implication: Integrating Passive and Active Relaxation Experience

The findings show that relaxation experiences are not solely a product of environmental design but result from the interplay between physical settings and the user's psychological condition. In this study, psychological distress plays as a key factor influencing the process of spatial engagement and often has a greater effect than gender. While natural elements and coherent spatial design serve as fundamental relaxation element setting for all users, the perceived value of facilities and social opportunities varies according to both gender and psychological condition.

Given that psychological distress status is the primary determinant of relaxation in public open spaces—surpassing the influence of gender—design interventions should prioritize universal relaxation features that cater specifically to high-distress users. Since the impact of distress is consistent across genders, designers should move away from gender-segregated programming and instead focus on 'low-arousal' environments [49]. This should integrates secluded quiet zones with high visual permeability (to maintain a sense of safety) [31] and the use of soft fascination elements such as dappled sunlight, moving water, and diverse vegetation, which are proven to reduce cognitive load [50]. To accommodate those experiencing psychological distress, public squares and parks should offer a gradient of social interaction, providing both 'prospect and refuge' (enclosed seating with a clear view of the surroundings) to ensure that the space remains a perceived relaxation benefit asset regardless of the user's initial mental health status [51] .

Therefore, urban open space design as part of daily psychological well-being support strategy should move beyond neutral assumptions. Instead, it should consider diverse perceived relaxation benefit needs. Integrating passive and active relaxation experiences offers a new practical design approach [11]. The design of urban open spaces should allow flexible navigation between these modes. This layered approach can significantly enhance the perceived relaxation benefit potential of urban environments, making them more supportive and inclusive for broarder spectrum of mental states and needs.

Conclusion

This study shows that perceived relaxation benefit experiences in urban open spaces are shaped by the interaction between individual internal and external factors. In this case gender and psychological distress play as internal factor and physical setting acts as external factors. Results show that psychological distress emerging as a more influential factor than gender, while natural elements and coherent spatial design consistently function as primary perceived relaxation benefit elements across user groups. The perceived relaxation benefit value of facilities and social interaction varies according to gender and psychological condition, which make these elements into secondary perceived relaxation benefit physical elements. Individuals with psychological distress tend to rely more on passive perceived relaxation benefit experience, whereas non-distressed users engage more actively with facilities and socially dynamic environments.

The findings further suggest that perceived relaxation benefit experiences in urban open space are mediated more by psychological conditions than gender alone. While psychological condition shape on how individual perceived relaxation experience (whether active or passive), gender differences influences how those relaxation experience are enacted. This implies

that the design of urban open space as restorative environments must move beyond the uniform assumptions that often characterize current practice. Though the cross-sectional design and reliance on self-reported measures limit causal interpretation, the results provide important insights into how internal psychological conditions interact with environmental characteristics. Future research should employ longitudinal or experimental approaches, expand sample diversity, and incorporate multidimensional measures of restoration to strengthen evidence-based frameworks for inclusive and mental health-supportive urban open spaces.

Despite its significant findings, this study has several limitations. First, the data collection relied solely on an online survey, which may intrduce sampling bias as it excludes individuals without digital access or those less likely to engage with online platforms, potentially limiting the generalizability of the findings. Second, the study lacked objective environmental measurements of the open spaces, such as decibel levels for noise, light intensity, or actual green coverage (NDVI), relying instead on participants' subjective perceptions. Future research should aim to integrate objective spatial data with validated, multi-item restorative scales and a more diverse sampling method to provide a more comprehensive understanding of how public spaces facilitate mental recovery across different populations.

AI Use Declaration

The authors acknowledge the use of Gemini to improve language clarity and assist with grammar checking. The prompts used are “please proofread this text for grammar and clarity while preserving academic tone” and “please check the grammar of this sentence”. The output from these prompts was used to enhance grammatical accuracy, improve sentence structure, organize initial thoughts. While the authors acknowledge the usage of AI, the authors maintain that they are the sole authors of this article and take full responsibility for the content therein, as outlined in COPE recommendations and journal policies.

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Appendix

Research Questionnaire

Part 1: General Information (adopted from : Survey methodology, 2009)
Please provide your demographic background by checking or filling out the options below. All data will be kept strictly confidential and used solely for research purposes.

1. Gender / Jenis Kelamin:
   [ ] Male / Laki-laki
   [ ] Female / Perempuan
2. Age / Usia:
   [ ] 18-19 years old / 18-19 tahun
   [ ] 20 – 24 years old / 18 – 25 tahun
   [ ] 25 – 44 years old / 26 – 35 tahun
   [ ] 45 – 59 years old / 36 – 45 tahun
   [ ] > 60 years old / > 60 tahun
3. Educational Background / Pendidikan Terakhir:
   [ ] Junior High School / SMP
   [ ] Senior High School / SMA/SMK/Sederajat
   [ ] Bachelor's Degree / Diploma/S1
   [ ] Postgraduate Degree / S2/S3
4. Current City of Residence / Kota Tempat Tinggal Saat Ini:
_____ (Please specify / Mohon sebutkan)

Part 2: Self Report Questionnaire-20
The following questions concern problems that may have bothered you during the past 30 days. If you think the question applies to you and you had the problem during the past 30 days, select 'Yes'. On the other hand, if you think the problem did not apply to you, select 'No'.

1. Do you often have headaches? (Yes/ no)
2. Do you lose your appetite? (Yes/No)
3. Do you sleep badly (Yes/No)
4. Are you easily frightened? (Yes/No)
5. Do you feel anxious, tense or worried? (Yes/No)
6. Do your hands shake? (Yes/No)
7. Is your digestion poor? (Yes/No)
8. Do you find it difficult to think clearly? (Yes/No)
9. Do you feel unhappy? (Yes/No)
10. Do you cry more than usual? (Yes/No)
11. Do you find it difficult to enjoy your daily activities? (Yes/No)
12. Do you find it difficult to make decisions? (Yes/No)
13. Is your daily work suffering? (Yes/No)
14. Are you unable to play a useful part in life? (Yes/No)
15. Have you lost interest in things? (Yes/No)
16. Do you feel worthless? (Yes/No)
17. Has the thought of ending your life been in your mind? (Yes/No)
18. Do you feel tired all the time? (Yes/No)
19. Do you have unpleasant feelings in your stomach? (Yes/No)
20. Are you easily tired? (Yes/No)

Part 3: Survey Instrument for Urban Open Spaces **(**adopted from **:** [11], [39], [40], [41], [42]

1. Visitation Patern and Motivation

- How often have you visited a public open space in the last month?
  (Never / 1–2 times / A few times a month / Once a week / More than once a week)
- What are the factors that influence your choice of a specific public open space? (Select all that apply)
  [ ] Calm and comfortable atmosphere
  [ ] Natural scenery or green elements (vegetation)
  [ ] Aesthetic and attractive spatial design
  [ ] Proximity to home or workplace
  [ ] Completeness of facilities (benches, pedestrian paths, etc.)
  [ ] Others : .....
- On average, how long is your duration of stay per visit? (Options: <1 hour / 1–2 hours / 2–4 hours / >4 hours)

2. **Perceived Spatial Relaxation**

- When you visiting public open spaces (such as city parks), do you feel more relaxed or relieved from stress? (Note: 1-strongly disagree; 2-disagree; 3-neutral; 4-agree; 5-strongly agree
- Does the spatial layout and design (such as the arrangement of furniture or decorative elements) in the public open spaces you visit support your comfort and relaxation? (Note: 1-strongly unsupportive; 2-unsupportive; 3-neutral; 4-supportive; 5-strongly supportive)
- Does the lighting (natural or artificial) in the public open spaces you frequently visit affect your mood? (Note: 1-strongly affects negatively; 2-affects negatively; 3-neutral; 4-affects positively; 5-strongly affects positively)
- Do the public open spaces you visit support positive social interaction (e.g., through shared spaces, seating areas, or community activities)? (Note: 1-strongly unsupportive; 2-unsupportive; 3-neutral; 4-supportive; 5-strongly supportive)
- When you are in a crowded space full of activity, how does it affect your mood? (Note: 1-strongly negative; 2-negative; 3-neutral; 4-positive; 5-strongly positive)
- (Open Ended Question) Please recommend a public open space (such as a park, or town square) that provides comfort and tranquility in your opinion, and what was your best experience there? (e.g., Bandung Town Square, because of the atmosphere with friends, pleasant views, friendly weather, chirping birds, etc.)