

SESSION 7: HEALTHY BUILDINGS

**Design
& Health**
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Design & Health

13TH WORLD CONGRESS & EXHIBITION

REVITALIZING HEALTH BY SALUTOGENIC DESIGN

Healthy environment | Healthy people

Neuro-urbanism and Mental Health:

Designing the Salutogenic City

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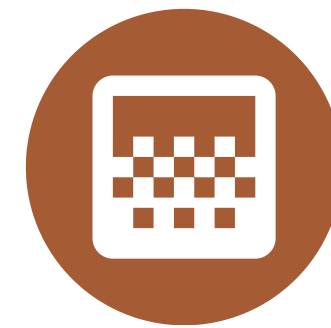
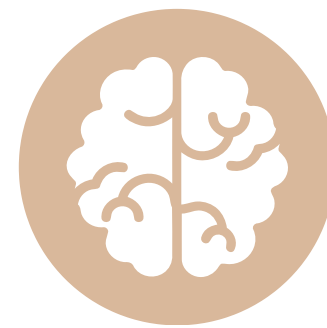
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AUTHORS

SUMMARY

OUR JOURNEY



1 - Context

- . Salutogenic City
- . Mental health
- . Neurourbanism

2 - Objective and Methodology

- . Environmental Health in the city
- . Integrative Review

3 - Discussions and Results

- . Environmental variables
- . Conceptual proposal

4 - Conclusions and acknowledgments

5 - References



INSPIRATIONAL WORDS

**“EVERY MAN CAN BE, IF HE SETS HIS MIND
TO IT, THE SCULPTOR OF HIS OWN BRAIN.”**

— Santiago Ramón Y Cajal,
spanish neuroscientist (1852-1934)



Fortaleza City, Ceará, Brazil. Source: a.cdn-hotels.com (2024).

Salutogenic City

The WHO focuses on creating settings which allow for the experience and development of good health: *“Health is created and lived by people within the settings of their everyday life; where they **learn, work, play and love**”* (WHO, 1986).

Within the salutogenic orientation, the focus is on the upstream conditions for experiencing good health and quality of life: instead of trying to reduce damage in areas or in populations at risk, **including health in the planning processes of urban environments can improve living conditions along the whole social gradient of health** (Lindström & Eriksson, 2011).

Mental health is a state of mental well-being that enables people to cope with the stresses of life, realize their abilities, learn well and work well, and contribute to their community. (...)

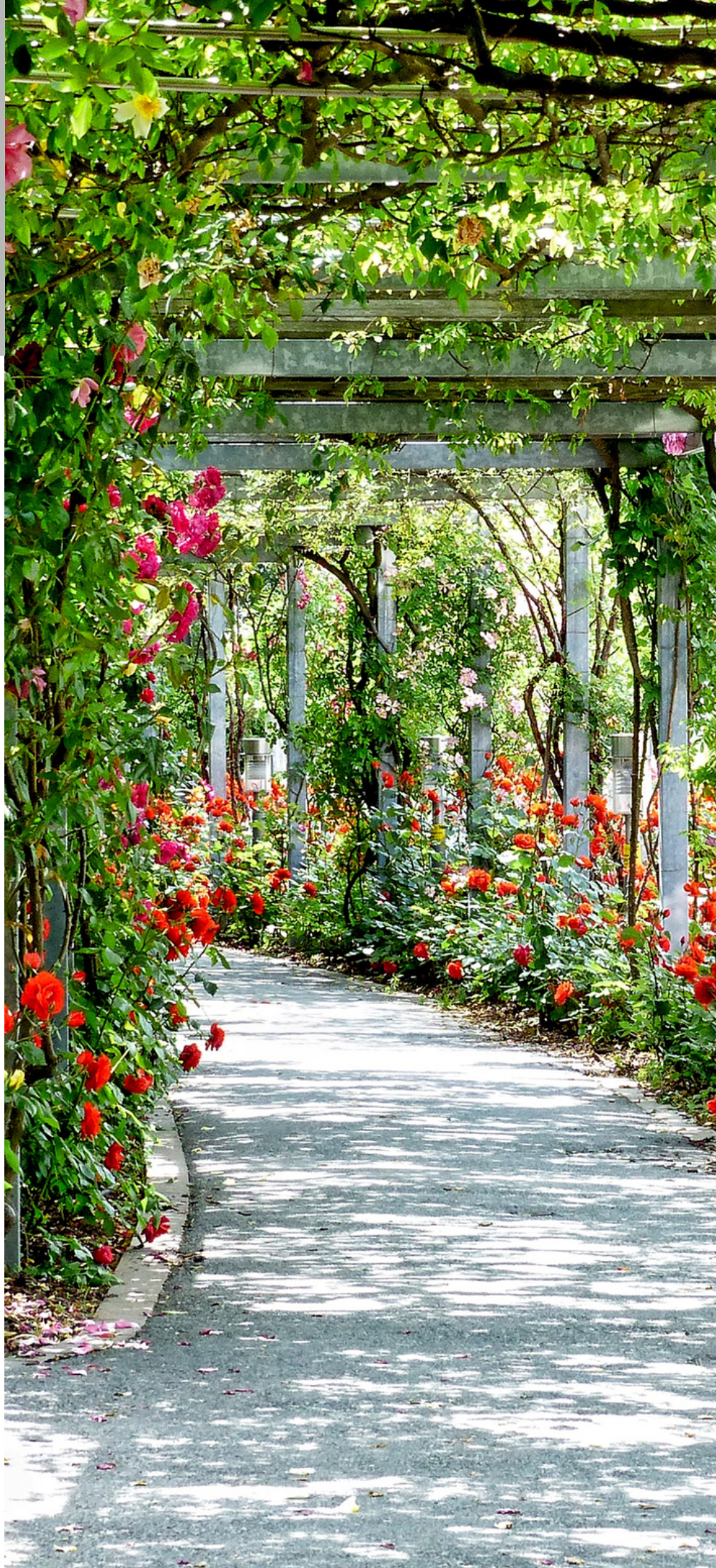
Mental health is a basic human right. And it is crucial to personal, community and socio-economic development (WHO, 2022).

The Institute of Health Metrics and Evaluation (IHME) found that, in 2019, **1 in 8 people across the globe lived with a mental disorder**, with anxiety and depressive disorders being the most common (Bonadiman *et al.*, 2020).

In 2020, the WHO demonstrated that the number of people living with **mental disorders increased** significantly due to the **COVID-19 pandemic** (WHO, 2022).

Brazil was ranked as the most anxious country in the world in 2019 (WHO, 2021).

Mental Health



NeuroUrbanism

Seeks to explore the relationship between urban environments, the **human brain, cognition** and **mental health**.

Psychiatry + Urban planning + Psychology + Neuroscience + Architecture + Sociology + Philosophy + Ethnography = **How cities and urban design influence the well-being and mental health of inhabitants** (Adli *et al.*, 2017).

Explore how the variables of the **urban environment directly influence brain responses**, aiming to **guide design decisions**, for example, in public leisure spaces, to benefit the health of users (Adli *et al.*, 2017).



Objective

Analyze the knowledge of neurourbanism integrated with the mental health of the population in order to bring together the main **environmental variables** of the city that **influence the quality, autonomy and people independence**



Propose viable **evidence-based strategies** for **urban design** capable of qualitatively influencing the **mental health of the population**



Methodology

INTEGRATIVE LITERATURE REVIEW (RIL)

CAPES Periodicals Database

(PubMed | Elsevier | ResearchGate | ScienceDirect)



Guiding question

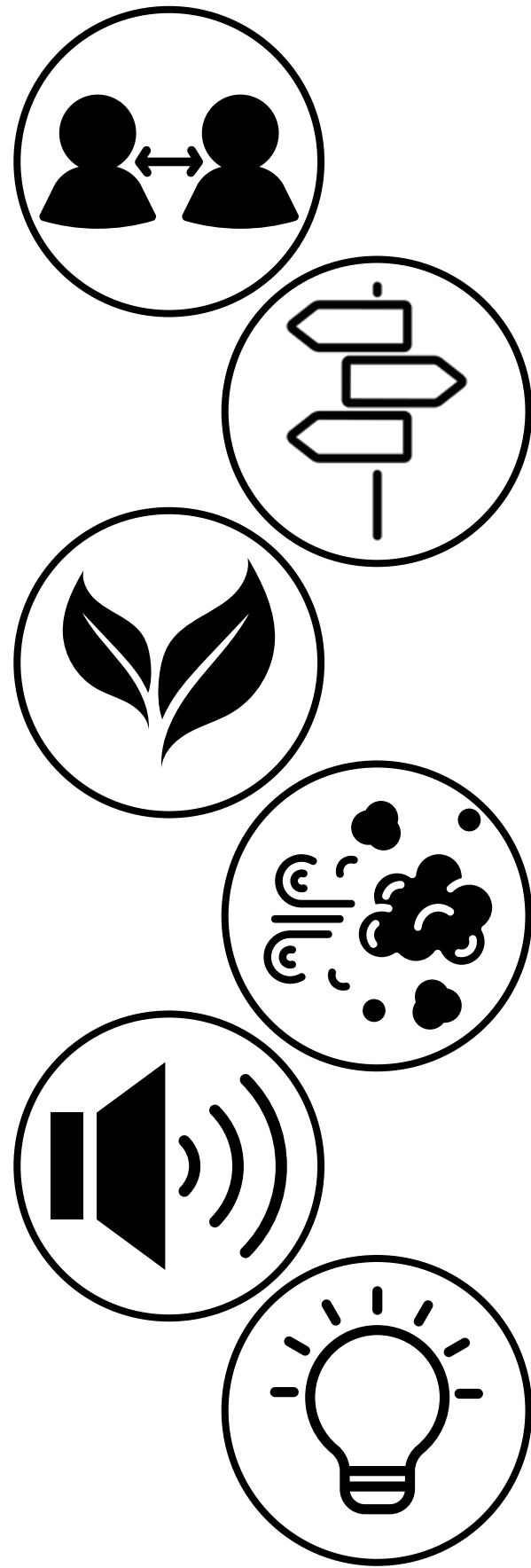
How can neurourbanism help urban planning for a salutogenic city?

Additional questions

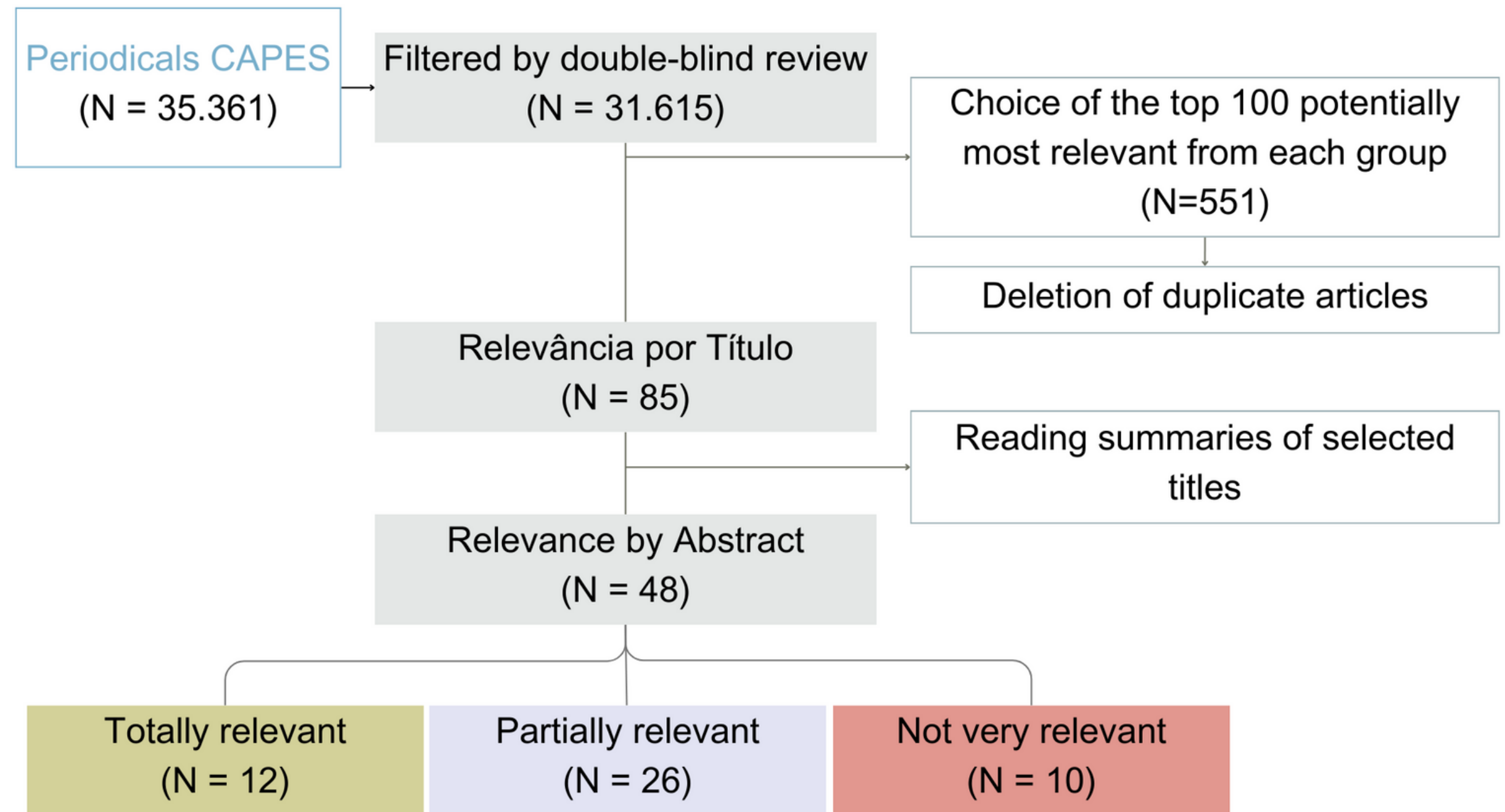
What variables to consider? How to intervene to mitigate mental disorders?

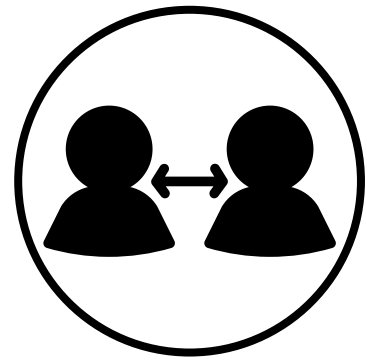


Proposal of Intervention Strategies



Methodology





Social Conexion

It is evident that **social connection is associated with increased chances of survival in several species**, especially in humans.

Prolonged loneliness can have negative effects on mental and physical health in children, adults and the elderly.

Loneliness contributes to a decrease in both the volume of the **prefrontal cortex** and the **hippocampus**, responsible, respectively, for executing tasks and processing memory.

Higher cortisol levels are also evident in elderly people in isolation (Bonini *et al.*, 2022; Bower *et al.*, 2023).

Environmental configuration, such as the **quantity and quality of services** and leisure areas present in the **neighborhood** (Lyu; Forsyth, 2021; Motoc *et al.*, 2023; Villeneuve *et al.*, 2023).

Case Ibirapuera Park, São Paulo, Brazil

Source: roadaffair.com (2024)



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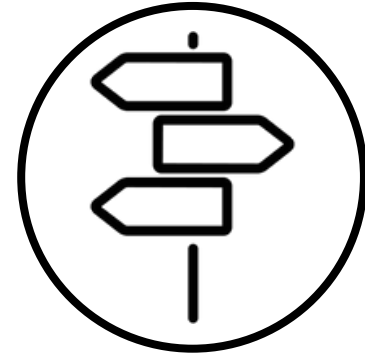
Canoa-Quebrada Beach, Ceará, Brazil

Fonte: roadaffair.com (2024)



***Canoa-Quebrada
Beach***
has a **memorable,
contemplative
landscape** and is
known as a point of
**social connection
between people.**





Spacial Navigation

Stress reduction: when people can find their way around easily, they feel safer and more relaxed (Neale *et al.*, 2019).

Cognitive stimulation: navigating the city effectively requires the use of cognitive skills such as spatial memory, attention and spatial reasoning (Finlay *et al.*, 2021).

Sense of control: can be beneficial for individuals who feel anxious or overwhelmed in unfamiliar environments.

Promoting autonomy: moving around the city independently and efficiently (Neale *et al.*, 2019).

Connection with the environment: connecting people with the environment around them, allowing them to better appreciate architecture, urban landscape and public spaces (Zhang *et al.*, 2021).



In Fortaleza, Ceará, Brazil, ***Ferreira Square*** is a **historic meeting point in the city**, transcending multiple **generations.**

Source: roadaffair.com (2024).

The human scale
present in
Ferreira Square
provides welcome and a
sense of security for
social connections.

Source: roadaffair.com (2024)



Gym equipment in squares encourages exercise

- Encourage the practice of physical activity among the population;
- Ease and simplicity of movements;
- Low exercise intensity;
- Elderly audience.



Source: Fernando Conti/Secom

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Connection with Nature

Stress reduction: associated with reduced levels of cortisol, the stress hormone (Sia *et al.*, 2020).

Improved mood: can elevate mood and promote feelings of happiness and well-being (Olszewska-Guizzo; Sia; Escoffier, 2023).

Increased creativity and concentration: stimulate creativity and improve the ability to concentrate.

Promoting mental health: reducing the risk of developing mental disorders, such as anxiety and depression.

Stimulation of physical exercise: muscle hormones = myokines = BDNF = increased neuroplasticity = memory and cognitive reserve (Vahabi; Lak; Panahi, 2023).

Case Trianon Park, São Paulo, Brazil

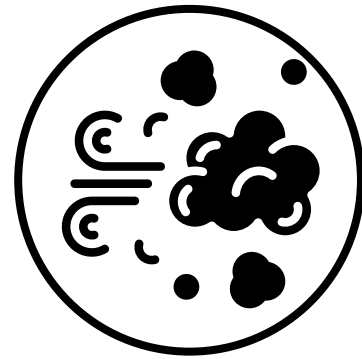
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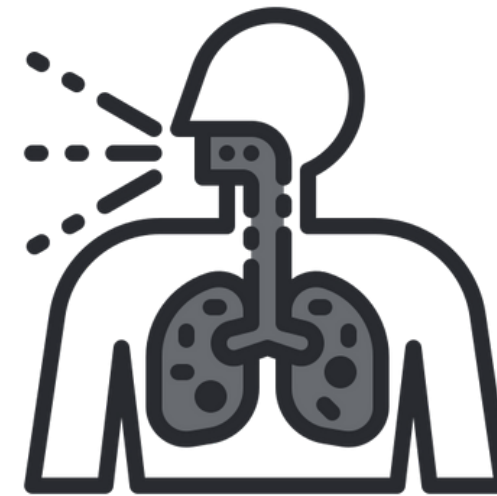
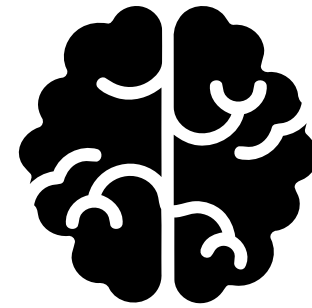
Forest bathing, or *shinrin-yoku*, in Japanese, is a type of forest therapy that basically consists of spending time in contact with nature.





Air Pollution

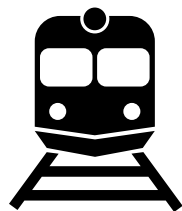
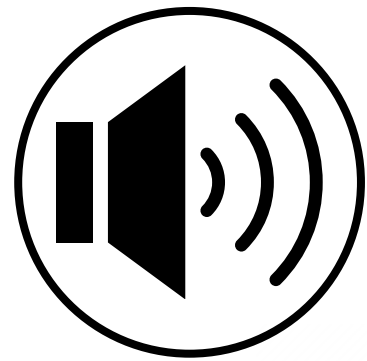
Variety of **neurological and cognitive impacts including memory impairment**, mental disabilities, anxiety, depression, schizophrenia, ADHD and neurological conditions including dementia, Alzheimer's disease, Parkinson's disease and stroke (Roberts *et al.*, 2019).



Heart disease, heart failure, cardiac arrest, arrhythmias and early **death** from **poisoning** (Chen; Zhang; Chen, 2023).



Low fertility and more difficulty conceiving, including in those undergoing in vitro fertilization, as well as sperm quality (Cadman *et al.*, 2023).

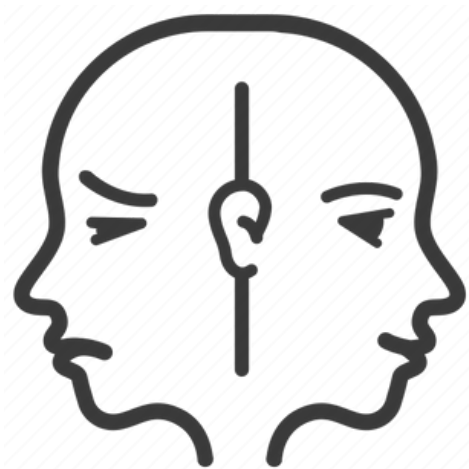
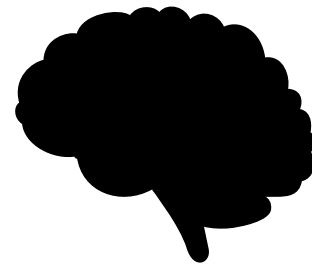
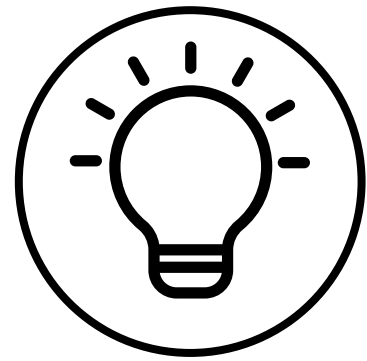


Sound Pollution

Second biggest global concern in relation to environmental risk factors, after air pollution, according to the WHO, urban noise generated by transport is considered one of the main propagators, including traffic, trains and aviation (Hadad *et al.*, 2023; WHO, 2018).

Constructions, leisure activities, such as shows and events, shops, among others, are part of this pollution (Li *et al.*, 2022).

WHO guidelines recommend levels below **53 dB and 45 dB for land traffic** in the morning and evening, respectively (WHO, 2018).



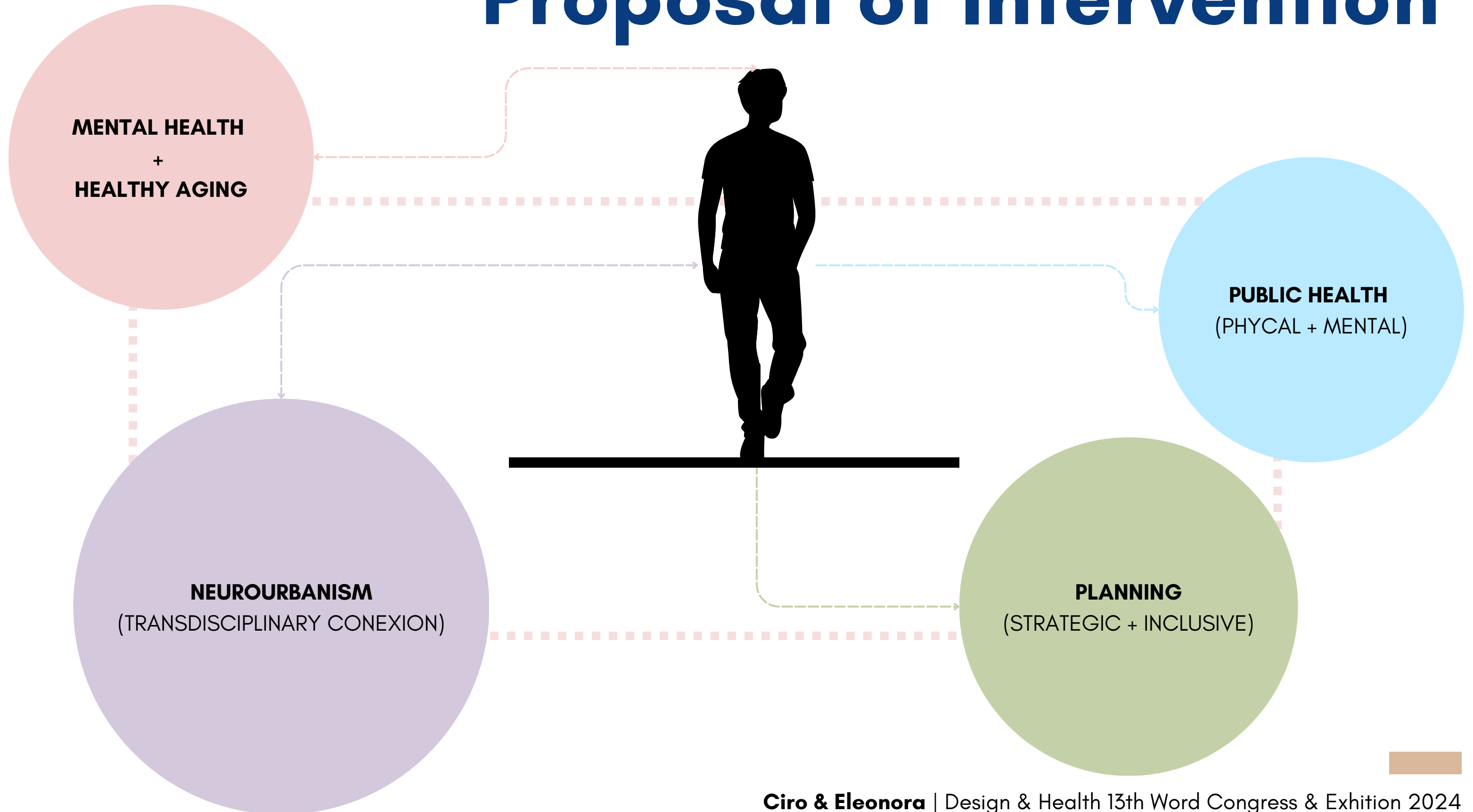
Light Pollution

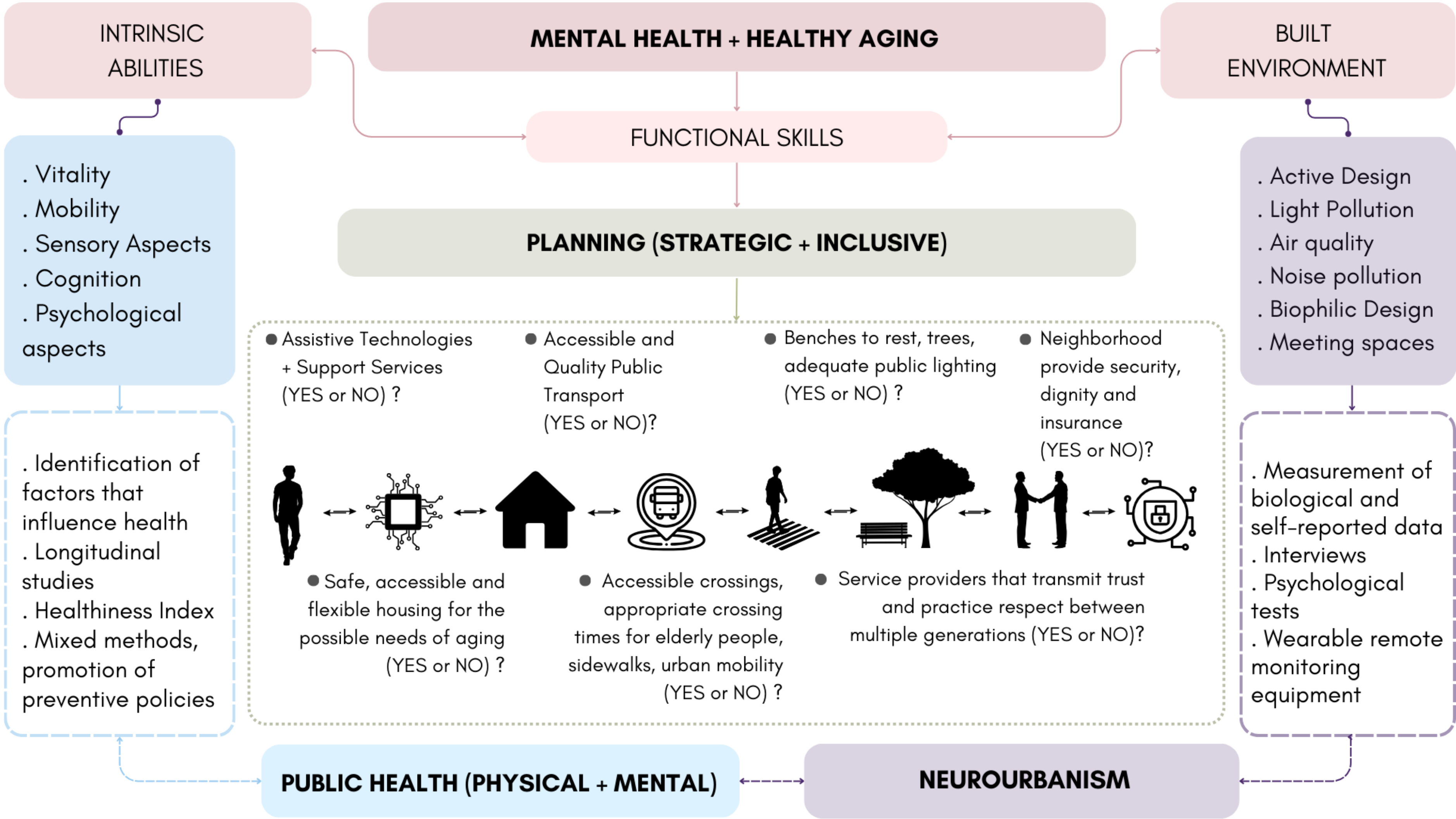
Artificial Light At Night (ALAN), represents an interference in natural patterns of light and darkness, resulting from the excessive or inadequate use of artificial lighting (Burt *et al.*, 2023).

Negative influence on sleep = was associated with a 30% increase in the risk of long-term dementia (Sabia *et al.*, 2021).

Light Research Center (LRC) = exposure to lighting consistent with the biological rhythms of the human body can provide improvements in sleep, mood and human behavior (Figueiró *et al.*, 2019).

Proposal of Intervention





Conclusion

It is clear that the proposal of **neurourbanism does not imply a total break with the pre-existing logic of urban planning**, but rather a **transdisciplinary** approach, which considers the complex **biopsychosocial needs** of the population in favor of **mental health** and a **salutogenic city**.

Acknowledgments

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References

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**THANK YOU ALL FOR THE
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