Neighbourhoods and Cognitive Health

Our neighbourhood environments play a role in the maintenance of an older adults cognitive health

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What is the problem

Several studies have highlighted a connection between our neighbourhood environments and cognitive health. This relationship is particularly important for older adults, as they tend to spend more of their time within their own neighbourhoods.

Given the ageing population and growing urbanisation, it's crucial to design cities that support healthy, independent living for older adults and promote cognitive health.

While research has looked at various environmental features—like the built environment, natural surroundings, and effects of urbanisation—few studies have examined these elements together. This is important because they are interconnected and jointly impact cognitive health.

Additionally, no studies have investigated how these environmental features influence the progression to, or recovery from, cognitive impairments such as mild cognitive impairment (MCI) or dementia.

Understanding how these environmental factors interact and affect cognitive health over time is vital for driving real-world changes in how we design neighbourhoods that support healthy ageing in place and promote cognitive health.

Glossary

Cognitive health.
The ability to clearly think, learn, reason and remember. The clinical absence of dementia or mild cognitive impairment (MCI).

Mild Cognitive Impairment
The early stage of memory loss and cognitive impairment. It is not as severe as Alzheimer's and dementia

Built environment
Refers to man-made structures and features that collectively make up neighbourhoods and cities.
These structures can include residential and commercial buildings, parks, trials and public transport.

Purpose of the study

To deepen our understanding of how neighbourhood environments impact cognitive health in older adults by examining a comprehensive set of interconnected environmental features over an extended period of time.

How is it different from past studies?

This study is unique for a variety of reasons:

1. It is the first study to explore how neighbourhood environmental features influence the transition from a healthy cognitive state to mild cognitive impairment in participants.

2. The study uniquely considers the connections between various environmental features—both built and natural—and air pollution. By examining these features together and recognising their interactions, we can achieve a more accurate understanding of how our surroundings affect cognitive health.

3. Unlike most prior studies which use data from one time point, this study utilises data from participants collected over a 12-year period. This research offers valuable insights into the long-term effects of neighbourhood environments on cognitive health

How was it done

About the PATH Study

The Personality and Total Health Through Life (PATH) study is a population-based study involving Australian adults. There were three cohorts of participants, defined by age at the beginning of the study: 20-24yrs, 40-44yrs, and 60-64yrs.

Participants underwent testing at multiple intervals (referred to as waves). The initial/baseline testing (Wave 1) began in 2001/02, and follow-up assessments occur every four years. PATH gathered data on socio-demographics, health, cognitive functions, and diagnoses.

> **Only data from the 60+ cohort was used in this study. Data was taken over a period of 12 years, from Wave 1 (2001/02) through to Wave 4 (2013/15) and included 1160 participants.**

For more details on the PATH study visit: https://www.pathstudy.org.au/about

Environmental measures

This study defined a neighbourhood as an area within a 1km radius from a participant's residential address.
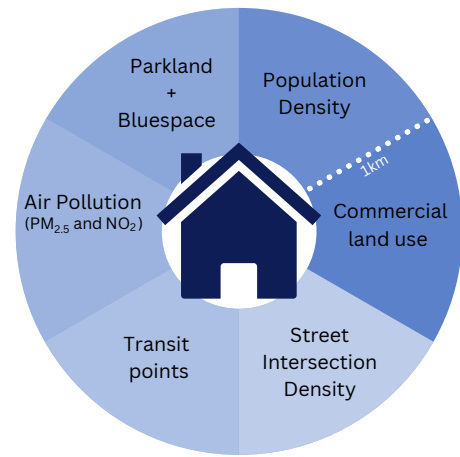
Neighbourhood variables used in the study

Cognitive Outcomes

Numerous cognitive tests were used in PATH to test different features of cognitive health (e.g. memory, processing speed etc.)

Clinical diagnosis of MCI or dementia was performed using diagnostic criteria.

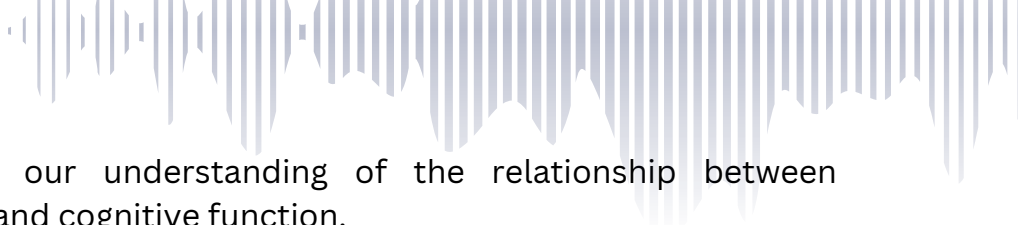**For further information on measurements see full paper**

Key findings

This study is the first to identify neighbourhood characteristics that influence the likelihood of developing mild cognitive impairment.

HIGHLIGHT

- Dense, destination rich areas were found to reduce the likelihood of an older adult transitioning from a healthy cognitive state to cognitive impairment.

- However, for those already diagnosed with MCI, these same features were associated with a lower likelihood of reverting to a healthy cognitive state.

These findings underscore the complexity of how certain environments can benefit cognitively healthy individuals while simultaneously posing challenges for older adults with cognitive impairments.

This research also deepens our understanding of the relationship between neighbourhood environments and cognitive function.

HIGHLIGHT

- Except for population density, all aspects of neighbourhood walkability (e.g. street connectivity, public transport, etc.) and natural environments were linked with better cognitive function in older adults.

- High levels of air pollution were linked to declines in cognitive function and an increased risk of cognitive impairment over time.

Why this matters

This study provides essential guidance for policymakers and urban planners on creating environments that support cognitive health in ageing populations. It highlights the need for neighbourhoods that balance environmental complexity, access to destinations, and natural surroundings while minimising harmful air pollution.

The research underscores the importance of designing communities that not only promote daily living activities but also protect cognitive function.

By reducing air pollution and optimising urban design, we can foster healthier, more resilient neighbourhoods that support cognitive health and healthy ageing, ultimately helping to address the growing public health challenge of cognitive decline in older adults.

This research brief is based on:
Cerin, E., Soloveva, M. V., Molina, M. A., Schroers, R. D., Knibbs, L. D., Akram, M., ... & Anstey, K. J. (2024). Neighbourhood environments and cognitive health in the longitudinal Personality and Total Health (PATH) through life study: A 12-year follow-up of older Australians. *Environment International*, 108984.

The entire study is available at: https://doi.org/10.1016/j.envint.2024.108984

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