

# The role of the physical environment in adolescent mental health

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# Motivation

- Associations of the physical environment with mental health
  - In adolescents: perceived stress, aggressive behaviour, mood, delinquent behaviour, major depressive disorder, psychotic experiences...
- But many open questions...
  - What are the mechanisms?
  - What are the links between physical and social environment factors?
  - What is the role of people's subjective experiences of their environments?

# The present study

- Green space, air pollution, and adolescent mental health
  - Data on 3,683 adolescents (10 to 15 years old) from England and Wales
  - Green space quantity (ward-level) and NO<sub>2</sub> concentrations (LSOA-level)
- Included variables of both green space and air pollution
  - Included variables of the social environment
  - Included variables of adolescents' perceptions of their neighbourhoods

# Methods: Data

- Understanding Society ([www.understandingsociety.ac.uk](http://www.understandingsociety.ac.uk))
- Neighbourhood green space at ward-level (Richardson & Mitchell, 2010)
- Neighbourhood air pollution at LSOA-level (Mukhopadhyay & Sahu, 2017)
- Neighbourhood deprivation at LSOA-level (2011 Carstairs Index)

*Mukhopadhyay, S., & Sahu, S. K. (2017). A Bayesian spatiotemporal model to estimate long-term exposure to outdoor air pollution at coarser administrative geographies in England and Wales. J. R. Stat. Soc., 181(2), 465-486. <https://doi.org/10.1111/rssa.12299>*

*Richardson, E. A., & Mitchell, R. (2010). Gender differences in relationships between urban green space and health in the United Kingdom. Soc. Sci. Med. 71(3). 568-575. <https://doi.org/10.1016/j.socscimed.2010.04.015>*

# Methods: Variables

## Outcomes

Five scales of the Strengths and Difficulties Questionnaire  
(emotional symptoms, conduct problems, hyperactivity, peer problems, total difficulties)

## Objective measures

Greenspace, air pollution, deprivation, urbanicity/rurality

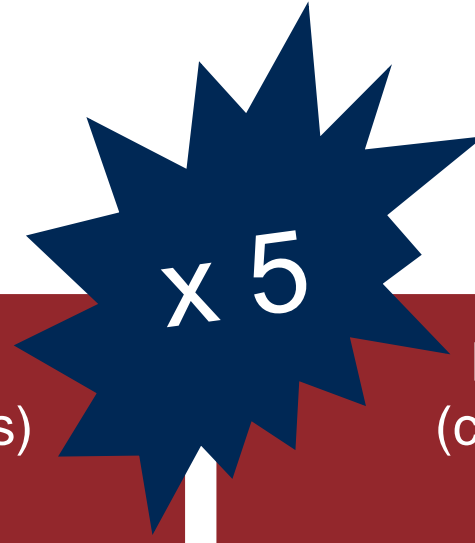
## Subjective measures

Neighbourhood cohesion, liking of neighbourhood, perception of safety, fear of being a victim of crime, noise from neighbours

## Covariates

Gender, age, mother's education, ethnicity

# Methods: Regression



**Model A**  
(objective measures)  
*N = 1676*

- Greenspace
- Air pollution
- Deprivation
- Urbanicity

**Model B**  
(subjective measures)  
*N = 1392*

- [Model A]
- Neighbourhood cohesion
- Liking of neighbourhood
- Perception of safety
- Fear of crime
- Noise from neighbours

**Model C**  
(covariates)  
*N = 1082*

- [Model B]
- Gender
- Age
- Mother's education
- Ethnicity

# Results

Emotional symptoms	Conduct problems	Hyperactivity/inattention	Peer relationship problems	Total difficulties
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*Note.* Significant predictors in Model C for all outcome variables. Numbers in parentheses are beta values.

# Discussion

1. Objective measures of the physical environment were not associated with adolescent mental health
2. Neighbourhood social deprivation was associated with conduct problems and peer relationship problems
3. Subjective experiences of the environment (especially fear of being a victim of crime) were associated with adolescent mental health

**The full paper: <https://doi.org/10.1016/j.healthplace.2019.102153>**



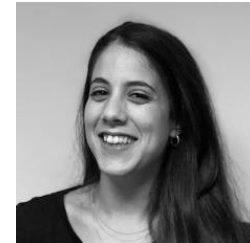


Thank you



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The Leverhulme  
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Ecological Study of  
the Brain