

# BRAIN RESPONSES TO FACES AFTER URBAN VERSUS NATURE EXPOSURES

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## Introduction

City living is associated with increased risk of mental disorders (1) that are often associated with altered face processing (2, 3, 4).

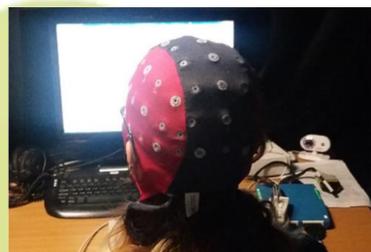
## Aims

- 1) Does brief exposure to urban versus green environments modulate attention?
- 2) Can greater exposure to faces from urban exposures explain the differences elicited by urban versus green environments?

## Event related potentials

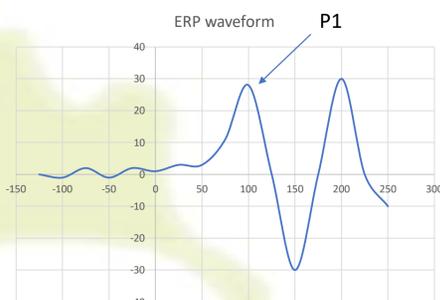
They reflect electrical activity in the brain.

Brain activity is measured using scalp electrodes (EEG).



Activity on every channel for each condition is averaged. The averaged waveform is the ERP.

We focused on the P1 component. The P1 is believed to reflect attention allocation (5).



## Methods

2 groups of 24 young adults particularly in 2 separate experiment

2 sessions with EEG

Phase 1 – videos  
Experiment 1

Nature



Urban with faces



Experiment 2

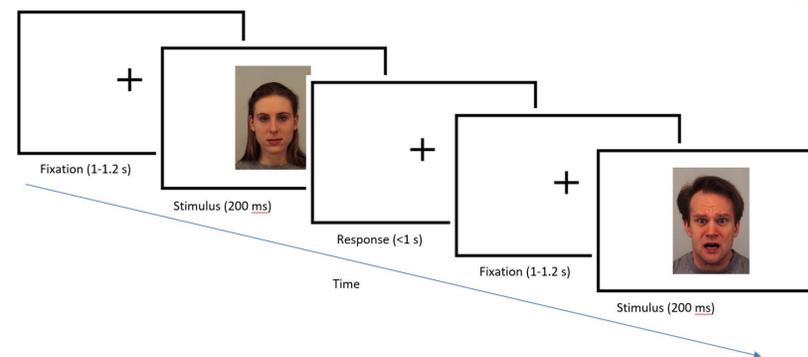
Nature



Urban with blurred faces



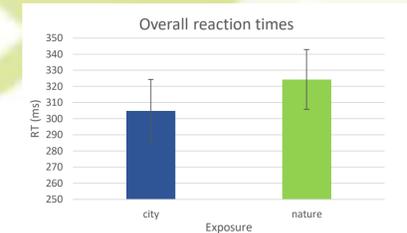
Phase 2 - task



## Results

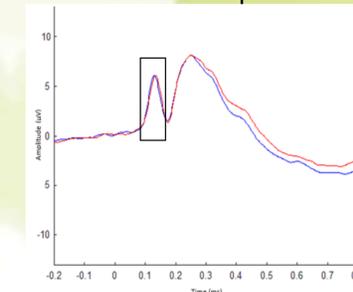
Experiment 1 – city video with faces

Faster Reaction times after city than nature exposure.

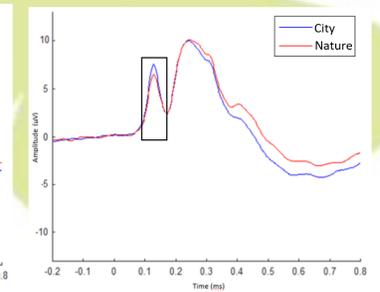


P1 is larger after city versus nature exposure over the right but not the left hemisphere, suggesting enhanced attention to faces.

Left hemisphere



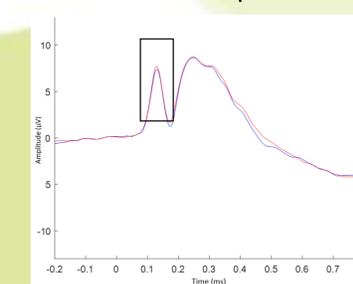
Right hemisphere



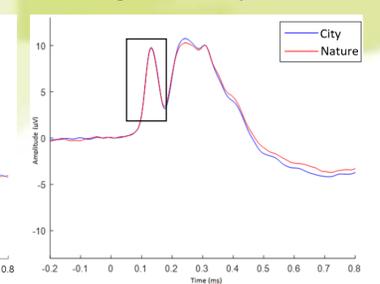
Experiment 2 – city video with blurred faces

P1 did not differ after city versus nature exposure over either hemisphere, suggesting that exposure to faces enhanced P1 in Experiment 1.

Left hemisphere



Right hemisphere



## Discussion

Modulation of the P1 suggests that city exposure may lead to enhanced attention to faces. Similar P1 pattern characterizes anxiety disorders, which city dwellers are more likely to develop.

However, this effect disappears when urban exposure no longer contain faces, suggesting that exposure to multiple faces increases attention to faces. Being exposure to crowds is stressful, therefore overcrowding in cities may explain the increased prevalence of mental disorders in such environments.

References:

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- 5) Luck, S. J., Woodman, G. F., & Vogel, E. K. (2000). Event-related potential studies of attention. *Trends in cognitive sciences*, 4(11), 432-440.