The Nature of Decisions: The Influence of Natural and Urban Environments on Decision Making

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Introduction

Exposure to natural environments influences physical health, mental health, and cognition; however, little research investigates how exposure to nature influences decision making.

- Exposure to nature influences intertemporal choices (Berry, et al., 2014; van der Wal, Schade, Krabbendam, & van Vugt, 2013)

Does this effect generalize to risky choices?

- Exposure to nature influences environmental prosocial choices (Zelenski, Dopko, & Capaldi, 2015)

Does this effect generalize to monetary prosocial choices?

Methods

In a between-subjects design, participants ($N = 154$) viewed a series of images (nature scenes, urban scenes, or geometric shapes) prior to completing each decision-making task.

Intertemporal Choice

- Delay discounting choice between hypothetical smaller, sooner rewards and larger, later rewards

Risky Choice

- Probability discounting choice between hypothetical smaller, safer rewards and larger, riskier rewards

Monetary Prosocial Choice

- Modified dictator game task splitting hypothetical sums of money

Environmental Prosocial Choice

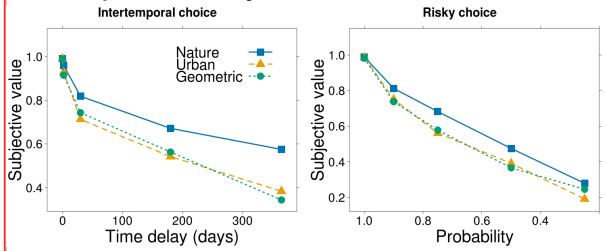
- Fishery-themed commons dilemma task (FISH) assessing environmental decision making

Results

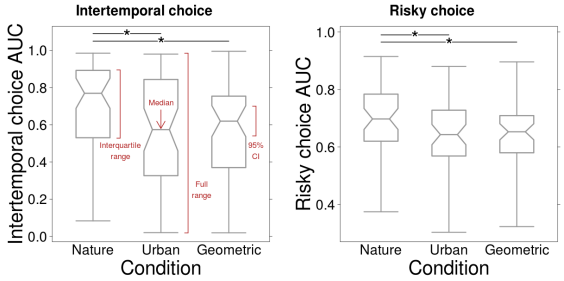
Measures

The intertemporal choice task and risky choice task measured areas under the normalized discounting curve. Higher values indicate greater self-control and risk aversion. The dictator game measured the proportion of choices in which the participant chose the prosocial option. The FISH game measured the number of seasons in which the fishery was cooperatively sustained.

Intertemporal and risky choice



Discounting curves for intertemporal choices and risky choices for nature, urban, and geometric image conditions.



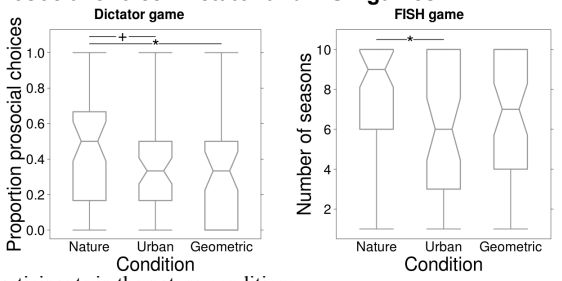
Participants in the nature condition:

- Exhibited more self-control than participants in the urban ($p = 0.048$, $r = 0.23$) and geometric ($p = 0.048$, $r = 0.24$) conditions
- Exhibited greater risk aversion than participants in the urban ($p = 0.04$, $r = 0.23$) and geometric ($p = 0.04$, $r = 0.24$) conditions

(*) represent significant differences ($p<0.05$)
(+) represent marginally significant differences ($0.05 \leq p<0.10$)

Results

Prosocial choice: Dictator and FISH games



Participants in the nature condition:

- Selected more prosocial choices than participants in the geometric condition ($p = 0.04$, $r = 0.25$) and marginally more than those in the urban condition ($p = 0.053$, $r = 0.22$)
- Lasted more seasons than participants in the urban condition ($p = 0.048$, $r = 0.24$)

Conclusions

Compared to other conditions, viewing nature increased:

- **Self-control in the intertemporal choice task**
- **Risk aversion in the risky choice task**
- **Prosocial decisions in the dictator game task**
- **Prosocial decisions in the FISH task**

Thus, mere exposure to images of nature improves decision making across a range of situations. This broad influence of exposure to nature raises the question of what mechanism could generate these effects. One possible mechanism is stress reduction.

References

Berry, M. S., Sweeney, M. M., Morath, J., Odum, A. L., & Jordan, K. E. (2014). The nature of impulsivity: Visual exposure to natural environments decreases impulsive decision-making in a delay discounting task. *PLOS ONE*. doi: 10.1371/journal.pone.0097915

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Zelenski, J. M., Dopko, R. L., & Capaldi, C. A. (2015). Cooperation is in our nature: Nature exposure may promote cooperative and environmentally sustainable behavior. *Journal of Environmental Psychology*, 42, 24-31.