

Nature Relatedness – Individuals' Connectedness with Nature and the Role in Motivating Environmental Concern and Behaviour

Elizabeth Nisbet, PhD

Department of Psychology, Trent University



2013 Clean Water Summit



Overview

- The psychology of sustainability
- Individual differences in nature relatedness
- Why connectedness matters/Research
- Implications: a happy path to sustainability?

Why psychology?

- Human behaviour influences the environment
- Environmental problems affect human health
- What motivates environmental behaviour



Determinants of Environmental Behaviour

- Structural factors: SES, geography, infrastructure
- Psychological factors: norms



Determinants of Environmental Behaviour

- Psychological factors: guilt, helplessness



Raising Awareness



Raising Awareness

Information alone \neq behaviour



=



EXIT 18

EXIT 17

Vegetarians
Who Eat Meat



Exercisers
Who Take
Cigarette Breaks



EXIT 19

Animal Rights
Activists
Who Wear Leather

ENVIRON-
MENTALISTS
WHO BUY
PAPER
PLATES



Disconnected from nature?





Do We Need Nature?

- E. O. Wilson's Biophilia Hypothesis
- Evolutionary history
- Suggestive evidence:

nature scenes, pets, outdoor activities, gardening, zoos,
office workers/plants





Nature Is Good For You



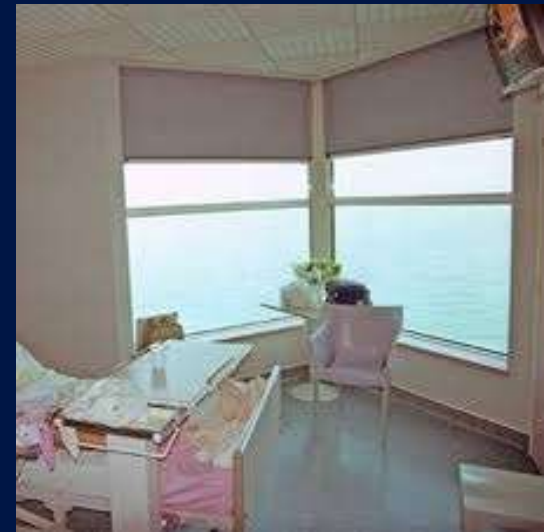
- Urban centres and nature deprivation – intervention restored SE, self-efficacy, perception, aggression, empathy for nature
 - Playgrounds and child development, walking to school (obesity/driving vs. opportunity to observe wildlife)
 - Proximity to green space - mortality benefits, reduces ADHD symptoms
- 



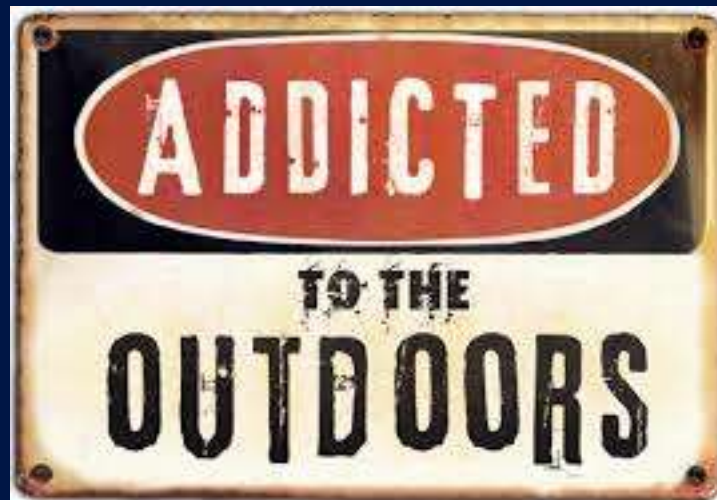
Nature Contact/Images and Health

- Physical health benefits of nature and natural images
 - hospital, prison studies, wall art, etc.
- Empirical evidence for stress reduction, relaxation, attentional restoration, physical healing (e.g., blood pressure, heart rate, cortisol; forest medicine)

Attention Restoration Theory - soft (effortless) vs. hard (intense, riveting) fascination



Individual Differences?



Measuring Nature Relatedness

- Individual differences in subjective connectedness
- Cognitive, affective, physical relationship with nature
- 21-item self-report measure
- Internal consistency: alpha $\alpha = .88$ (21 items)
- Test-retest correlation: $r = .85$
- EFA – 3 possible dimensions or subscales

(Nisbet, E. K., Zelenski, J. M., & Murphy, S. A., 2009. The Nature Relatedness Scale: Linking individuals' connection with nature to environmental concern and behavior. *Environment and Behavior*, 41, 715-740.)



The Nature Relatedness Scale

Sample Items:

My relationship to nature is an important part of who I am

I feel very connected to all living things and the earth.

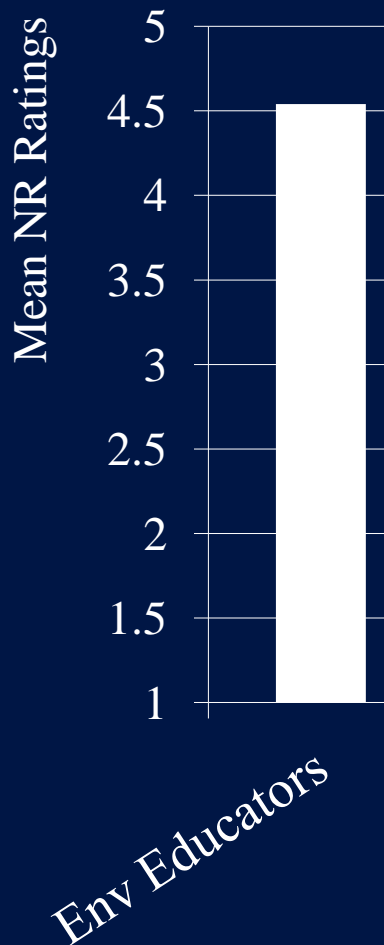
Animals and plants should have fewer rights than humans (*R*)

I enjoy being outdoors, even in unpleasant weather.

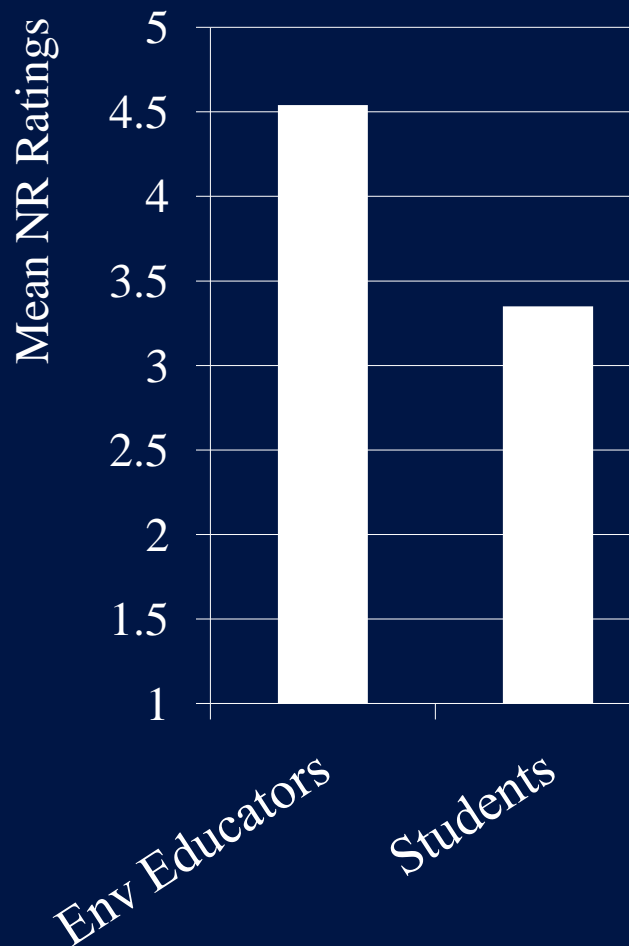
I take notice of wildlife wherever I am.



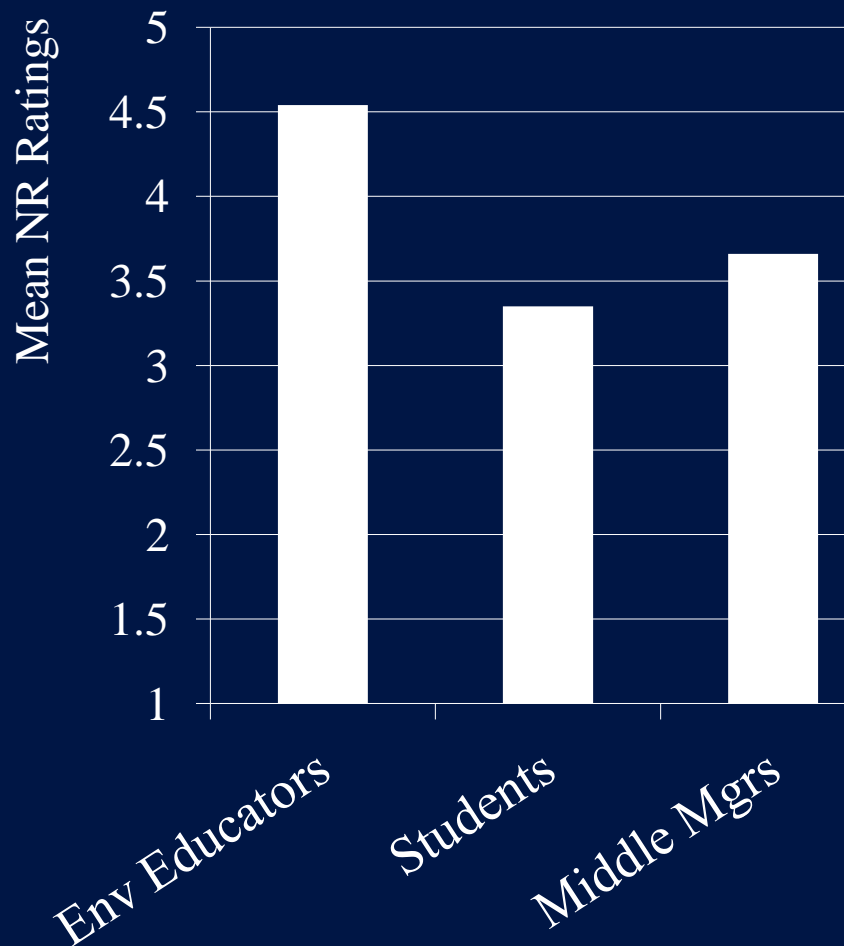
Nature Relatedness Scores



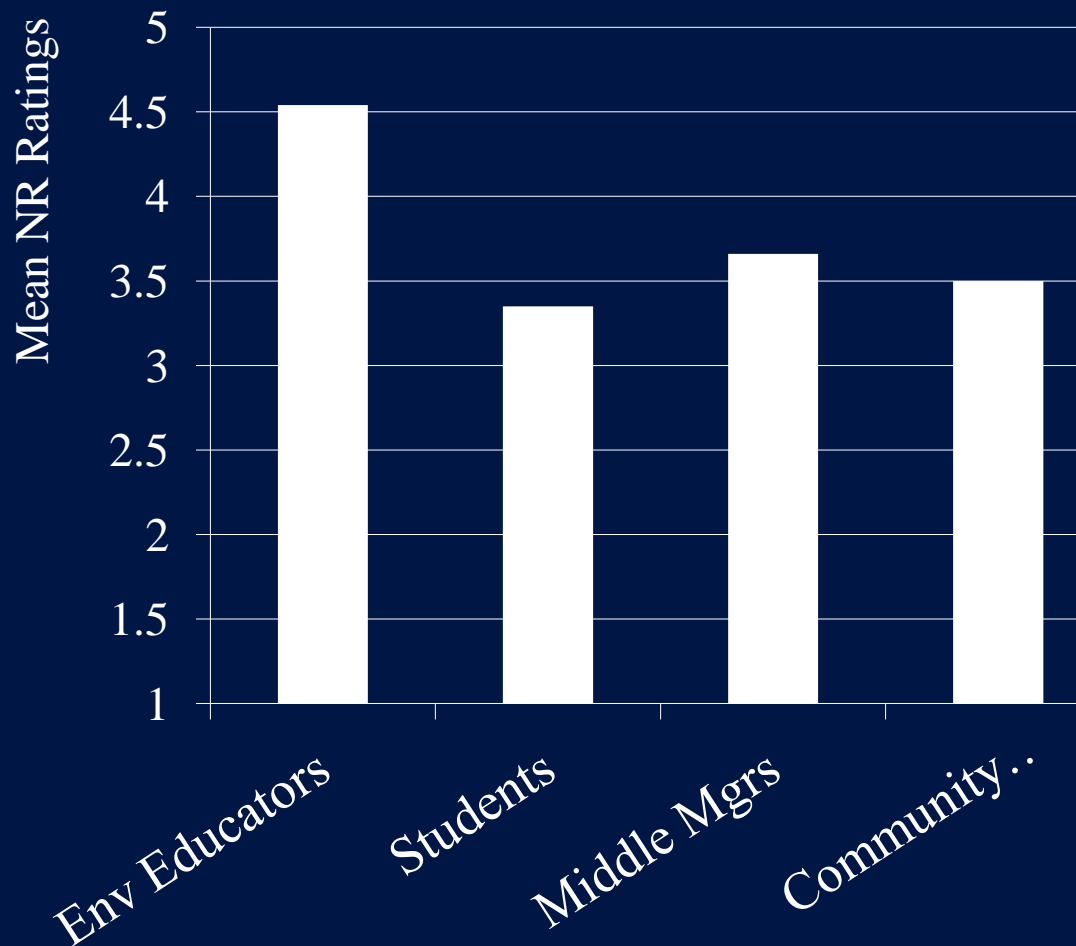
Nature Relatedness Scores



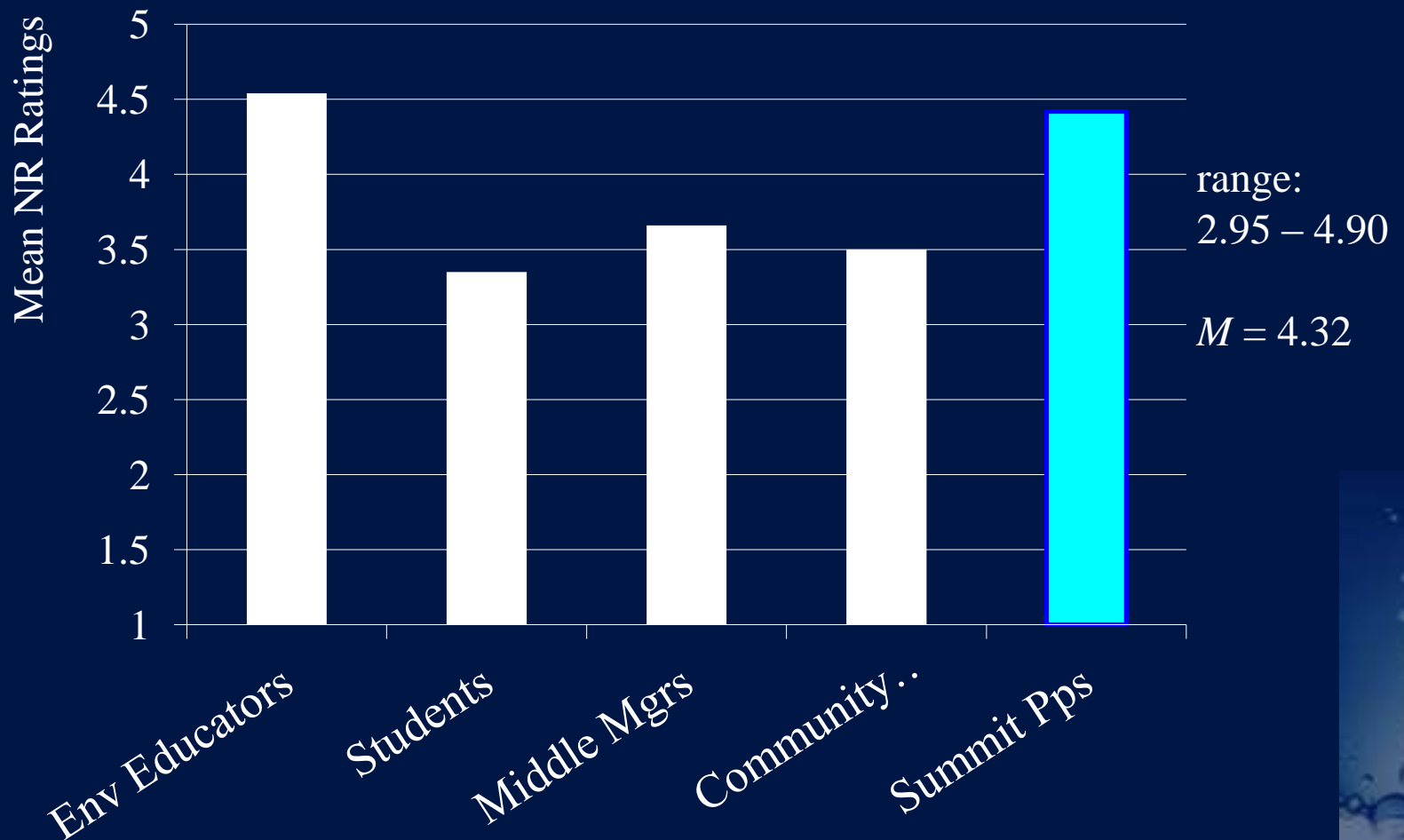
Nature Relatedness Scores



Nature Relatedness Scores



Nature Relatedness Scores



Nature Relatedness and Happiness

- ❖ Modern lifestyles – Is disconnection related to unhappiness?



Nature Relatedness and Happiness



- Life satisfaction
- Subjective Happiness
- Positive affect
- Fascination, awe
- Negative affect
- Depression

Nature Relatedness and Well-Being



- Personal Growth
- Autonomy
- Purpose
- Vitality

A better predictor of happiness than environmental attitudes

A distinct contributor to well-being

Nature Related People are Happier

	Study 1
Positive affect	.29**
Negative affect	-.11
Autonomy	.28**
Personal Growth	.29**
Purpose in Life	.19*
Environmental Mastery	.09
Self Acceptance	.18*
Positive Relations with Others	.10
Life Satisfaction	.13

* $p < .05$, ** $p < .01$

^a Partialling out the effects of NEP, NEC, Ecology scale (actual commitment/affect).

Nature Related People are Happier

	Study 1	Study 1b ^a
Positive affect	.29**	.33**
Negative affect	-.11	-.29**
Autonomy	.28**	.26**
Personal Growth	.29**	.29**
Purpose in Life	.19*	.23**
Environmental Mastery	.09	.28**
Self Acceptance	.18*	.30**
Positive Relations with Others	.10	.22**
Life Satisfaction	.13	.24**

* $p < .05$, ** $p < .01$

^a Partialling out the effects of NEP, NEC, Ecology scale (actual commitment/affect).

Clean Water Summit Survey



NR (or dimensions) associated with:

- Positive affect (NR-self, $r = .49$)
- Negative affect (NR-self, $r = -.33$)
- Vitality ($r = .42$, NR-self, $r = .57$)

NR as Motivator ?



Validity: Environmental Attitudes

Ecology Scale – Verbal Commitment	.65**
Ecology Scale – Actual Commitment	.53**
Ecology Scale – Affect	.53**
New Ecological Paradigm	.54**
New Environmental Consciousness	.60**

Local Environmental Satisfaction	-.21**
Government Environmental Satisfaction	-.21**

Validity: Nature Related Activities

- Nature related people own pets, buy organic, volunteer, spend time outdoors
- A *better* predictor of behaviour...



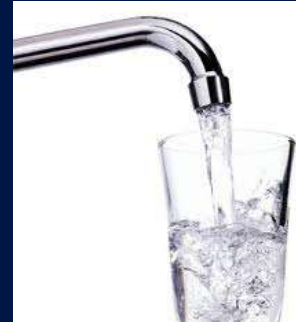
Nature Relatedness Predicts Behaviour ^a

<i>N</i> = 176	β	R ² change	OR ^b	95% CI ^b
Belong to environmental organization	1.26*	.06	3.52	1.29-9.63
Self-identification as environmentalist	1.24**	.06	3.45	1.43-8.32
Buy organic	.80*	.04	2.23	1.11-4.50
Buy fair trade	1.00*	.05	2.72	1.22-6.08
Participate in nature-related activities	1.49**	.10	4.41	1.89-10.29

^a Controlling for NEC, NEP, E-scale-affect, ^b OR = odds ratio. CI = confidence interval (Nisbet et al., 2009), * $p < .05$, ** $p < .01$

NR and Water Behaviours

- Summit Survey composite measure (behaviours, activism, recreation)
- NR-perspective predicts frequency ($r = .32$)
- as does NR-self ($r = .27$)
- gender differences in NR, but not behaviour





NR as Motivator

- Associated with well-being, environmental concern, and future-orientation





Message Framing

- Environmental sustainability

“... meets the needs of the present without compromising the ability of future generations ...”

Brundtland Commission (1987)

- Temporal and spatial frames (mixed findings)
- Personality predictors (consideration of future consequences, connectedness)

Global Frame



Weather putting world under siege, Oxfam says Climate-related deaths more than double that of 2009



Climate-related disasters killed 21,000 people in the first nine months of this year, more than double the number in 2009, the humanitarian organization Oxfam reported on Monday.

Timed to coincide with the start of international talks tackling climate change in Cancun, Mexico, the report cited floods in Pakistan, fires and heat waves in Russia and sea level rise in the Pacific island nation of Tuvalu as examples of the deadly consequences of climate change.

Still, Oxfam put its report forward as evidence that quick action is needed to mitigate and adapt to climate change. Oxfam said floods in Pakistan inundated about one-fifth of the country, killed 2,000 people and affected 20 million, spreading disease

and destroying homes, crops, roads and schools, with estimated damage of \$9.7 billion.

In Russia, Oxfam said, temperatures exceeded the long-term average by 7.8 degrees in July and August, and the daily death rate in Moscow doubled to 700. Some 26,000 wild fires destroyed 26 per cent of wheat crops, prompting a ban on exports.

Residents of low-lying Tuvalu, where seas are rising by about five to six millimetres annually, find it hard to grow staple crops as salt water intrudes on farm fields, Oxfam reported. As a result, they are more reliant on imported processed foods to survive, according to the report.

Exploding population growth and the demands it places on water will be the focus of an international conference beginning Sunday. More than 4,500 people are set to attend the World Water Congress to discuss global water challenges like providing clean drinking water, waste-water management, sanitation, water conservation and energy production.

The conference is organized by the International Water Association, the world's largest group of water-industry

Local Frame



A gathering to help the Ottawa River Summit sets out to protect threatened waterway



OTTAWA—When Samuel de Champlain reached the banks of the Ottawa River in the 1600s, he probably took a sip of the fresh, clean water.

"Today, I don't think people would think about drinking from the Ottawa River," said Chief Kirby Whiteduck of the Algonquins of Pikwakanagan First Nation.

Some say the river is in crisis, others say it is at risk, but the bottom line at the first Ottawa River Summit was that the waterway is in need of protection. The summit was a collaboration between the Ottawa Riverkeeper and the National Capital Commission.

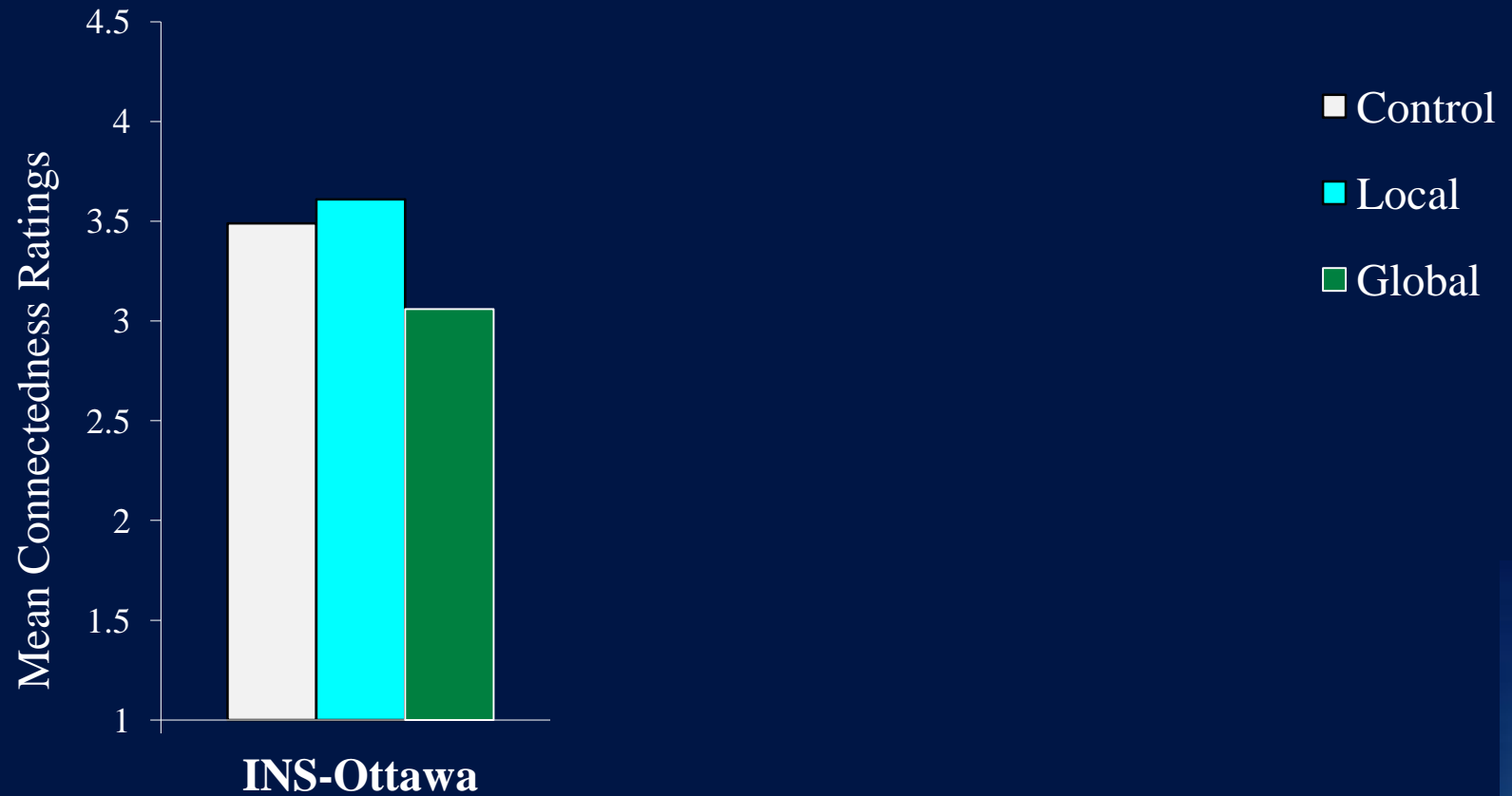
"Water basically keeps everything alive, a lot of people aren't acting on it and don't know we need to do it (protect water)," Whiteduck said.

Close to 130 municipal, community and First Nations leaders from Ontario and Quebec gathered in Gatineau on Friday to discuss the importance of preserving the Ottawa River watershed. The watershed spans more than 148,000 square kilometres, from the rocky lands of the Canadian Shield in Quebec, through the Ottawa Valley and into the St. Lawrence River.

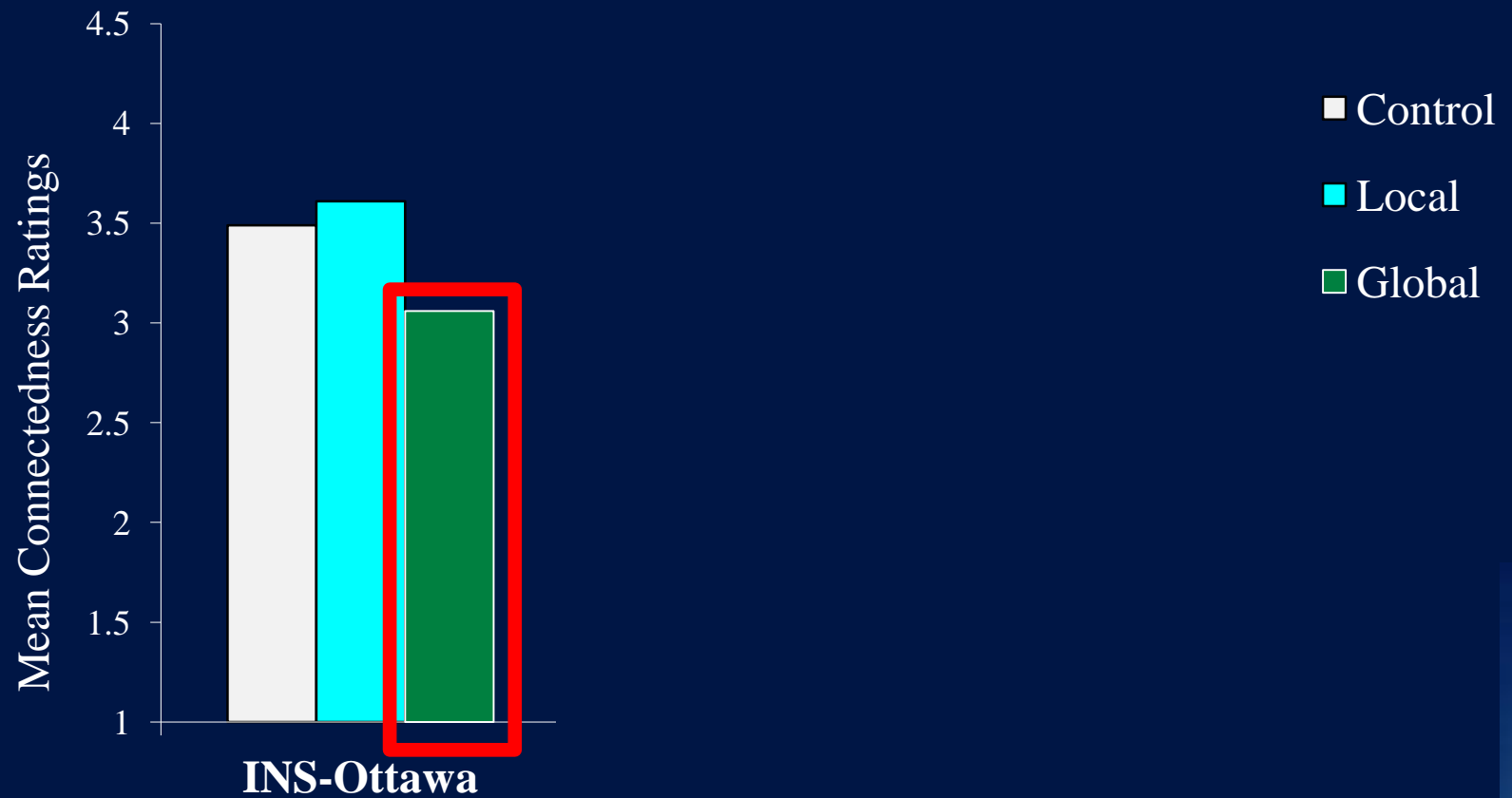
Meredith Brown of Ottawa Riverkeeper said there are numerous threats to the river, including pollution from sewage, landfills and nuclear reactors, dams that affect river flow and climate change resulting in record-low water levels.

An increase in chemicals has also resulted in fish feminization, where male fish develop female parts, she said. "If you are pregnant or are a young child, there are fish you cannot eat safely," Brown said. "As you travel up the food chain, you find more"

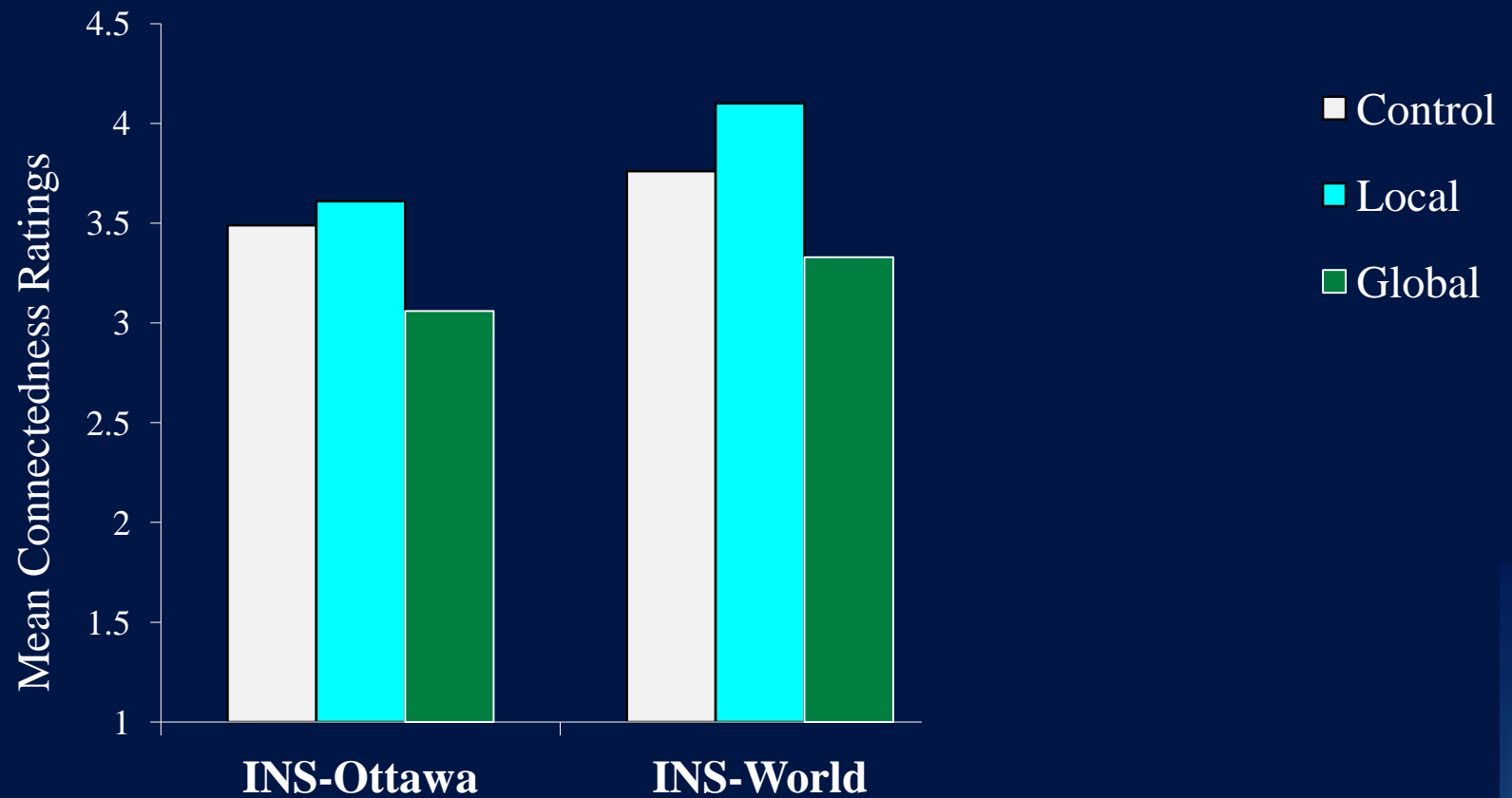
Connectedness Results



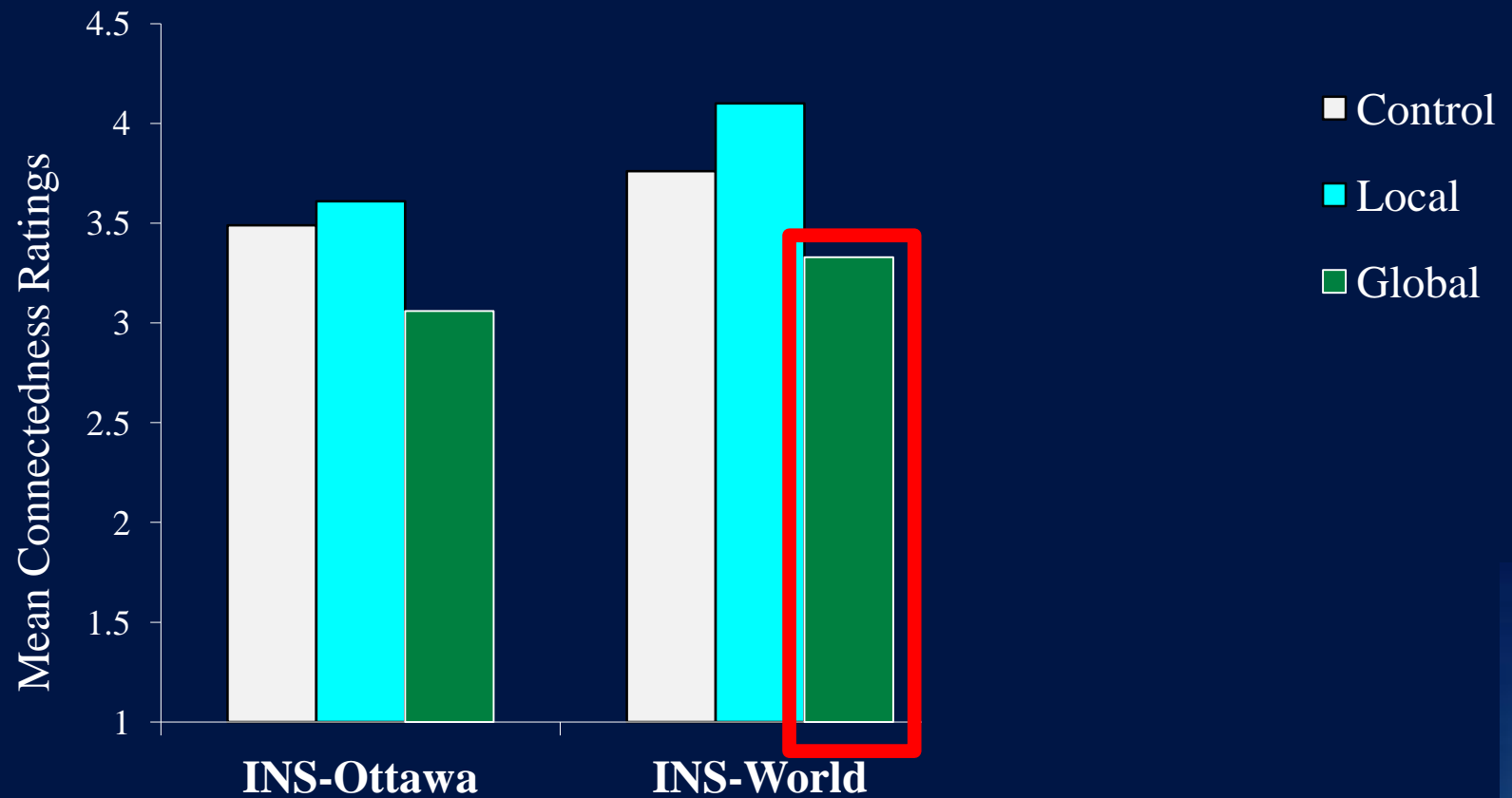
Connectedness Results



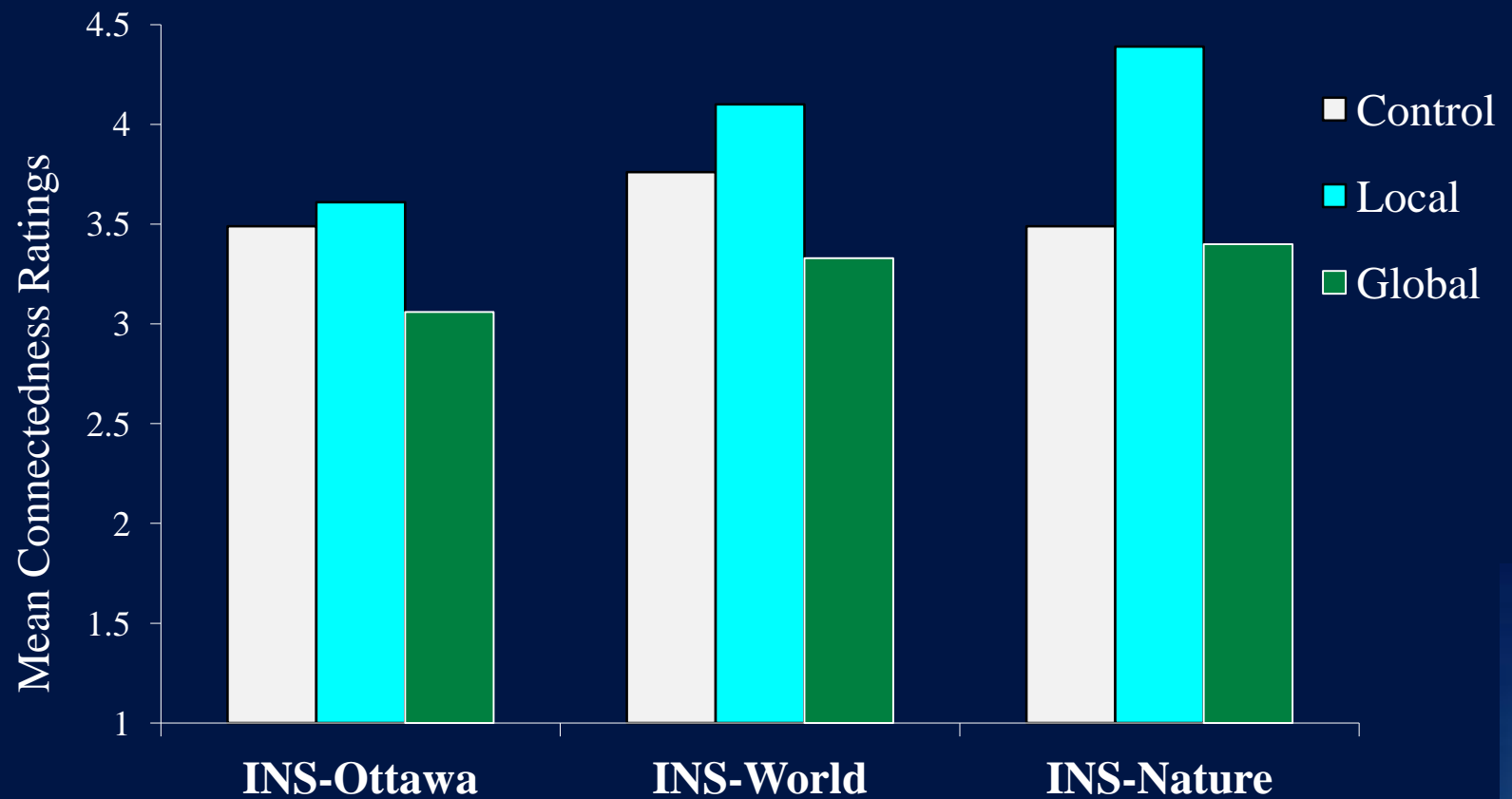
Connectedness Results



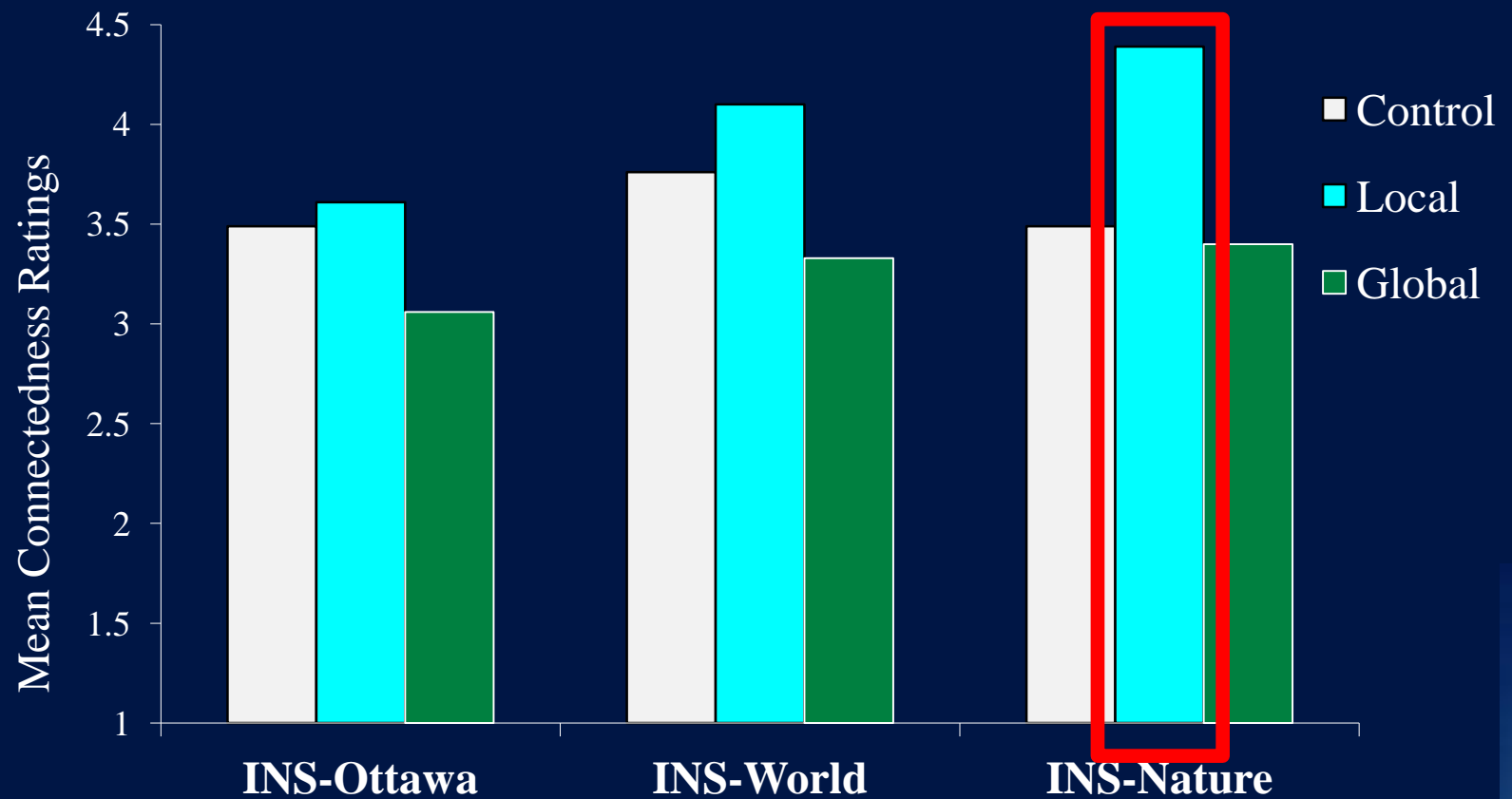
Connectedness Results



Connectedness Results



Connectedness Results





Message Framing

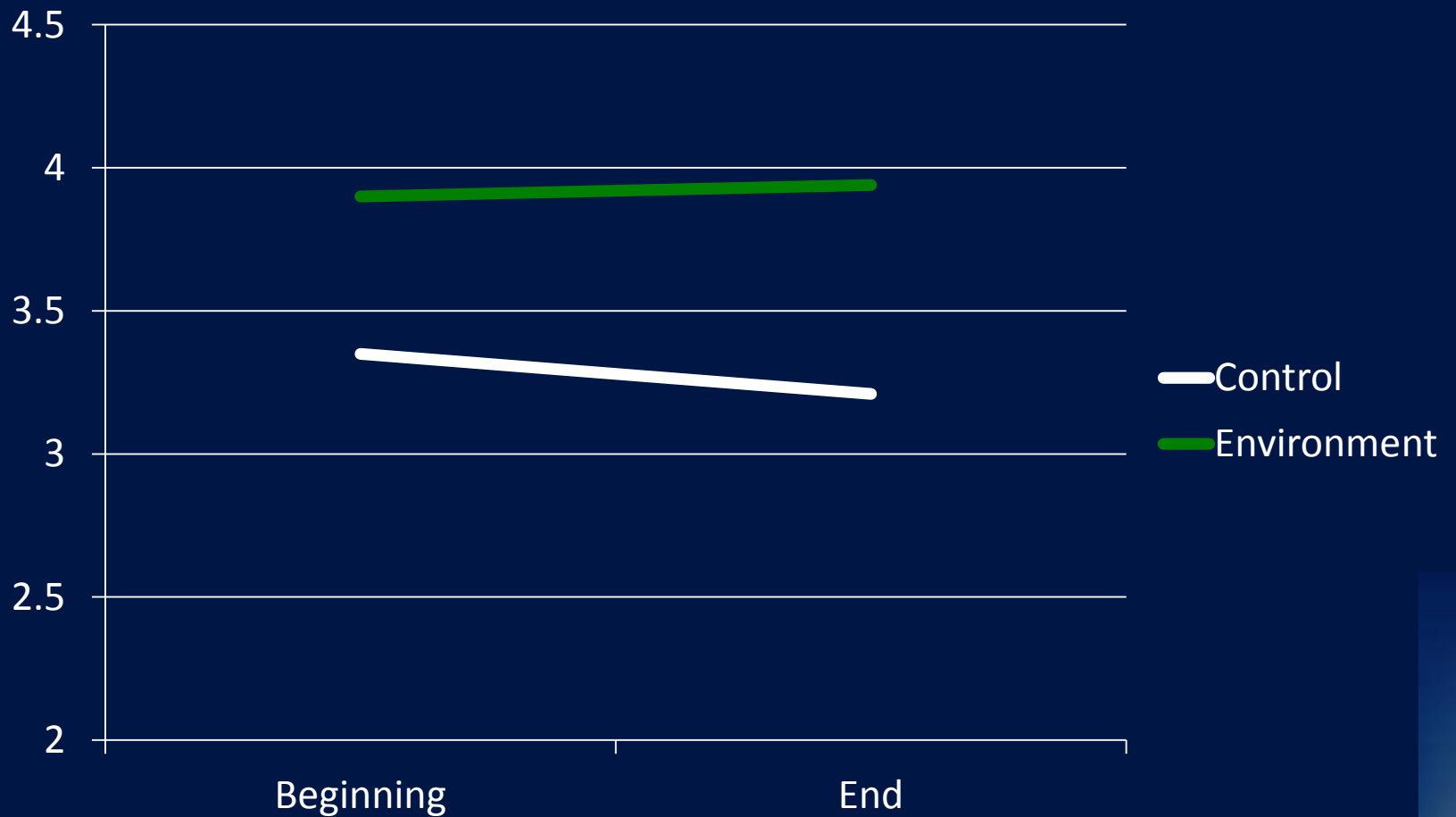
- Frame of environmental info matters
- Thinking “locally” may inspire more global and nature connectedness
- Individual differences (CFC, connectedness) influence planet-level concern
- Work needed to turn concern into behaviour

Can We Change Nature Relatedness?

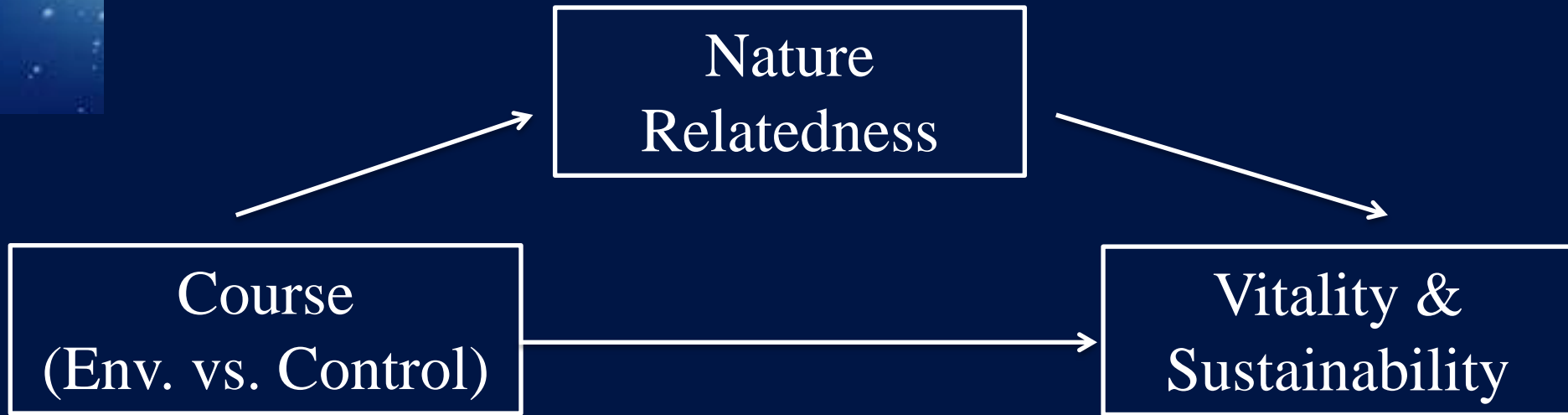
- Ecological knowledge/literacy
- Longitudinal study of environmental education students, compared to controls
- Changes in nature relatedness, environmental attitudes, well-being, over 3 months



Nature Relatedness Over Time



Change in Vitality & Sustainable Attitudes



(The Nature Related Path to Happiness) (Nisbet et al., 2009, 2011)

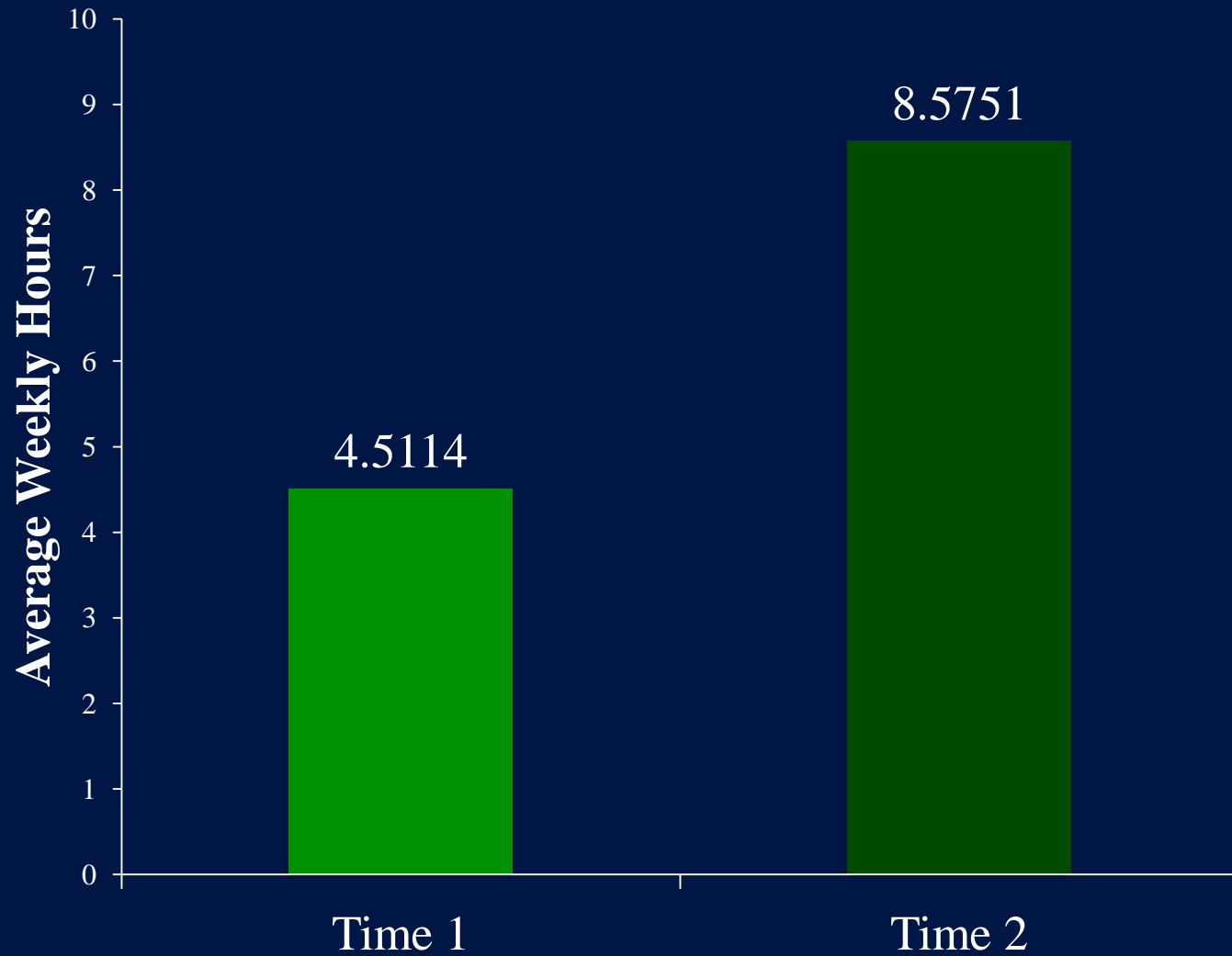
More work to be done on ‘interventions’

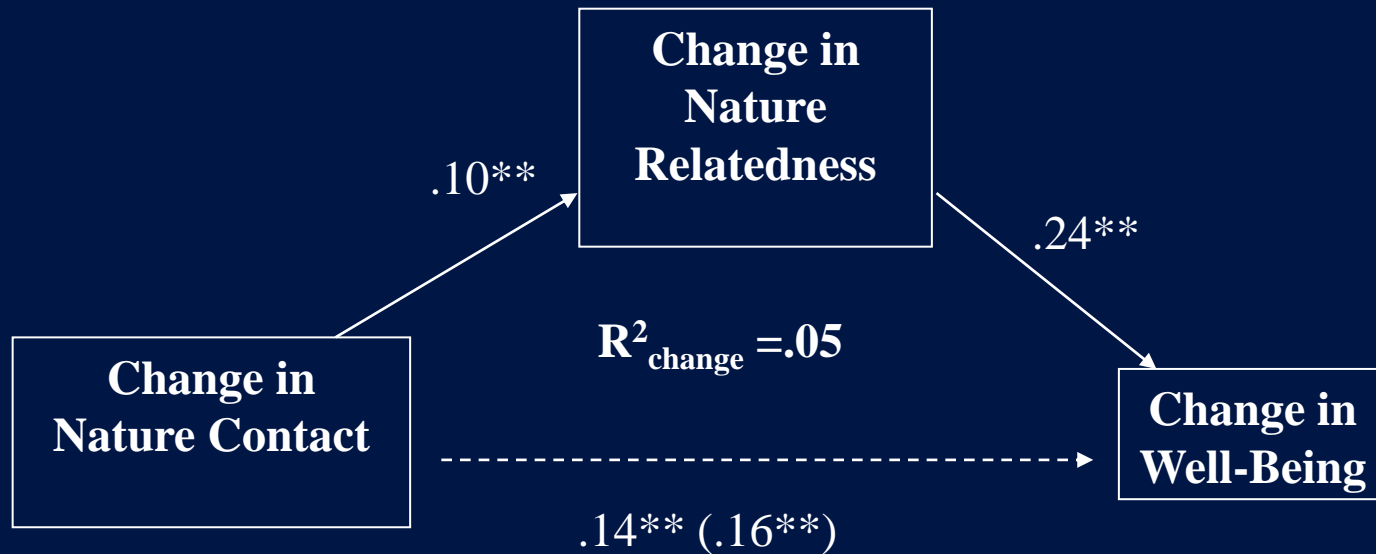
30x30 Nature Challenge



- Nature contact 30 minutes every day in May
- $N = 2,225$, 83.8% women
- Age range: 17-83, $M = 45.76$
- Pre and post surveys assessing NR, well-being, aggregated time use /activities, job functioning ($n = 332$)

30x30 Nature Challenge



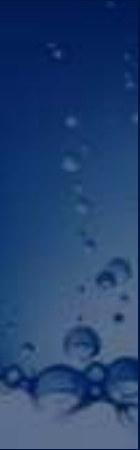
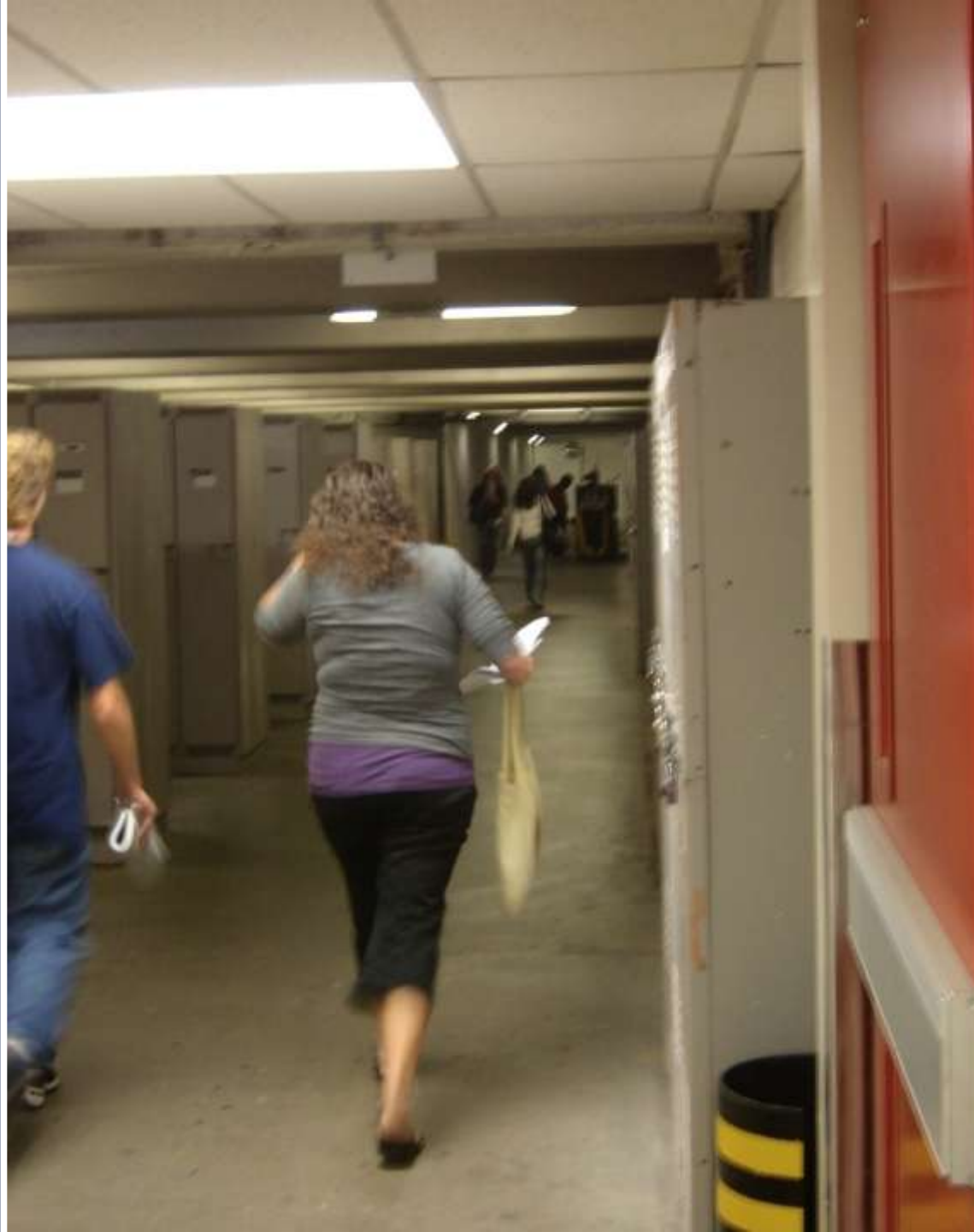


Nature Contact and Happiness

- Trait level connection is associated with more nature contact and (some types) well-being
- Nature experiences linked with well-being
- Potential benefits of “state” relatedness?
- What about nearby nature, differences in built and natural environments?





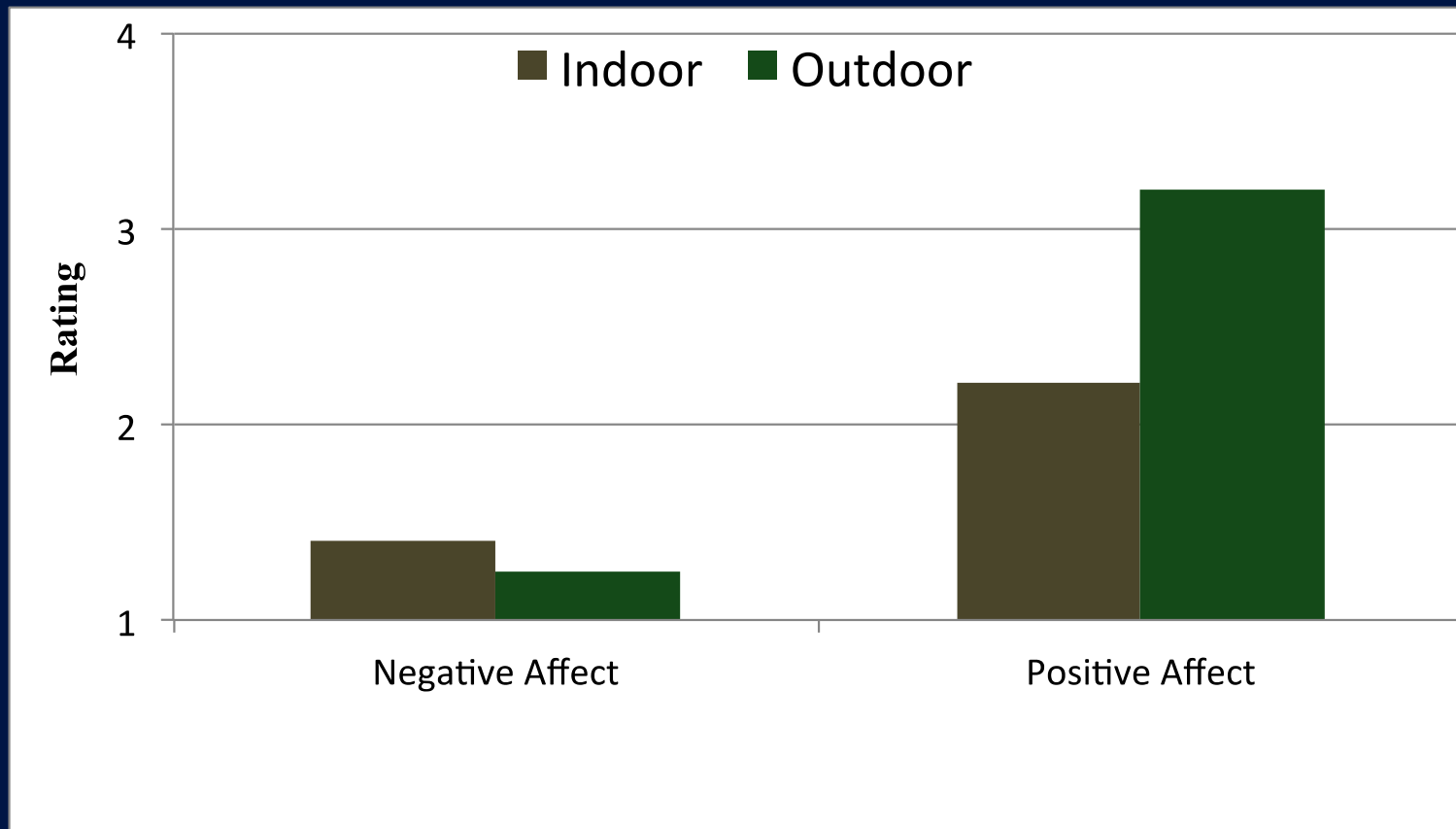


Walking Study 1

- University students – “*impressions of campus*”
- Random assignment to indoor or outdoor walk
- Autumn, all non-rainy days
- Post-walk well-being: “How do you feel right now?”



People prefer the outdoor walk

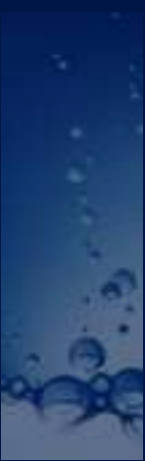


(significant differences; Also vitality, fascination)

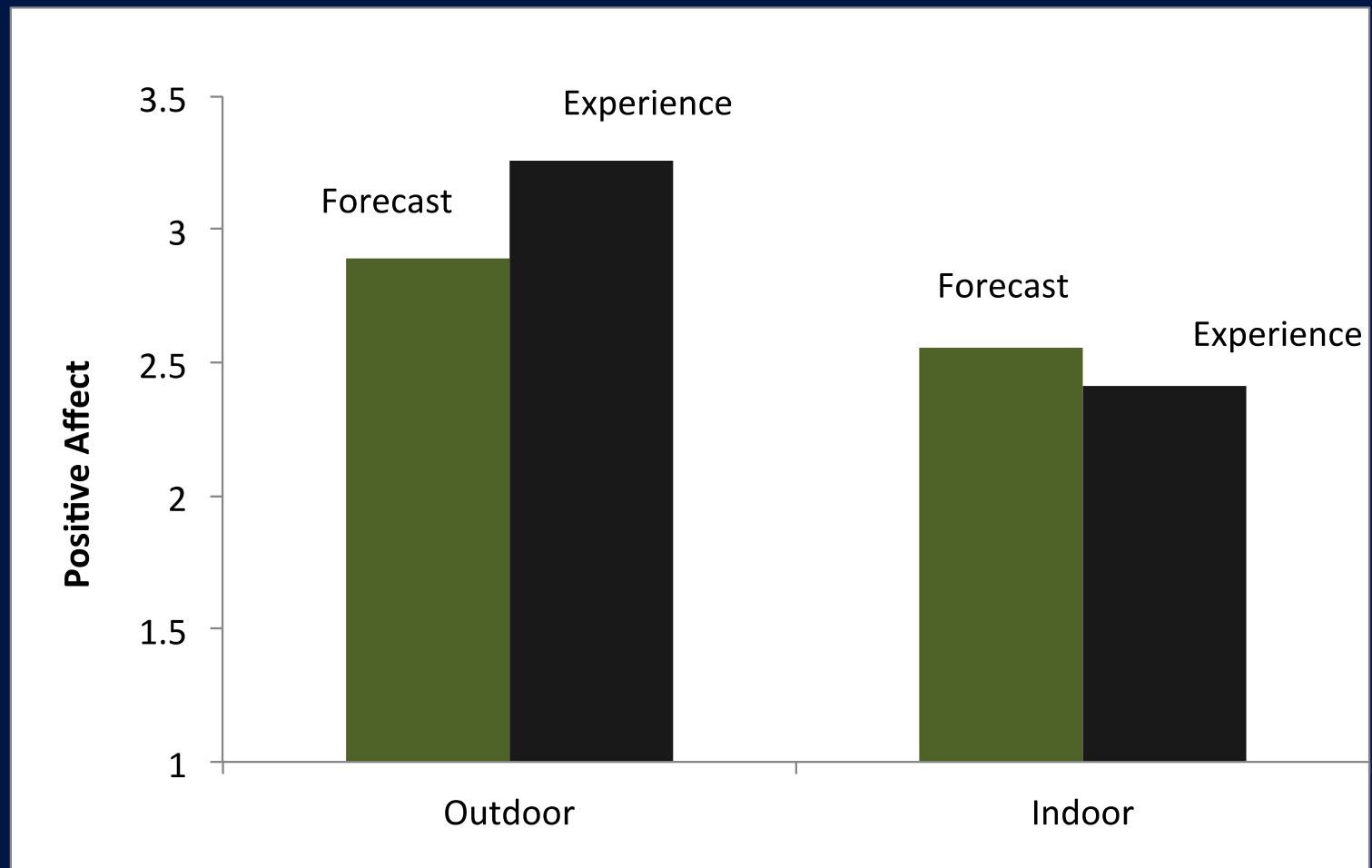




Walking Study 2

- ❖ Similar methodology as study 1, but added...
 - ❖ Pre-walk affective forecasting - **predictions** of happiness (positive/negative affect)
 - ❖ **State** happiness measured after walk
- 

People under-predict the benefits of outdoor walks



Walking Study 3

- ❖ Replicated results from studies 1 and 2 with different design
- ❖ Random assignment to walk location
- ❖ Random assignment to *either* predict *or* experience
- ❖ Mood benefits of nearby nature are underestimated; Forecasting errors occur both between and within person



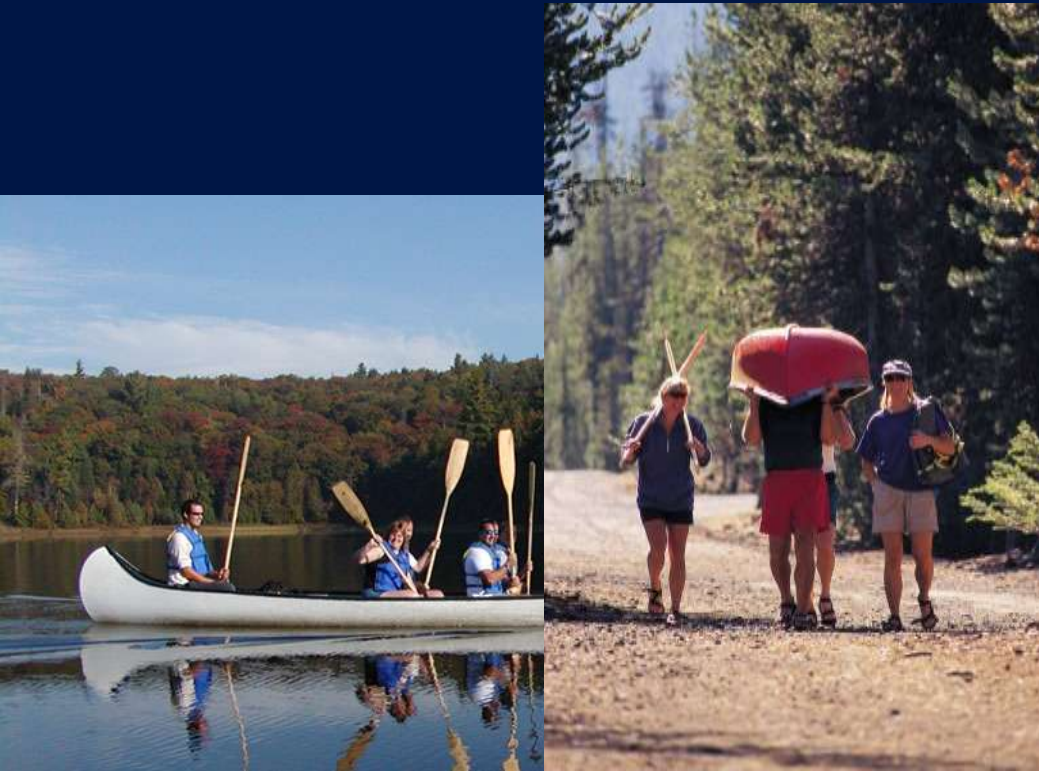
Forest ecology walk

- a look at forest ecology patterns and processes

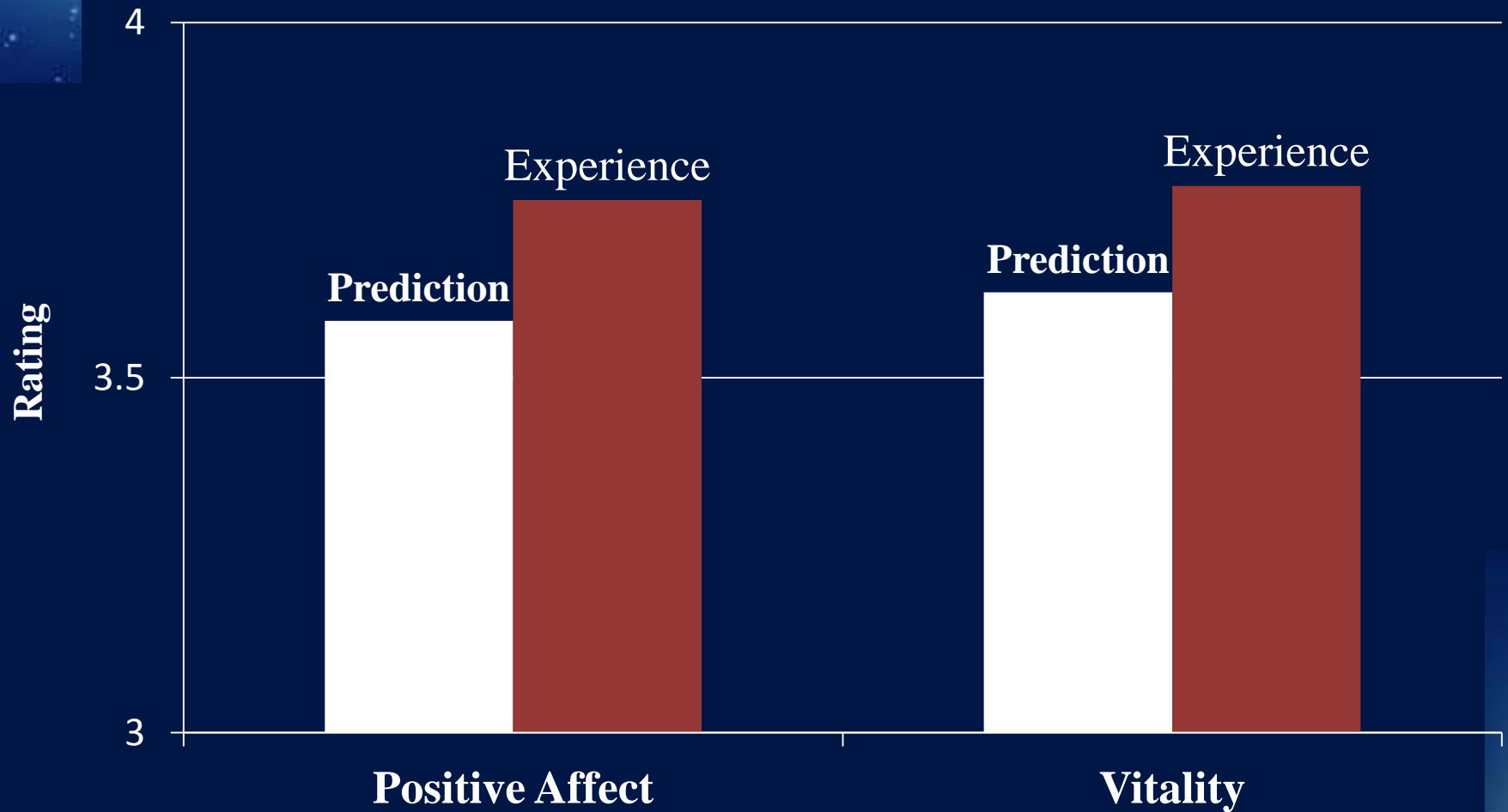


Mock canoe trip

- paddle and portage through a 5 day canoe trip in 2 hours, activities



Even outdoor educators err in affective forecasting

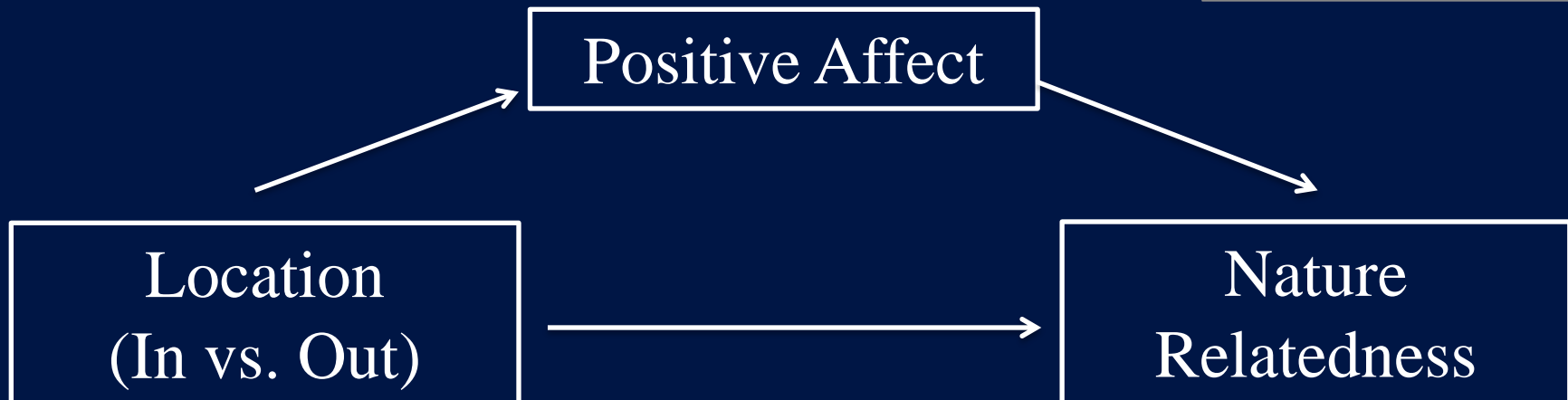
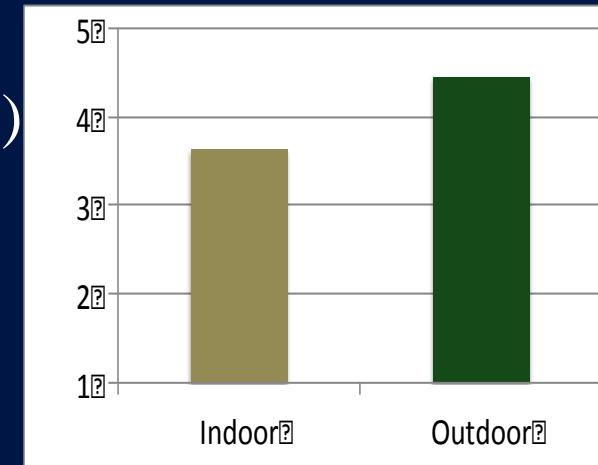


Changing Nature Relatedness (in the short term)

Campus walk studies

(INS)

(The happy path to sustainability)



Promoting Nature Relatedness

Does being a 'citizen scientist' affect mood and connectedness with nature?

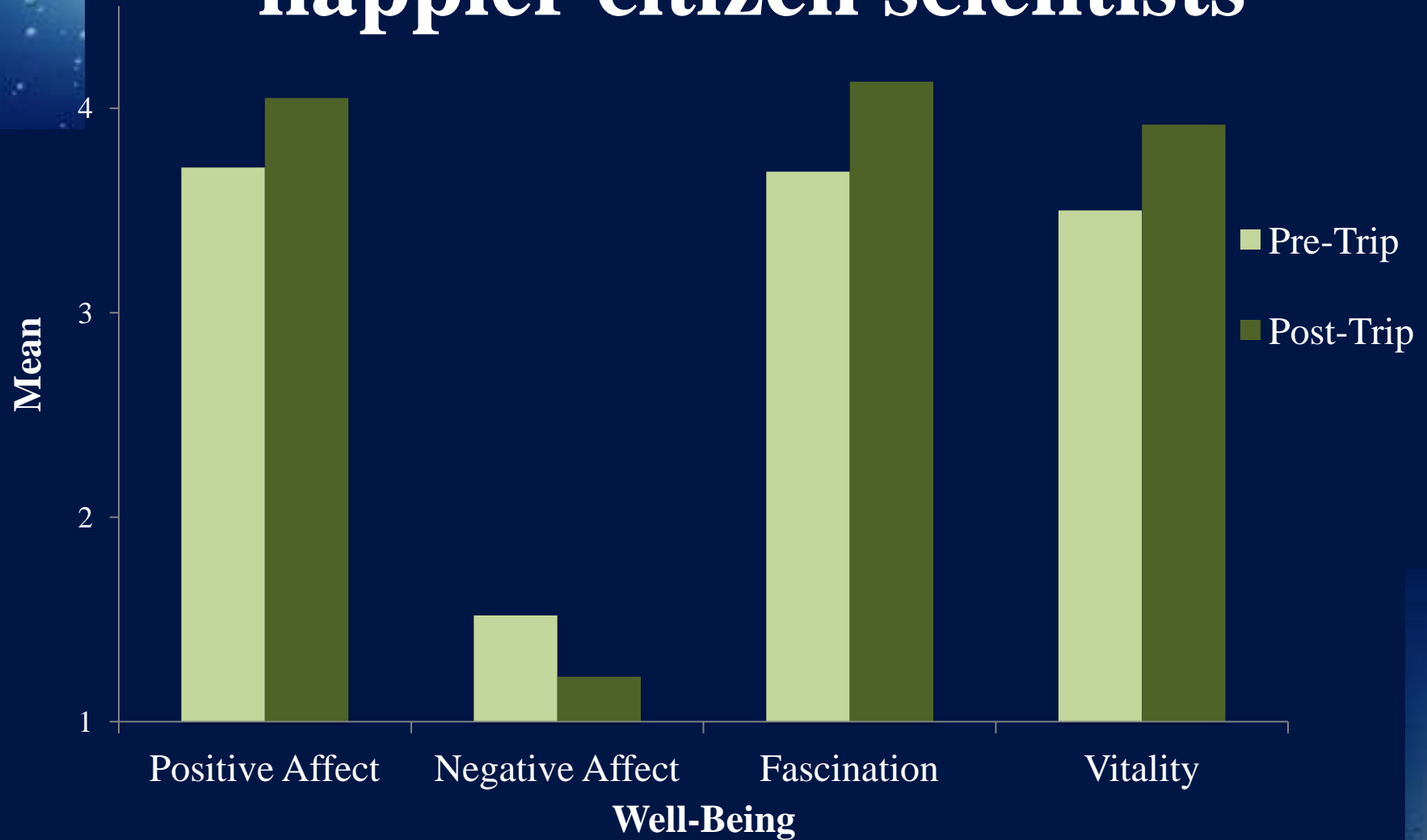


Promoting Nature Relatedness

NON-INVASIVE GRIZZLY BEAR TRACKING STUDY



More nature related, happier citizen scientists



Nature Relatedness Research

Ecology + Psychology = WILDLIFE
CSI STUDY

A Field Guide to Compost Visitors

Citizen Science at Work



[Introduction](#) [Alphabetical Species Listing](#) [Taxonomic Species Listing](#) [Glossary](#) [Literature](#) [About](#)

Red Fox (*Vulpes vulpes*)



Field Guide

- [Birds – Taxonomic Listing](#)
 - Wild Turkey (*Meleagris gallopavo*)
 - Turkey Vulture (*Cathartes aura*)
 - Red-shouldered Hawk (*Buteo lineatus*)
 - Red-tailed Hawk (*Buteo jamaicensis*)
 - Mourning Dove (*Zenaidura macroura*)
 - Barred Owl (*Strix varia*)
 - Red-bellied Woodpecker

Future Directions and Applications

- Interventions – engage people through citizen science to foster both NR and well-being
- Urban Design (health promotion and policy, interdisciplinary collaboration)
- Messaging (framing, health)



I ♥ TAP WATER



alternative messaging?



alternative messaging





FOR THE **LOVE**
OF NATURE

Benefits of Connectedness

- Complementary, not competing goals
- Health of people and the planet are interconnected (e.g., active commuting)
- Intrinsic motivation is sustainable
- Understanding NR levels of target audience allows for tailored messaging/interventions



Happy People, Happy Planet





Thanks to

Jassandre Adamyk

Genevieve Brown

Lauren Finney

Mary Gick

Megan Graham

Zsuzsa Grandpierre-Nagy

Jennifer Rouse

Gregg Treinish

Robert Hill

Raelyne Dopko

Steven Murphy

Logan Nealis

Stephanie Pineau

Scott Smedley

Rob Toynbee

John Zelenski

Social Sciences and Humanities Research Council





Thank You!

Contact: **elizabethnisbet@trentu.ca**

Psychology Department
Trent University
DNA C104
Peterborough, Ontario
Canada K9J 7B8
(705) 748-1011 ext. 7855
fax: (705) 748-1580

naturerelatedness.ca

