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Teaching *Current Directions in Psychological Science* offers advice and guidance about teaching a particular area of research or topic covered in this peer-reviewed APS bimonthly journal, which features reviews covering all of scientific psychology and its applications.

Psychological Science's Contribution to a Sustainable Future

Going Green: The Cognitive Benefits of Nature

Psychological Science's Contribution to a Sustainable Future

By David G. Myers

Eom, K., Papadakis, V., Sherman, D., & Kim, H. (2019). The psychology of proenvironmental support: In search of global solutions for a global problem.Current Directions in Psychological Science, 28, 490–495. https://doi.org/10.1177/0963721419854099

Spaceship Earth faces the looming threat of global destruction:

- *Greenhouse gases are increasing,* with 45% more CO_2 in the atmosphere than before the Industrial Revolution.
- *Sea and air temperatures are rising,* with annual global temperatures on the rise and record highs outnumbering record lows by 6 to 1.
- *Plant and animal species are migrating* toward the poles and higher elevations.
- *Ice and snow packs are melting,* and Arctic and Greenland ice is noticeably shrinking.
- *The seas are rising,* as residents of Arctic villages, southeastern US coastal cities, and South Asian islands know well.
- *Extreme weather is increasing,* and heat waves, drought, fires, hurricanes, and floods are becoming more intense.

And climate change has only begun, making these trends mere harbingers of a future that likely will entail increased human death, displacement, trauma, and conflict.

So, ask Kimin Eom (Singapore Management University) and Viki Papadakis, David Sherman, and Heejung Kim (University of California, Santa Barbara), what contribution can psychological science make to our understanding of proenvironmental action and policy support?

Their research explores person–culture interactions — and, specifically, the contexts in which people's actions in support of a healthy and sustainable environment are more driven by external social norms or

by internal beliefs and attitudes. They note three ways in which our social identities matter:

Cultural individualism vs. collectivism. In individualistic contexts such as the US, personally held concerns about the environment predict purchases of environment-friendly products and support for green policies. In collectivistic contexts such as Japan, prevalent norms more often guide behavior.

Socioeconomic status (SES). In high-SES contexts, personal beliefs about climate change predict support for proenvironmental policies and donations to such causes. Low-SES contexts reduce individual autonomy and control. Survival more often entails collaboration and coordination with others and responsiveness to social norms.

Religion. Nonreligious people tend to value self-expression, which increases the influence of their personal awareness and concerns about the environment. Among those who are highly religious, divine moral mandates matter more, such as (in Christianity) the obligation to serve as stewards of a God-given planet.

Ergo, say Eom and colleagues, effective persuasion strategies may differ depending on the context. In individualistic, high-SES, or nonreligious contexts, persuasion involves targeting individuals — by changing or activating their awareness and attitudes. In collectivist, low SES, or religious contexts, it involves targeting social expectations — by changing or activating environmentally supportive norms.

These insights can be added to the growing list of psychological tools for shaping public opinion and action. Can your students brainstorm additional persuasion tactics — perhaps when challenged to imagine how they might influence an environmentally sustainable behavior of their choice, such as eating less beef or driving less? Here, for example, are other psychological principles for climate educators (adapted from Myers & Twenge, 2019):

- *Connect your message to your audience's values*. For a conservative audience, emphasize restoring the environment to how it used to be, and protecting national security by diminishing dependence on foreign oil.
- *Use credible communicators*. Messages may be better received from sources the audience can trust and respect. (Who might this be in your campus context?)
- *Think local*. Although climate change is global, people respond more strongly to threats that affect them personally — droughts in one place, fire risk, floods, or sea rise in another. (What are your local concerns?)
- *Make communications vivid and memorable*. Harness the power of the availability heuristic with dramatic examples. Make messages concrete: "The Earth has a fever."
- *Nudge people by using "green defaults."* Program thermostats to return to energy-saving settings until temporarily reset. Have room lights turn off in the absence of human motion.
- *Frame risks and solutions effectively*. Explain CO_2 as a "heat-trapping blanket." Propose a "carbon offset" rather than a "carbon tax."
- *Create incentives.* What we reward, we get more of (as in carpool lanes and solar power rebates), and what we punish, we get less of (as when shifting taxes to carbon consumption).
- *Encourage postmaterialist values that support human flourishing.* Educate people to understand why materialism fails to satisfy and to define quality of life in more relational and spiritual terms.

A persuasion exercise also could be adapted to other issues that students may care about, such as encouraging vaccination, creating a more welcoming climate for LGBTQ students, or campaigning for a candidate. In her Introduction to Psychology course, fellow columnist Cindi May engages students "in a service learning project in which they work in groups to select and advocate for an issue of their choosing. They have to develop an advocacy plan based on psychological principles, implement the plan, and then create a report that explains/justifies their techniques and discusses their success (or failure)."

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Going Green: The Cognitive Benefits of Nature

By Michael Scullin and Cindi May

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Microsoft Founder Bill Gates is famous for innovating solutions to complex problems. Unlike some business people, his insights do not always arise in cubicles, board rooms, or office spaces. Instead, Gates relishes in taking "think weeks" at his lake house and working on problems while walking through the area's wooded trails. As told in the 2019 Netflix documentary *Inside Bill's Brain* (Silberberg, Stott, & Guggenheim), Gates does "his best thinking while he's walking . . . it helps him somehow to organize his brain." Scientists agree that walking and other aerobic activities benefit cognition, but is there potentially something additive about walking in a *nature* setting?

Kathryn Schertz and Marc Berman (2019) argue that exposure to nature — via active walking or passive viewing — benefits cognition. Indeed, mountains of correlational and experimental data support their claim that nature specifically benefits working memory and controlled attention. Some impressive findings include the following:

Walking for 50 minutes through an arboretum improved attention task performance relative to walking for 50 minutes through downtown. Season didn't matter: A stroll in freezing weather improved attention as much as a stroll on a warm day (Berman, Jonides, & Kaplan, 2008).

Working memory developed faster over 12 months in children (N = 2,593) who had greater green space around their schools (as quantified by satellite imagery), even after controlling for individual and neighborhood-level socioeconomic status (Dadvand et al., 2015).

Attention task performance was greater in public-housing residents who were randomly assigned to live in buildings with greater surrounding green space (Kuo & Sullivan, 2001).

A walk in the woods is not always an option, particularly for people living in urban areas or those with mobility issues. Fortunately, the cognitive and affective benefits of nature can be observed within minutes from the seat of your chair. Use this 3-minute "Picture Viewing" activity with students: https://tinyurl.com/NatureActivity. Students will first view pictures of urban environments, followed by mood and alertness ratings. Then they will repeat the activity with pictures of nature environments (or, download the activity and randomly assign students to conditions). Mood and alertness ratings will increase following viewing nature pictures (Berman et al., 2008), listening to nature sounds (Van Hedger et al., 2019), or watching the documentary *Planet Earth* (Zelenski, Dopko, & Capaldi, 2015).

After the activity, engage your students in scientific reasoning about designing experiments on nature. For example, in small groups have students answer these questions:

- How can "nature" be operationally defined?
- Which third variables may contribute to nature-cognition associations?
- What is an appropriate control group in an experiment on nature exposure?

After some initial brainstorming, help guide students by suggesting they consider how a computer would classify pictures as urban versus nature environments. By taking a reductionist approach, researchers have identified that nature images are characterized by an abundance of nonstraight edges, by minimal color saturation, and by low hue variability (Berman et al., 2014). As an example, think of nature scenery in terms of roundness (mostly nonstraight edges), color similarity (mainly green hue), and realistic paleness (minimal color saturation).

While the reductionist approach can define components of "nature," and mechanisms by which nature may be pleasing, whether perceiving these features alone benefits cognition remains an open question. Put the question to your students — ask them to theorize *why* exposure to nature environments benefits cognition. Is it classical conditioning (positive experiences), a shift to an atypical context (devoid of work), or better air quality? After generating some theoretical explanations, compare students' responses to leading theories in the field:

- Stress-Reduction Theory: Exposure to nature produces a positive mood response, alleviating the individual of stressors that impair cognition (Ulrich, 1983).
- Attention-Restoration Theory: Involuntary, "soft fascination" with the perceptual features of nature — without any requirement to effortfully reorient attention — allows top-down attention systems a chance to replenish (Kaplan, 1995).
- Prospect-Refuge Theory: Because of evolutionary shaping, only natural landscapes with greater prospect (clear field of view) and greater refuge (more places to hide) will be aesthetically pleasing and attentionally restorative (Appleton, 1975).

As a final activity, challenge your students to translate their learning into their everyday lives with the "Green Exercise Challenge." Nudge them to take a 50-minute walk through green space on campus or along a hiking trail by offering a microincentive on the next quiz (Sundstrom, Hardin, & Shaffer, 2016). If you are on a transportation-limited urban campus, you might suggest that students walk on a treadmill while watching free "nature walk" videos (e.g.: https://tinyurl.com/WalkNature). Encourage students to take the walk without distractions (i.e., leave the cell phone at home), because solitude boosts creative insight and problem solving (Kaufman & Gregoire, 2015). Just like Bill Gates. At the beginning of the

next class, invite students to share their experiences, reflecting on how their experience fits with stress-reduction theory, attention-restoration theory, and prospect-refuge theory.

Winter is coming, but nature walks are beneficial across all seasons. So let's all take a page from Bill Gates' nature playbook. This season, go ahead and face unafraid all of those cognitive plans that you've made. Take a walk in a winter wonderland.

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