

Teaching Environmental Psychology: Demonstrations and Exercises

Paul A. Bell

Colorado State University

Thomas C. Greene

St. Lawrence University

Britt L. Mace

Southern Utah University

Patricia A. Romano

Colorado State University

Jacob A. Benfield

Pennsylvania State – Abington

Gretchen A. Nurse

Colorado State University

Environmental psychology is concerned with the interaction of people with their built and natural environments. We provide a history of the field on our chapter website www.colostate.edu/Depts/Psychology/environmentalpsych/supplements.

Today, a course in environmental psychology can incorporate material that is applicable to either the built or natural environment, or to both. Other labels have also emerged that instructors might incorporate in the course. Barker's (e.g., 1968, 1990) ecological psychology involves a special set of principles (e.g., the behavior setting, staffing) and methods (e.g., field observation) to study how communities or aspects of communities influence social interaction and outcomes. Conservation psychology is a movement that emphasizes the use of psychological principles to encourage conservation and preservation of natural resources (see <http://www.conservationpsychology.org>). Ecopsychology is a movement that emphasizes therapeutic benefits of interacting with nature (see <http://www.ecopsychology.org>).

In this chapter we describe exercises and demonstrations that illustrate principles that instructors often teach in environmental psychology courses. Instructors can conduct many of them in the classroom, but others require observation or manipulations in other settings on or off campus. Some are more properly homework assignments that take more time than is available in a typical class period. We have ordered them according to the chapters in the textbook with which we are most familiar (Bell et al.'s 2001 *Environmental Psychology*), but instructors can use them with any textbook or in a course designed around specific readings. Specifically, the order of our coverage is research methods; nature and human nature; environmental perception, attitudes, and cognition; theories; noise; weather and climate; disasters and toxic hazards; personal space; territoriality;

residential environments; institutional environments; work, learning, and leisure settings; and changing behavior to save the environment. In the materials that follow we describe exercises we use on the topics we cover. Unlike most other chapters in this book, we are not describing exercises that we took from published sources with documented outcome data but rather exercises that we created and modified over the years or that we borrowed from other instructors. Supplemental materials, including handouts for students and some additional specialized exercises, are located on our chapter website, www.colostate.edu/Depts/Psychology/environmentalpsych/supplements.

Research Methods in Environmental Psychology

Accretion and Erosion

Environmental psychologists may use any of the research methods that other psychologists use, but there are several types of measures and data collection techniques that are common and easy to demonstrate in the classroom. One measure is accretion, or evidence that humans have used a setting implied through things they have added to it, such as litter, graffiti, fingerprints or footprints, or functional items left behind (e.g., a coat, pen, or book). Another measure is erosion, or evidence that people have used a setting implied through things they have removed from it, including indications of wear and tear such as worn carpet, reduced supplies of paper towels or toilet paper, or missing chairs. We ask the students to be detectives and roam around the current or an empty neighboring classroom or the building lobby and note examples of accretion or erosion that tell them about the activities that have taken place in that setting. We have them note what other aspects of the setting give clues about the

activities that have occurred there. Upon returning to their seats, we ask them to share their findings and list them on the board or projection system. We then collapse their observations into categories according to similarity and summarize all the events that we believe likely happened in the setting even though we did not actually observe the events. For example, some common findings include: everyone in the classroom faced a certain way because that's the way the chairs or desks are facing; a previous class was chemistry because there are chemical formulas on the board; or someone was bored or inattentive because he/she had time to doodle on the desk. Additionally, finding worn seats or graffiti or litter more often in some parts of the room may indicate differential preference for those areas by certain occupants or environmental cues that permit or promote the behavior.

Behavior Mapping

Behavior mapping is a structured observational technique in which one observes and records behaviors. This demonstration is an example of the research method of *field observation*. After teaching specifics of how to conduct field observation (e.g., Loomis, 1987), I (Romano) ask individual students to select a setting and to observe it for 30 minutes. Potential settings include the library, food court, or popular student "hang out" or walkway. I ask students to construct an observational template (i.e., a diagram of the setting and a checklist of potential behaviors, including an "other" category with space to add detail). Examples of observations could include the activities that the people present engage in, how often each person in a dyad talks to the other, which direction people turn at a specific choice point (e.g., at the intersection of two sidewalks), or how many people are texting or talking on their cell phones. Students complete their field template along with a brief report about the experience and the setting.

Other Activities on Our Website

We have posted other activities for teaching research methods in environmental psychology on our chapter website (www.colostate.edu/Depts/Psychology/environmentalpsych/supplements). On the website, we include an activity on Experiments, Surveys, Field Research, and Archival/Available Data; one on ABAB quasi-experimental designs; and one on Visual Communication.

Nature and Human Nature

Introduction to Biodiversity Exercise

Only small enclaves of "nature" survive on most college campuses. Should we eliminate native plants, replacing them with groomed zones that are planted and maintained with just one species of grass? Naturalists sometimes formally assess vegetative variety by generating an inventory of the species (even microscopic) in carefully measured plots, a technique that is easily adapted to more informal purposes. This exercise asks students to confront commonly held assumptions, and it can spark discussions about what makes a landscape pleasant, what differentiates a flower from a weed, and whether plant and animal diversity is unsightly or an amenity.

I (Greene) first show slides of well-manicured lawn or forested areas of campus and slides of "wild" areas of campus such as an area behind a maintenance building or along a drainage ditch. I ask which areas are more aesthetically pleasing and why. Photographs can illustrate common "weeds" such as dandelions, familiar "flowers" such as tulips or petunias, and more ambiguous species such as Queen Anne's lace or ornamental thistles. Students should recognize that labels such as "weed" are often arbitrary. I introduce the following exercise.

In groups of three, students use a 1.5ft piece of string and a stick or pencil to evaluate four pre-identified areas. I recommend two open lawn areas, and two areas with less of a monoculture. Ideally, one of the areas with less monoculture would be a "rain garden" or other planned area with established native species, but any weedy "back" area of campus will work. At the end of the exercise the class reconvenes to discuss findings. Almost certainly, the "weediest" areas show the greatest biodiversity. The discussion can include the class reactions to the aesthetics of the various areas, judgments about the value of plants and animals, and the impact of campus aesthetics on recruitment, quality of life and sense of place. For a copy of a sample student handout, see (www.colostate.edu/Depts/Psychology/environmentalpsych/supplements).

Landscape Assessment Using Slides of Natural and Built Landscapes with Rating Scales

I (Mace) choose a collection of 20-30 images from different types of natural and built environments and present each scene for 15-20 seconds with a computer projector. Students then use bipolar adjective Likert scales (e.g., *1=low, 7=high*) to rate each scene on variables such as scenic beauty and preference (see Mace, Bell, & Loomis, 1999). Students then work in groups to calculate means and

look for categorical differences in their individual and class ratings. This demonstrates one effective way to complete landscape assessments. If the images represent several different types of natural environments, this exercise can also be a useful test of biophilia and biophobia. For example, are scenes that imply provision of food and shelter high in preference and those that imply risk or threat low in preference (see Wilson, 1984)?

Environmental Perception, Attitudes, and Cognition

Environmental Attitudes

It is fun for students to see how much they may agree or disagree with others in the class on attitudes toward preserving or exploiting the environment, and whether differences are associated with background or student major. One source for a simple environmental attitudes scale is <http://www.ssi.nrcs.usda.gov/SSIEnvPsy/nrcs/sequoia.html>. Numerous other environmental attitude and behavior surveys exist on the conservation psychology website, <http://www.conpsychmeasures.com/CONPSYCHMeasures/index.html>. An environment-related implicit attitudes test exists at <http://www.conservationpsychology.org/game/>.

We choose two or three scales and discuss them in class to describe research design and how psychologists construct surveys. Students analyze individual questions to try and see how the questions relate to one another and how they differ, and these analyses open the door to a discussion of factor analysis, reliability, and validity in survey design and measurement.

Alternatively, we use one or many of these scales to collect data as part of a class exercise. We have students choose one survey to distribute to 5-10 of their friends and neighbors. Once the data are complete, groups of students analyze the data in class to compare responses by student major, size of hometown, or endorsement of activities such as hunting, hiking, or running.

Design a Survey on a Specific Environmental Issue Using the Theory of Planned Behavior/Theory of Reasoned Action

The Theory of Planned Behavior (TPB; see <http://www.people.umass.edu/aizen/tpb.html>) is useful in predicting how well attitudes, norms, and perceived control predict behavioral intentions and behavior. Following a lecture on the Theory of Planned Behavior, we (Nurse, Mace) have groups of students work together to create a survey on an environmental issue of their choice using TPB.

Environmental psychologists use TPB to assess very specific issues involving deliberate behavior, so it is important to discuss with students how the survey questions could have different meanings for different respondents. From this activity students realize the difficulties of survey design and question writing.

Biophilia/Environmental Perception

Biophilia asserts that we have a natural affinity to elements of nature (Wilson, 1984). Biophobia asserts that we have much to fear in nature (e.g., predators, hazards, and disasters). For a relevant exercise I (Mace) take the class outside to show the application of the biophilia hypothesis and attention restoration theory (see the subsequent Theories section). I choose a semi-natural area on campus that fits the properties of a savanna-type environment, i.e., having a copse of trees or boulders that provides some shelter and a wide surrounding view. I have students spread out and choose spots where they are comfortable and can take advantage of the view. I do not allow them to use phones or computers during the exercise. Students sit in this place for 10 minutes and then record their thoughts or their perceptions. I then direct them to lie flat on their stomachs and focus their attention on the blades of grass or the microenvironments right under their noses. I leave them in this orientation for 10 minutes, after which they jot down their perceptions or thoughts or sketch a scene. Last, I have them flip over and lie on their backs, changing their perceptual orientation to the sky above. Following 10 minutes in this position, I have them complete the writing component one last time and then group everyone together for a short discussion. I ask the group specifically if they found the exercise restorative and have them reflect on the connections to biophilia.

Cognitive Mapping

A cognitive map is our brain's representation of the spatial environment (see Bell et al., 2001). One approach to helping students understand the concept of a cognitive map is to have them sketch the route they take to get to a particular location (i.e., to create a sketch map; see Lynch, 1960). The location needs to be one that they travel to frequently, such as home, work, or school. Once they have completed the sketch, we (Romano, Nurse) ask them to evaluate their maps. For example, do they rely on landmarks or distance? Did they create the map from an on-the-ground or aerial view? Can they identify paths (i.e., shared travel corridors such as streets, walkways, or riverways); edges (i.e., limiting or enclosing features that are not functioning as paths such as a seashore or wall); districts (i.e., larger spaces that have some common character such as Fraternity Row or

Chinatown); nodes (i.e., major points where behavior is focused, typically associated with the intersections of major paths or places where paths are broken or terminated, such as a traffic circle, a downtown square, or two freeways intersecting); and landmarks (i.e., distinctive features that people use for reference points and that are typically visible from a distance, such as a monument or tall building)? Can they identify common errors in cognitive maps: incompleteness (e.g., major districts or nodes omitted); distortions (e.g., things too close together, too far apart, too big or small, or at the wrong angles); augmentations (nonexistent features added to the map)? They can test for these errors by downloading an aerial photo of the area from popular mapping websites.

Campus Mapping with Paper Maps of Campus, Colored Pencils, and Tracing Paper

Although cognitive maps represent subjective memories for environments, graphic maps are also useful for collecting and analyzing spatially distributed information. Increasingly, this information is stored and analyzed digitally as part of a Geographical Information System (GIS). As is true of other computerized data analysis, GIS systems can process huge volumes of spatial information efficiently (Golledge, 2002). To avoid the expense and the long learning process necessary to use typical GIS programs, this exercise gives students a taste of geographical analysis using the important analytic approach pioneered by Ian McHarg (1969).

We (Greene, Mace) print a simple black-and-white campus map for each student and create a color-coded 5-point preference scale (*green=prefer very much, purple=prefer very little, with 3 other colors in between*). Each student receives 5 corresponding colored pencils. Students should color their individual map using the scale to represent areas they like and dislike on campus. The instructor asks groups of students to compare maps or even to draw a “combined map” after reconciling their opinions. The instructor then asks the students whether there are landscape features that predict preference. In our experience, high preferences are usually expressed for semi-natural grassy or forested areas on campus and students dislike parking lots as well as certain types of building architecture or function.

To further demonstrate GIS as a decision-making tool, we sometimes extend the exercise by asking small groups of students to consider potential sites for a new outdoor classroom. Using a series of four tracing paper overlays, participant groups create shaded areas they collectively consider to be too noisy, too far from concentrations of potential classes, too sloped or too uncomfortable (e.g.,

hardscapes such as asphalt or brick are not very “sitable”). If students shade each of the negative factors and all four are overlaid, the remaining “clear” spaces identify potential classroom sites. Sample GIS analysis maps from our own research, which are also useful as space planning tools, can be found on our chapter website. These may illustrate common pedestrian routes, preference zones or areas perceived as dangerous. This exercise is appropriate for sections on cognitive mapping and campus planning and design.

Theories

Arousal Theory

Environmental psychology involves a number of perspectives used to understand the links between people and their natural or built environments. The Arousal Perspective examines features in the environment that stimulate or overstimulate us physiologically and psychologically (e.g., Dientsbier, 1989). A simple and harmless way to introduce this concept is to have students look at a color wheel on a projected slide and identify the color that they find most stimulating and the color they find the most calming. Color wheels are easy to find on the Internet, and some even include numbers by each color. I (Romano) ask students why they picked the colors they did and then ask what other kinds of stimuli or experiences give them the same reactions. I then ask students to identify a stimulating setting and a calming setting. I then ask if it is the whole setting itself or individual elements in the setting that lead to their reactions. To the extent they choose individual elements, the implication is that by modifying elements within the setting we can design environments to achieve desirable outcomes. Thus, the discussion concludes with showing why designers have different elements in mind when designing a shopping mall versus a doctor’s office waiting room for different levels of arousal.

Attention Restoration Theory

Attention Restoration Theory (ART; Kaplan, 1995) proposes that stressful, effortful mental tasks such as a complex class assignment, walking through a crowd, or dealing with a difficult employee decision deplete our attention and lead to directed attention fatigue (e.g., the way a typical student feels after taking the last final exam of the year). ART proposes that we restore our attentional capacity by finding a different, involuntary attention activity that requires little effort, such as a simple fascination (e.g., watching a hummingbird or listening to soft music). A museum visit or watching a pleasant natural scene might provide such a cure.

To prepare for this assignment, I (Romano) create a series of slides that depict a range of natural land, water, or sky photos (e.g., the National Park Service website at <http://www.nps.gov> has many such photos), and students observe each photograph for the same amount of time (i.e., 5 or 10 seconds). Also, I construct a brief Likert scale questionnaire that asks students to rate the degree to which they find each scene restorative. When students have rated the slides, we discuss their ratings as a class, and then students tell me about places in their lives that they tend to find restorative. I then ask them to assume they plan to move into a new apartment and to consider what window views they would prefer and why.

Barker's Ecological Psychology

Ecological psychology posits that a physical site usually evolves to facilitate the behaviors that are most common in it and that we also modify behavior to fit the constraints of spaces. For instance, instructors may chastise students who are loud in classrooms but encourage boisterous behavior in sports venues. Conversely, over time we either modify buildings to fit evolving behavior requirements or they fail and we raze them (e.g., Barker, 1968, 1990).

A favorite demonstration for me and my students involves a field trip including the college chapel and a library. In the chapel I (Greene) deliver a brief account of Barker's theory of behavior settings, and, in the settings I choose for this activity, I note that lecturing from a raised pulpit has architectural implications of its own. Then I ask students to sing the well-known song *Row, Row, Row Your Boat* in rounds. Some students admit to being uncomfortable singing a secular song in a church, but most seem to enjoy themselves until the next stop – the campus library. With a librarian's permission, I insist on another chorus among the books. It usually takes more than one try to get much volume, and virtually everyone notices how out of place the behavior is. At the end of the tour, I ask students how they felt singing in each setting and whether it was more awkward in one area than the other. Another option is to take a sound meter along to see whether sound levels in each setting match students' levels of discomfort. Settings to explore on other campuses might include concert halls, outdoor plazas, or the student center.

Noise

Noise sensitivity demonstration

Noise, unwanted sound, is one of the most chronic of environmental stressors. Its effects on

humans include both physiological and psychological distress (e.g., Barber, Crooks, & Fristrup, 2009; Glass & Singer, 1972). Although the categorization of one sound or another as noise depends on several factors unique to the situation as well as sound itself, individual characteristics such as noise sensitivity shape not only how people react to a sound but also how people set up their environments in the first place. This activity demonstrates the person-environment interaction as it applies to ambient sounds, noise sensitivity, and the home environment.

Students complete a brief checklist of noise sources found in their bedrooms along with a short version of Weinstein's (1978) Noise Sensitivity Scale. They then run correlations or *t*-tests between high vs. low noise sensitivity groups. I (Benfield) also ask a few of the students who scored on the extreme ends of the noise sensitivity scale to discuss their responses from the noise survey for quick comparisons in class. Those with higher noise sensitivity almost always have fewer noise sources in their bedrooms. This outcome demonstrates that those who are more sensitive to noise choose or adopt environments that are quieter. A link to a shortened version of the scale is www.colostate.edu/Depts/Psychology/environmentalpsych/supplements.

Sound Logging/Isobel Mapping Using a Decibel Meter

Sound logging is a simple exercise to orient students to the auditory world and the psychology of sound and noise perception. I (Mace) take the class outside and find a bustling campus area. I have the students find a spot away from others and listen to the sounds around them. Students should write down the sound sources and the times the sounds started and ceased. After 10 minutes of sound logging in the busy area of campus, they complete the same task in a less-used, quieter area. I then have students break into small groups and compare their sound logs.

Because I have access to decibel meters, I have groups of students complete isobel mapping (i.e., a two-dimensional sketch of sound levels across a landscape) to show how sound propagates. Students begin at a central location close to a loud noise source, such as a main street on or near campus. They take decibel measurements at this location and then move about 100 yards in one direction. They stop and take decibel measurements. They walk another 100 yards in the same direction and again take decibel measurements. They continue completing the decibel measurements at least 5 times in each direction away from the central location. Once all groups have completed their measures, I have students complete an isobel map by sketching the location on paper and drawing lines around the

central location representing the various decibel levels (think of a topographic map that depicts elevation). The end result is a visual representation of the loudness of a given location, which can lead to a discussion about consequences of noise levels in different locations. An example of an isobel map of Stanley Park in Vancouver, B.C. is located at <http://www.sfu.ca/sonic-studio/handbook/Isobel.html>

Noise, Natural Sounds, and National Parks

The National Park Service has a Natural Sounds Program that conducts research on sounds in parks, including natural sounds and noise created by humans (aircraft overflights, road vehicles, snowmobiles, human voices). The website is www.nature.nps.gov/naturalsounds/. After students explore the website, I (Mace) have them use a sound level meter to compare sounds across campus. Are the more natural areas quieter? Are there areas where noise is encouraged? Are there areas where students go to get away from noise yet where it is common for them to listen to MP3 players or similar devices? Can they think of implications when park visitors experience sounds in different places?

Weather and Climate

Tracking Weather Forecasts

This exercise involves tracking weather forecasts (5 to 7 days ahead) for a two-week period and comparing the accuracy of forecasts to the actual conditions on dimensions such as temperature and precipitation. I (Mace) create a worksheet so there are three columns for each of the next five days. Columns are used to record the forecasted high and low temperatures as well as the chance of precipitation. Students should track the weather forecast for two locations, one local town and another more distant location. Some useful internet sites for weather forecasts include www.wunderground.com and www.weather.com. Each day students record the forecast to track changes in it over a five-day period. Students should record the actual highs, lows, and precipitation once the given day has passed. Students compare the actual results with the series of forecasts. A clear pattern typically emerges showing a high degree of forecasting accuracy for up to 48 hours but less accuracy for longer-range predictions. Students can access historical data at the www.wunderground.com website to allow comparisons with daily weather events by location from the past. For a longer assignment, students can check the long-term forecast on the Farmer's Almanac website, www.farmersalmanac.com, and compare that site's more folk approach with the more scientific forecasts provided by the National Weather

Service. The exercise can be useful in a discussion of why people ignore warnings of a disaster.

Disasters and Toxic Hazards

Toxic Exposure – Meth Labs

Environmental psychologists concern themselves with the health effects of natural and built settings. Areas of increasing concern include “meth houses,” built structures, often homes or hotel rooms, that have become toxic due to the cooking of methamphetamine. Meth poison is invisible to the naked eye and can cause short-term symptoms such as headaches and sore throats, long-term serious health consequences, and even death. The cost to clean or demolish a home that has toxic meth exposure is in the tens of thousands of dollars, and only highly trained individuals can clean or demolish these sites. One website about these concerns is <http://www.kci.org/index.html>. I (Romano) download and show one of their videos in class, after previewing it carefully for inappropriate content. I then ask each student to find a news report of a meth lab cleanup, in particular the time and cost of the cleanup, the number of people affected by the toxic exposure, and the reported consequences of the exposure. I lead discussion of what steps, if any, students would take when searching for a home to rent to reduce their risk of renting a place that had hazardous meth or other toxicity. In particular, we discuss whether students are willing to pay a higher rent for assurance that the landlord had checked the facility for toxins.

Natural and Human-Made Disasters

I (Romano) select a natural or human-made disaster that has received wide coverage in the press (e.g., Hurricane Katrina). I have students find, read, and bring to class at least two online news articles about that disaster. I ask students to analyze the article by identifying how it might fit the disaster concepts used by environmental psychologists, such as: (1) magnitude, or the size of the geographic or population affected (e.g., a few homes as typical in a tornado or many communities as typical in a hurricane); (2) event duration, or how long the disaster is physically present and how long it affects people (minutes, hours, days, months, years); (3) low point, or the point at which things are as bad as they are going to get and will now improve over time; (4) warnings, e.g., long-term warnings, short-term warnings, no warnings; (5) crisis effects, e.g. people anticipating the possibility of a disaster versus they were complacent, thinking it would not happen; (6) levee effect, e.g., people settling close to the disaster area thinking they had protection through some sort

of preventive intervention; (7) adaptation, or evidence that people learned to live with the risk of a particular type of disaster because the risk is rather commonplace in the area (see Bell et al., 2001 for details on these concepts). I ask students to share their verbal summary of the article and related concepts in class, and I let the other students offer alternative perspectives on how the disaster fits the concepts.

Group Assignment on Disasters

I (Mace) have students work in small groups (3-4) and research a major historical natural or human-caused disaster. Groups should divide the task of researching the effects of their specific disaster into individual, community, and societal levels. I include both natural and human-caused disasters, as this distinction serves as the main comparison in class discussion. I focus the discussion and comparison on several relevant variables such as the low point, acute stress, and the long-term psychological effects of natural and human-caused disasters. A positive spin to take following this discussion is to have the class brainstorm ways to prevent or prepare for future disasters. Instructors can include information from the U.S. federal government Community Emergency Response Teams (CERT) program (see www.citizencorps.gov/cert/).

Tracking a Specific Storm as It Moves

I (Mace) have students use the Weather Underground website (www.wunderground.com) during hurricane season to track individual storms and stimulate class discussion about many of the dynamics of hurricanes, disasters, preparedness, climate change, and the aftereffects on the community once a hurricane has passed. The Weather Underground provides a wealth of information and data on current and historical storms that generally get students interested in tracking hurricanes, the effects of disasters, and forecasting the weather. It is easy to demonstrate fallibility in forecasts, as not all areas predicted to be hit are hit, and some areas get more severe impacts than forecast. The crisis effect, in which people do not take action, also appears in the reported effects (see Bell et al., 2001 for details on these effects).

Personal Space

How Close Do They Get?

Personal space is the body buffer zone that people maintain between themselves and others (e.g., Sommer, 1969). To illustrate this concept, we have students form two lines 4 or 5 feet apart, each facing the other. Each student should directly face another

student. Students are to walk toward one another and stop walking whenever they feel uncomfortable. Once all of the students have ceased walking forward, we have them observe the distance between themselves and their partner, estimating the distance by counting floor tiles or using tape measures. We ask them to describe any physiological personal space zones and consequences of invasion of personal space.

Personal Space on Campus

After completing the previous activity I (Mace) have students wander around campus looking for estimates of personal space distance variations in public settings. The student center and library provide lots of opportunities for study. An added variation of this assignment is to have students subtly invade another's personal space and to pay attention to the reactions of the other person, especially the nonverbal cues displayed showing discomfort. I address ethical and safety concerns and indicate that invasions should be something that would normally occur, such as when standing in line at a food counter or sitting next to someone on a bus. Additionally, while students are walking around campus, I have them also record examples of territorial markers they encounter (e.g., a backpack or book or coat placed to keep others a little farther away) and what these markers are attempting to communicate. In my experience, students are fascinated by personal space and this exercise can lead to great class discussions.

Classroom Seating and Participation

Instructors know that students have different preferences for where they sit in class, and seating position can make a difference in discussion participation and grades as well as in getting the attention of the instructor (e.g., Stires, 1980). In one exercise I (Mace) provide each student with several copies of a typical classroom seating arrangement, representing the front of the classroom, the back, the sides, and the middle. I have students take one of these sheets to each of their classes for a week and record the seating locations of those who contribute in class either with questions, answers, or discussion. I also have students do a head count so we can take size of class into consideration. We analyze the results in class to see if a pattern emerges where those in the front and middle of each class contribute more.

Privacy Preference Demonstration

Environmental psychologists theorize that privacy is a central component of several environment-based social behaviors including personal space, territoriality, and crowding (e.g.,

Altman, 1975). To help demonstrate to students the impact their own privacy preference can have on their everyday behaviors, this in-class activity exposes students to both a personality scale measuring privacy preference and previous research involving classroom seat selection (e.g., Marshall, 1974; Pedersen, 1994).

Students complete two privacy subscales, score their answers, and, in class discussion, identify themselves as high, middle, or low scorers. In my (Benfield) experience, the higher scoring individuals are on the back row or the end seats of the other rows. The scales are on the chapter website at www.colostate.edu/Depts/Psychology/environmentalpsych/supplements.

Territoriality

Territorial Personalization and Owner Personality Using Trace Measures

Territorial behaviors include controlling access to the space, aggressively defending the space from invasion, and personalization of the space by the owner (e.g., Altman, 1975). Although the first two are harder to observe or demonstrate in the classroom, students can easily observe personalization of space in a residence hall or office. This demonstration combines the trace measure methodology of indirect observation, the self-expressive nature of territorial personalization, and the personality research of Gosling (2002, 2008) to show students how environmental cues can provide information to the outside observer. Similarly, this activity serves as another demonstration of how personality type can influence person-environment interaction. In essence, personalization of one's territory correlates with the owner's personality, and others judge our personality by the way we personalize our territory.

This activity works in several variations depending on the preparation of the instructor or the resources available. Students need to view a primary territory (e.g., bedroom, automobile, etc.) and make judgments about the owner's personality by completing the Gosling personality scales as the students think the owner would. The owner also completes the scales. In class, the instructor compares those personality judgments (i.e., the class member's judgments versus the owner's self-report). Students typically report surprise at how well they can attribute Big 5 personality traits to an individual based on simply observing his or her territory. Several variations on this activity exist. Instructors could ask 3-5 student volunteers to provide pictures of their bedrooms, and the class could try to match each room with each student. With appropriate

consent, students could take a field trip to the residence halls to do direct observations of student volunteers in their rooms. With appropriate consent, the instructor could bring pictures of faculty offices for the in-class observations and discussion. Any of these approaches will demonstrate that how people personalize their living spaces reveals something about their personality.

Residential Environments

Place Attachment Writing Exercise

A great introduction to place attachment is to have students write two or three paragraphs describing one or more of their special places. These places can be built or natural settings, and students should describe the place itself along with the specific reasons why the place is special to the student. I (Mace) have students do this as a homework assignment so they can spend some time reflecting on the places they have known and why the places are important to them. The next class period I share a couple of my special places, and then ask the class to share their places. As part of the discussion, I ask students how they would feel if something detrimental were to happen to their places; students report that the more attachment they feel the greater the sense of loss they would anticipate.

Place Attachment and College Student Retention

Students' high place attachment to their hometowns can lead to homesickness and students spending less time on campus. McAndrew (1998) provides a scale that measures attachment and homesickness. I (Mace) use a shortened version in a Likert-type format to illustrate the relationship in class to show how important a sense of place is to college student retention. I have the students sum their individual scores on the two items and compare their scores with scores of classmates. High scores indicate strong place attachment to the home. I consistently find that the longer the students have been at the campus, the lower their scores. The shortened scales I use can be found at www.colostate.edu/Depts/Psychology/environmentalpsych/supplements.

Work, Learning, and Leisure Settings

Exploring a Museum Environment.

A museum field trip or art gallery visit on or off campus provides a great opportunity to describe numerous design principles and human-environment interaction. I (Benfield) video record students as they begin their tour, taking into account informed consent

issues. At the end of the tour, I show the video and ask why they went the direction they did. I ask what attracted them to particular exhibits and why they bypassed other exhibits, when or if they felt fatigued, and discuss whether this might be due to overload. We discuss whether they found the experience restorative rather than fatiguing. Additionally, we discuss several aspects of museum design including wayfinding aids, noise levels and lighting levels in the exhibits, options for movement or manipulation of levers or buttons, and the print size of the interpretive material. We then discuss what students believe that they have learned, if anything, and the factors associated with more effective exhibits. Awareness of these considerations helps students realize that designers consider these elements when planning a contemporary museum setting.

Our Campus Environment.

College campuses reveal rich histories, but in my (Greene) experience, few students have examined buildings and other campus spaces systematically. This exercise encourages students to become scholars of their campus and its legacy. It can be eye-opening to learn about the architectural history of one's campus in terms of the layout, evolving building materials, and changes in pedagogy and campus cultures. A sample exercise is on our chapter website at www.colostate.edu/Depts/Psychology/environmentalpsych/supplements.

Human Factors and Bad Design on Campus.

Human factors or ergonomics involves the interaction of humans with machines and ambient environments. We often associate human factors principles with Industrial/Organizational Psychology or Cognitive Psychology, but the environmental factors that create stressful workplaces have much in common with homes and other institutions. Almost inevitably, campuses illustrate poor ergonomics. Instructors may know a few examples of doors that swing unpredictably or of unreliable machines, but I (Greene) was amazed when I first started asking students to provide photographs and descriptions of human factors errors in their residences and classrooms. Plumbing fixtures that turn the wrong way and misaligned maps are common, but students typically provide a deluge of other inconvenient and sometimes dangerous examples. The assignment is engaging, but relatively easy. Complete instructions for students are on the website (www.colostate.edu/Depts/Psychology/environmentalpsych/supplements).

Designing a Remodeled Space to Incorporate Principles from Environmental Psychology

I (Romano) use a fun semester-long homework assignment that involves assigning students to groups and having each group come up with a new design for an existing space that improves the functionality of the space through design principles learned in the course. Each group selects a space, which might be a restaurant, a lobby, a classroom, an outdoor seating area, or another location of interest. The groups create a poster that explains their remodel and how their remodel incorporates material from the course, such as congruence, noise abatement, or stimulation. Having a presentation day toward the end of the course when all groups present their posters is an engaging and enlightening way to review course material and demonstrate applicability of constructs. On our chapter website is a sample of the assignment handout, and a sample flyer inviting others on campus to the presentations www.colostate.edu/Depts/Psychology/environmentalpsych/supplements

Also on the website is an alternative semester-long service project from Britt Mace, in which students apply environmental psychology principles to a community project.

Changing Behavior to Save the Environment

Commons Dilemma Simulation

The commons dilemma is a social dilemma derived from Hardin's (1968) concept of The Tragedy of the Commons. When a slowly regenerating resource—such as the whale population, a confined grassland, or a forest—is shared by a number of people, the temptation is to harvest more than one's share. Strategies for individual gain lead to collective loss; if too many people take more than their share the consequence is that the resource disappears faster than it can replenish and everyone loses. We use a game that simulates the commons dilemma as a fun class exercise. A thorough description of how to adapt it to the classroom is on the chapter website at www.colostate.edu/Depts/Psychology/environmentalpsych/supplements.

Calculating Carbon Footprints

Students can answer many personal behavior questions and calculate their carbon footprints at <http://www.carbonfootprint.org>. Students should complete all questions on the website out of class and bring their results to class for discussion. In addition to calculating their actual carbon footprint, it is also a great exercise for asking them to think about making lifestyle changes and the costs and benefits of doing

so. I (Mace) have students choose two changes they would like to make to their current situation (e.g., switching to a more fuel efficient vehicle, changing their household energy consumption) and recalculate their carbon footprint to include their potential behavior changes. We discuss in class the results and how changing behaviors can reduce carbon impact on the planet. This exercise serves as a useful segue into a discussion of global warming as well as the commons dilemma.

Summary

We believe that environmental psychology is an exciting field that engages students in their everyday settings and encourages them to think about how the environment influences their actions and the actions of those they observe. The field also helps students understand what psychology as a discipline can do to foster sustainable practices in society. We have created these exercises and demonstrations from our own experience through years in classrooms, typically based on findings in the research literature. We modify them as technology evolves and as we receive feedback from students.

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