

RESEARCH ROUNDTABLE ON HEALTH, PARKS, RECREATION, AND TOURISM

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Research Panel: Jessica Leahy, University of Maine;
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Chad Pierskalla, West Virginia University.

1.0 INTRODUCTION

Presented by Kelly Bricker

Over the past few years, there has been increased awareness of the connection between health and outdoor recreation and a proliferation of alliances, partnerships, and statewide efforts to promote the health benefits of outdoor recreation (Memorandum of Understanding [MOU] 2002, NRPA 2008). The alliances formed underscore the relevance of outdoor recreation in promoting healthy lifestyles, healthy environments, and healthy communities. As a result, many initiatives are underway to connect the outdoors to a healthier lifestyle. This progressive movement is exemplified by the following cooperative efforts.

In 2002, several federal agencies created a MOU to promote public health and recreation: the Department of Health and Human Services, including the Centers for Disease Control and Prevention (CDC), Indian Health Services, and the Office of Public Health and Science; the Department of Agriculture, including the U.S. Forest Service and the Center for Nutrition Policy and Promotion; the Department of Interior, including the Bureau of Indian Affairs, Bureau of Land Management, Bureau of Reclamation, Fish and Wildlife Service, and National Park Service; and the Department of the Army, Army Corps of Engineers. The purpose of the MOU was to establish a general framework for cooperation among these agencies. Through the MOU, they agreed to work together to promote the uses and benefits of the Nation's public lands and water resources to enhance the physical and psychological health and well-being of the American people.

Progress to date includes a range of initiatives and findings:

- The CDC has collaborated with the American Hiking Society to promote trails and health, and to publicize National Trails Day in June 2008;
- A growing body of research has demonstrated that people in activity-friendly environments are more likely to be physically active in their leisure time;
- The National Recreation and Park Association and the Sajai Foundation have joined forces to develop a science-based curriculum called Sajai Wise Kids that teaches children about making healthy nutrition and activity choices.

The roundtable discussion summarized current initiatives related to health, parks, and recreation. The following are examples of other initiatives and programs and how they are transcending boundaries in the formation of new and exciting partnerships.

2.0 HEALTH, RECREATION, AND OUR NATIONAL PARKS

Co-presented by Dave Smaldone and Jessica Leahy

As part of the increasing focus on improving individual health, the Healthier U.S. initiative proposed in 2002 by President Bush promoted the use of public lands to improve personal health by encouraging the use of these lands for physical activity. In 2006, each National Park partnered with a university researcher and a variety of stakeholder organizations to design and implement interventions with one or more of the following three broad goals: 1) to increase park users' awareness of the health benefits derived from recreation in National Parks; 2) to increase healthful recreation/physical activity behaviors in National Parks; and 3) to increase healthful recreation/regular physical activity behavior as a lifestyle at home.

Based on the recommendations of the National Park System Advisory Board Subcommittee on Health and Recreation (2006), seven diverse National Park Service sites (one per region) were chosen for a study on the relationship between health benefits and National Parks. These seven parks were: Cuyahoga Valley National Park (Ohio), C&O Canal National Historical Park (Washington, D.C., area), Acadia National Park (Maine), Point Reyes National Seashore (California), Sitka National Historical Park (Alaska), Timucuan Ecological and Historical Preserve (Florida), and Zion National Park (Utah). The pilot projects are intended to lead to service-wide health and recreation initiatives that are evidence-based and grounded in science. Dr. Ross Brownson of St. Louis University, a leading expert in public health and physical activity, was the National Coordinating Principal Investigator for the seven pilot studies. Funding came from the Fee Demonstration Program for federal agencies (see <http://www.fs.fed.us/passespermits/about-rec-fees.shtml> for information on the Fee Demonstration Program).

In 2006 and 2007, each pilot project site designed a specific intervention plan based on the resources and visitors at that site. All sites have completed individual reports, and a comprehensive final report is in progress. Details will be released when the final report is completed sometime in 2008.

2.1 Update on Four of the National Park Service Pilot Projects

Presented by Jessica Leahy, University of Maine

Four of the seven pilot projects evaluated their pre- and post-intervention designs with the same visitor intercept survey, allowing for cross-site comparisons. A summary follows:

- “Take a Walk in your Park” was the slogan utilized in Sitka National Historic Park, in cooperation with the University of Alaska Southeast. The intervention strategy was a walking tour for cruise ship passengers. To promote the campaign, rangers stood on the dock handing out brochures as cruise ship passengers unloaded.
- Point Reyes National Seashore, in partnership with Dominican University, adopted the slogan, “Take a Walk on the Wild Side.” Their campaign promoted walking and cycling among both visitors and local residents. They used television ads, newspaper ads, brochures, and posters to reach their audiences.
- Zion National Park was evaluated by the University of Utah. Their campaign slogan was “Take a Walk in Zion.” In this locale, the goal was to encourage walking among park bus riders. In particular, the campaign encouraged visitors to walk back to the visitor center after taking the bus one-way into the park. The intervention strategies included posters, maps, brochures, and scripts for bus drivers to read.
- Acadia National Park was evaluated by the University of Maine. The campaign slogan for this park was “Walk the Great Meadow Loop to Health: Pathways to the Park.” The physical activity targeted was walking, and both visitors and residents were target audiences. The intervention strategies included newspaper ads, newspaper articles, brochures, posters, bus placards, events, emails, websites, and television public service announcements.

2.2 Increasing Walking at the C&O Canal National Historical Park: An Intervention Focused on Local Employees

Presented by Dave Smaldone

The C&O Canal National Historical Park project focused on the Washington, D.C., area of the Park and investigated the effects of social support and targeted messages on participants’ beliefs, attitudes, and behaviors. The Park partnered with Georgetown University, George Washington University, and the Georgetown Business Improvement District to target the employees of businesses near the Park. This study was very similar to a multi-worksite employee wellness research program. Volunteer participants formed teams and competed in a 7-week walking challenge. Pre- and post-challenge surveys were used to measure the effects of the interventions, and were distributed to all participants (N=183) online

and through the mail. The program “interventions” consisted of: 1) message “flyers” delivered via email to half the participants (chosen randomly) every other week; and 2) social support development through team formation and the use of a website to track and compare participants’ progress. Comparisons between these two groups—social support only and social support plus flyers—assessed the impacts from the interventions. Results indicated that overall walking behavior did not change; most participants were already active walkers, and overall walking rates did not increase. However, those participants receiving the flyers increased their walking rates by one day per week. Awareness levels also did not change, most likely because participants had a high level of awareness regarding the health benefits of walking and of using National Parks for health reasons at the start of the Challenge.

3.0 THE PARKS FOR PHYSICAL ACTIVITY RESEARCH CONSORTIUM (PPARC) INITIATIVE

Presented by Andrew Mowen

Parks and open spaces are increasingly being acknowledged as a potential asset in promoting public health. A growing body of evidence suggests that parks may play a role in enhancing physical activity levels, but little is known about the nature and extent of this role. There are limited data on the demographics of people who use parks for physically active recreation and the extent of physical activity that occurs in park settings. In addition, park-based physical activity data collection and measurement efforts have been inconsistent and have made it difficult for park managers and policy makers to understand the relative importance of parks and open spaces in promoting physical activity across multiple settings. As such, consistent data collection methods and measures are necessary for comparing physical activity across different types of settings and will help to identify contextual factors that correspond with higher levels of park-based physical activity.

PPARC was formed in early 2007. Initiated by the National Recreation and Park Association, the

PPARC working group comprises scholars and park, recreation, and health professionals who collaborated to create and pilot-test a survey instrument. Questions from this instrument are designed to measure park-based physical activity and barriers to physical activity in park settings, and can be adopted for use in visitor surveys, master planning efforts, and Statewide Comprehensive Outdoor Recreation Plans. Adding these questions into ongoing survey efforts will allow comparisons of findings with the national and state health prevalence data (e.g., Behavioral Risk Factor Surveillance System, National Health and Nutrition Survey). A complete list of PPARC survey questions (both on-site survey and telephone/mail survey) can be found at <www.nrpa.org/content/default.aspx?documentId=6188>.

4.0 MEASURING THE RESTORATIVE CHARACTER OF NATURE-BASED ACTIVITY

Presented by Chad Pierskalla

“[I]n the interest which natural scenery inspires there is the strongest contrast to [the mental fatigue caused by thinking about the future]. It is for itself and at the moment it is enjoyed. The attention is aroused and the mind occupied without purpose” (Fredrick Law Olmsted 1865).

Human-environment interactions have been defined in terms of perceptual intake of information (attention to external stimuli or events over time). As more attention is directed toward the environment, more burden is placed on information processing, contributing to mental fatigue. Ulrich et al. (1991) found that the behavioral responses to this type of taxing situation may include avoidance, alcohol use, and cigarette use. The linkage between stress and drug use was further supported in a 2003 study conducted by the National Center on Addiction and Substance Abuse. It found that high-stress teens (26 percent of all U.S. teens) are twice as likely to smoke, drink, get drunk, and use illegal drugs. Perhaps the most important research linking child performance with the physical environment has been conducted by the Landscape and Human Health Laboratory at the University of Illinois,

Urbana-Champaign. The researchers recommend adding trees and greenery near homes and schools to supplement established treatments and improve the functioning of youngsters with chronic attention-deficit hyperactivity disorder (ADHD) symptoms (Faber Taylor et al. 2001, Kuo and Faber Taylor 2004). ADHD symptoms, including difficulty paying attention or focusing on tasks, affect up to 7 percent of children, yet current treatments, drugs, and therapy may not work in all cases. Although the focus of this presentation is drug-use prevention, it is important to note that many other personal, social, economic, and environmental benefits have been attributed to human-nature interaction studied at the Laboratory.

Many argue that human-nature interaction can help reduce stress, and thus reduce the likelihood of drug use by young people. Providing background support for this proposition, more than 100 studies of recreation experiences in wilderness and urban nature areas indicate that restoration (or stress mitigation) is one of the most important benefit opportunities offered by nature (Ulrich et al. 1991). According to the Attention Restoration Theory proposed by Kaplan (1995), involuntary attention to events that are non-threatening and interesting—and thus *automatically* hold our attention—offer a reprieve from the burden of directed attention (allowing the neurons to restore). That is, recreation is metaphorically similar to sharpening a dull pencil (i.e., drug abuse and addiction prevention through recovery from directed attention fatigue) rather than destroying the pencil and creating a new one (i.e., crisis management). Despite the growing body of knowledge in this area of research, we still do not know what “dose” of restorative nature (quality and quantity) should be recommended for highly stressed young people to minimize their risk of substance abuse. Similar research questions have been addressed for physical activity requirements (e.g., children and adolescents should participate in at least 60 minutes of moderate-intensity physical activity most days of the week, preferably daily). We propose several challenges that must be addressed before fully developing national guidelines for nature exposure as it relates to drug-use prevention. Selected findings from the authors’ own line of research is provided.

Challenge 1: Indicators of restorative benefits must incorporate the measurement of time. As noted by Aiken and his colleagues, “The position taken by transactionalism in the social sciences is that of understanding person-in-environment contexts as a function of particular ongoing transactions between persons and environments...The focus is on change as an integral part of people’s experience. Change is initiated by an event which creates imbalance and transformation” (cited in Aitken 1991). Therefore, measurements such as duration (e.g., 60 minutes), intensity (e.g., moderate intensity), and frequency (e.g., most days of the week) of nature exposure are necessary components of a well written restorative guideline.

We conducted a review of three texts containing 58 research studies on aesthetics or restorative character of the natural environment between 1973 and 2001 that used 60 different methodologies. Seventy-three percent of those studies used photographs or slides and relied heavily on researcher inference to capture the actual content of participants’ experiences over time (Kaplan and Kaplan 1989, Nasar 1992, Stewart and Hull 1992, Sheppard and Harshaw 2001). Comparatively, process-based research is better able to incorporate time into the analysis of perception. A frequently used approach for measuring human experience over time is the experience sampling method (Havitz and Mannell 2005). This approach has been used extensively to measure the quality of the real-time experience by collecting assessments of the present moment. This method is useful because real-time assessment may capture satisfaction as it varies during the experience (Stewart and Hull 1992). For example, Jarman (2005) used a continuous response system (real-time assessment involving hand-held dials) that provided feedback in 1-second intervals to identify the strongest and weakest arguments made by candidates during a 2004 Presidential debate. This Perception Analyzer technology (MSinteractive) has also been employed to measure audience reaction to simulated hiking events on wilderness trail (Pierskalla et al. 2007). In that study, researchers demonstrated that perceived video events (patterns of change) can be counted: the average number of total dial turns

(quantity of events) ranged from 19 to 31 per video clip (or approximately 13 to 21 perceived changes per minute of video) in their study of three wilderness trails (8 trail segments). One-second sampling intervals seem warranted in future studies of nature hiking.

Challenge 2: A global measure of restorative character is needed. Five components of restorative environments have been identified in the literature (Kaplan 1995, Laumann et al. 2001, Herzog et al. 2003, Hammitt 2004) including:

- Novelty: “In these surroundings, I would feel I am in a different environment than usual”
- Escape: “In these surroundings, I would feel away from my obligations”
- Extent: “All of the elements of this scene go together”
- Fascination: “I would feel absorbed in these surroundings”
- Compatibility: “I feel I would be capable of meeting the challenge of these surroundings”

Chang et al. (2007) found a large degree of congruency between post-hoc psychological measures of restorativeness and three real-time physiological responses (muscle tension, brainwave activity, and blood volume pulse). Despite this finding, time was not adequately incorporated into the analysis, which may lack ecological validity. In fact, it would likely be too demanding to ask subjects to respond to all five components of restorative environments at very short time intervals. A global measure of restorativeness, one that simultaneously measures all components of restorative environments in real-time, is needed to better incorporate time into the analysis.

Pierskalla et al. (2007) also used Perception Analyzer to examine the construct validity of a global, real-time measure of restorative character (0=low restorative character to 100=high restorative character) of simulated hiking events. In their preliminary study, they found significant relationships between number of dial turns (real-time) and novelty (post-hoc), average restorative character (real-time) and fascination (post-hoc), average restorative character (real-time) and compatibility (post-hoc), and minimum restorative

character (real-time) and extent (post-hoc). This global measure appears promising and can be used to simultaneously record psycho-physiological indicators of restoration. Packaging and cross-validation of Perception Analyzer and biofeedback equipment in laboratory studies are needed to determine the enduring restorative effect of various doses of nature.

Challenge 3: There is a need to measure the behavioral response to restoration. Psychological and physiological responses to restoration have been documented in the literature. However, more research is needed to better understand the behavioral response to restorative environments – in particular, the reduction in substance use as proposed here.

5.0 CITATIONS

- Aitken, S.C. (1991). **A transactional geography of the image-event: the films of Scottish director, Bill Forsyth.** Transactions, Institute of British Geographers, 16, 105-18.
- Chang, C., Hammitt, W., Chen, P., Machnik, L., and Su, W. (2007). **Psychophysiological responses and restorative values of natural environments in Taiwan.** Landscape and Urban Planning, 85(2), 79-84.
- Faber Taylor, A., Kuo, F.E., and Sullivan, W.C. (2001). **Coping with ADD: The surprising connection to green play settings.** Environment and Behavior, 33(1), 54-77.
- Hammitt, W.E. (2004). **A restorative definition for outdoor recreation.** In K. Bricker, comp. ed. 2005. Proceedings of the 2004 Northeastern Recreation Research Symposium. Gen. Tech. Rep. NE-326. Newtown Square, PA: USDA Forest Service, Northeastern Research Station, 1-5.
- Havitz, M.E., and Mannell, R.C. (2005). **Enduring involvement, situational involvement, and flow in leisure and non-leisure activities.** Journal of Leisure Research, 37(2), 152-177.

- Herzog, T.R., Maguire, C.P., and Nebel, M.B. (2003). **Assessing the restorative components of environments.** *Journal of Environmental Psychology*, 23, 159-170.
- Jarman, J.W. (2005). **Political affiliation and presidential debates: A real-time analysis of the effect of the arguments used in the presidential debates.** *The American Behavioral Scientist*, 49(2), 229-242.
- Kaplan, S. (1995) **The restorative benefits of nature: Toward an integrative framework.** *Journal of Environmental Psychology*, 15, 169-182.
- Kaplan, S., and Kaplan, R. (1989). **The experience of nature: A psychological perspective.** New York: Cambridge University Press.
- Kuo, F.E., and Faber Taylor, A. (2004). **A potential natural treatment for Attention-Deficit/Hyperactivity Disorder: Evidence from a national study.** *American Journal of Public Health*, 94(9), 1580-1586.
- Laumann, K., Gärling, T., and Stormark, K.M. (2001). **Rating scale measures of restorative components of environments.** *Journal of Environmental Psychology*, 21, 31-44.
- Memorandum of Understanding (MOU).** (2002). Department of Health and Human Services, Department of Agriculture, Department of the Interior, Department of the Army. Accessed May 1, 2008 from <http://www.cdc.gov/nccdphp/dnpa/physical/health_professionals/active_environments/mou.htm>.
- Nasar, J.L. (Ed.). (1992). **Environmental Aesthetics: Theory, Research, & Applications.** Cambridge: Cambridge University Press.
- NRPA (2008). **Parks for Physical Activity Research Consortium, PPARC.** Information accessed May 15, 2008 from <<http://www.nrpa.org/content/default.aspx?documentId=6143>>.
- Olmsted, F.L. **The value and care of parks.** Reprinted in Nash, R. (Ed.). (1968). *The American Environment: Readings in the history of conservation.* Reading, MA; Addison-Wesley, pp. 18-24.
- Pierskalla, C.D., Siniscalchi, J.M., Hammitt, W.E., Smaldone, D.A., and Storck, S.J. (2007). **Identifying predictors for quality and quantity restorative character of wilderness: using events as an analysis unit.** In: Burns, R. & Robinson, K. (comps). *Proceedings of the 2006 Northeastern Recreation Research Symposium*, 2006 April 9-11, Bolton Landing, NY. Gen. Tech. Rep. NRS-P-14. Newtown Square, PA: USDA Forest Service, Northern Research Station: 497-508.
- Sheppard, S.R.J. and Harshaw, H.W. (Eds.). (2000). **Forests and Landscapes: Linking Ecology, Sustainability, and Aesthetics.** IUFRO Research Series, No. 6. Wallingford, UK: CABI Publishing.
- Stewart, W.P., and Hull, R.B., (1992). **Satisfaction of what? Post hoc versus real-time construct validity.** *Leisure Sciences*, 14(3): 195-209.
- Ulrich, R.S., Simons, R.F., Losito, B.D., Fiorito, E., Miles, M.A., and Zelson, M. (1991). **Stress recovery during exposure to natural and urban environments.** *Journal of Environmental Psychology*, 11, 201-230.