

journal
of
interpretation

RESEARCH

volume 12
number 1
2007



EDITOR

Carolyn Ward, Ph.D.
Environmental & Natural
Resource Sciences
Department
Humboldt State University
Arcata, California

EDITORIAL ASSISTANT

Jennifer Ferreira
Environmental & Natural
Resource Sciences
Department
Humboldt State University
Arcata, California

ASSOCIATE EDITORS

James Absher, Ph.D.
Research Social Scientist
Pacific Southwest Research
Station
USDA Forest Service
Riverside, California

Robert Bixler, Ph.D.
Department of Parks,
Recreation, and Tourism
Management
College of Health, Education,
and Human Development
Clemson University
Clemson, South Carolina

Alan D. Bright, Ph.D.
Department of Parks,
Recreation and Tourism
Colorado State University
Fort Collins, Colorado

John H. Burde, Ph.D.
Department of Forestry
Southern Illinois University
Carbondale, Illinois

Theresa Coble, Ph.D.
Arthur Temple College of
Forestry
Stephen F. Austin State
University
Nacogdoches, Texas

Lesley Curthoys, Ph.D.
Associate Professor
School of Outdoor Recreation,
Parks and Tourism
Lakehead University, Canada

Dr. Troy Hall
Associate Professor
Department of Conservation
Social Sciences
University of Idaho, College of
Natural Resources
Moscow, Idaho 83844-1139

William E. Hammitt, Ph.D.
Department of Parks,
Recreation and Tourism
Management
College of Health, Education,
and Human Development
Clemson University
Clemson, South Carolina

Doug Knapp, Ph.D.
Department of Recreation and
Park Administration
Indiana University
Bloomington, Indiana

Bernard Lane, Ph.D.
Center for the Historic
Environment, Dept. of
Archaeology
University of Bristol
Bristol, England

David Larsen
Interagency Interpretation
Specialist
Stephen T. Mather Training
Center
Harpers Ferry, West Virginia

Ross J. Loomis Ph.D.
Past-President, Rocky Mountain
Psychological Association
Professor Emeritus
Department of Psychology
Colorado State University
Fort Collins, CO 80523-1876

Steven Martin, Ph.D.
Environmental and Natural
Resource Sciences
Department
Humboldt State University
Arcata, California

Mark Morgan, Ph.D.
Department of Parks,
Recreation and Tourism
University of Missouri
Columbia, Missouri

Dave Smaldone, Ph.D.
Assistant Professor
325E Percival Hall
Division of Forestry - WVU
Morgantown, WV 26506-6125

Gail A. Vander Stoep, Ph.D.
Department of Community,
Agriculture, Recreation, and
Resource Studies
Michigan State University
East Lansing, Michigan

John A. Veverka
President
John Veverka & Associates
Okemos, Michigan

Tim Merriman
executive director

Lisa Brochu
associate director

Paul Caputo
art and publications director

Jamie King
membership manager

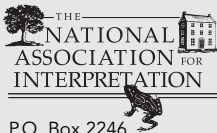
Deb Tewell
sales and events manager

Beth Bartholomew
business manager

Carrie Koch
certification clerk

Russell Dickerson
IT/AV technician

Tara Tanner
membership assistant



P.O. Box 2246
Fort Collins, CO 80522
888-900-8283 toll free
970-484-8283
970-484-8179 fax
www.interpnet.com

Subscription:
\$35 domestic, \$45 international

Copyright ©2007
ISSN 1092-5872

Sue Ellen Fast
Editor, *Interpscan*, the quarterly publication of Interpretation Canada
EcoLeaders Interpretation and Environmental Education
Vancouver, British Columbia

James Absher
Research Social Scientist
Pacific Southwest Research Station
USDA Forest Service
Riverside, California

Michael Manfredo
Professor, Department Chair
Colorado State University
Natural Resource Recreation and Tourism
Fort Collins, Colorado

Joseph Roggenbuck
Professor
Natural Resource Recreation
Virginia Polytechnic Institute and State University
Department of Forestry
Blacksburg, Virginia

Larry Beck
Professor
Department of Recreation, Parks and Tourism
San Diego State University
San Diego, California

Bernard Lane
Director
Rural Tourism Unit and Architectural Conservation Programme
Co-editor, *Journal of Sustainable Tourism*
Center for the Historic Environment
Department of Archaeology
University of Bristol, England

Sam Ham
Professor and Director
Center for International Training & Outreach (CITO)
Department of Resource Recreation and Tourism
College of Natural Resources
University of Idaho
Moscow, Idaho

Betty Weiler
Professor of Tourism
Department of Management
Berwick Campus
Monash University
Narre Warren, Australia

Gary Machlis
Professor of Forest Resources and Sociology, National Coordinator for the CESU
College of Natural Resources
Department of Forest Resources
University of Idaho
Moscow, Idaho

Sam Vaughn
Associate Manager,
Interpretive Planning
Harpers Ferry Center
Denver Service Center
Denver, Colorado

Cem Basman
Assistant Professor
Department of Recreation and Park Administration
Indiana University
Bloomington, Indiana

Ted Cable
Assistant Department Head and Professor
Dept of Horticulture, Forestry, and Recreation Resources
Kansas State University
Manhattan, Kansas

C O N T E N T S

volume 12, number 1
2007

- 2 **A Note from the Editor**
Carolyn Ward

R E S E A R C H

- 5 **The Effect of Moral and Fear Appeals on Park Visitors' Beliefs about Feeding Wildlife**
Karen S. Hockett, Troy E. Hall
- 29 **An Action Research Appraisal of Visitor Center Interpretation and Change**
Philip L. Pearce, Gianna Moscardo
- 51 **Teacher Persistence in Implementing EE: Implications for the Interpretive Community**
Julie Athman Ernst

I N S H O R T : R E V I E W S A N D R E P O R T S

- 69 **An Applied Evaluation at a Living History Museum**
Jamie J. Peterson

A P P E N D I X

- 75 **Submission Guidelines for Authors**

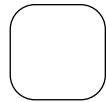
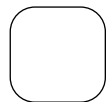
**A Note from
the Editor**

This issue of the *Journal* is a demonstration of the breadth of research conducted applicable to interpretation. One article examines the effectiveness of varying types of messages on impacting visitor beliefs regarding feeding deer. Another article delves into the key influences affecting teacher persistence in using environmental education despite the numerous barriers deterring its use. The third article focuses more closely on the specific approach taken for conducting research, in this case, action research.

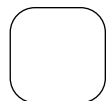
The variability in these three articles including their topics, the theories and foundations from which they build, the methods used to collect the data, and the applications of their results serves as a reminder of the range of the information from which we all have to draw. Whether we are practitioners looking for a more effective approach for controlling visitor behavior or researchers searching for an improved method of data collection, research is the tool allowing for the communication of what works, when, for whom, why and how.

I look forward to the future developments of our field through your quality submissions to *JIR*.

—C



R E S E A R C H



The Effect of Moral and Fear Appeals on Park Visitors' Beliefs about Feeding Wildlife

Karen S. Hockett
Virginia Tech

Troy E. Hall
University of Idaho

Author Note

This research is based upon the first author's masters of science thesis in the Department of Forestry, Virginia Tech. Research was supported by the National Park Service. Address correspondence to Troy Hall, Department of Conservation Social Sciences, University of Idaho, Moscow, ID 83844-1139. E-mail: troyh@uidaho.edu. Telephone: 208-885-9455. Fax: 208-885-6226.

Abstract

This study tested the effectiveness of two written messages compared to a control condition in changing campers' beliefs about feeding deer at Shenandoah National Park. Drawing on the Elaboration Likelihood Model of Persuasion, both interventions were designed to promote central route processing. One used research on hazard warnings to present a fear appeal message highlighting risks to visitors, while the other used norm activation theory to develop a moral appeal that focused on impacts to deer. Questionnaires (control $n = 111$, moral appeal $n = 115$, fear appeal $n = 116$) assessed level of agreement with belief statements taken from the appeals as well as related statements that would indicate whether message elaboration occurred. The fear appeal increased agreement that deer could cause physical harm to people and appeared to cause elaboration on these messages, but the moral appeal did not strengthen previously held beliefs that feeding harmed the deer. Both appeals reduced self-reported frequencies of deer feeding. Women agreed more strongly with some of the moral appeal statements in all conditions, but the interventions affected men and women equally. Results suggest that fear appeals may be an effective technique for changing beliefs about feeding wildlife.

Keywords

deer, elaboration likelihood model, empathy, interpretation, norm activation, risk communication

Introduction

Seeing wildlife in the wild is a highlight of many visitors' trips to parks and protected areas, but close-range human-wildlife interactions can have negative consequences for both wildlife and people (Reynolds & Braithwaite, 2001). Wildlife feeding is a difficult issue for agency managers who want visitors to have positive, meaningful experiences with nature, but need to balance these experiences with risks to the visitor and wildlife (Orams, 1996). For instance, Hammitt, Dulin, and Wells (1993) reported that 72% of visitors said they approached wildlife and 7% said they fed wild animals at one site in Great Smoky Mountains National Park. Despite efforts to educate visitors and the threat of fines, a considerable wildlife feeding problem still exists in many parks.

Many techniques have been employed to discourage visitors from feeding wildlife. Direct approaches (such as fining visitors for feeding wildlife) emphasize regulation of behavior and restrict individual choice. Indirect techniques (e.g., interpretive signs and brochures) try to encourage visitors to adopt appropriate behaviors voluntarily. If people feed wildlife out of ignorance of the effects, indirect techniques informing visitors of the negative consequences may be effective (Roggenbuck, 1992). Indirect techniques are preferred as long as they achieve management goals, because they preserve visitor freedom (McCool & Braithwaite, 1992; Orams, 1996). Evaluations of different information campaigns in parks have generated mixed results. For example, a study at Crater Lake National Park suggested that wildlife feeding could be reduced significantly by informing visitors of the potential negative consequences (e.g., contracting plague) of feeding ground squirrels (Schwarzkopf, 1984). In New Zealand, Espiner (1999) developed signs based on communication theory principles to convey the risks of approaching glaciers, which reduced non-compliant behavior from 41% to 21% at one site and from 49% to 12% at another site. However, other studies have found that communications, especially those delivered through signs and other non-personal media, have at best a small effect on knowledge, attitudes, or behavior (e.g., Brown & Koran, 1998; Olson, Bowman, & Roth, 1984). The mixed findings highlight the need for carefully designed campaigns and evaluations.

The primary purpose of this research was to evaluate the effectiveness of two intervention messages in changing park visitors' views about feeding deer at Shenandoah National Park. As discussed in the following section, we turned to social psychological theories of persuasion to develop what we hoped would be effective appeals. In a quasi-experimental design, we compared two messages against a control to evaluate cognitive change. Although we did not observe campers' behaviors, attitudes and the beliefs that comprise them are an important influence on behavior (Kaiser, Ranney, Hartig, & Bowler, 1999). According to the Theory of Planned Behavior (Ajzen, 1985), attitudes toward a behavior are composed of salient beliefs and evaluations of those beliefs (Fishbein & Yzer, 2003). Attitudes, subjective norms, and perceived behavioral control interact to form a person's behavioral intentions, which lead to the performance of a certain behavior. Because we could not observe actual behavior, our goal was to focus on the process of cognitive change involving the beliefs that are the basis of attitudes, which in turn are important antecedents to behavioral change.

Theoretical Foundations

Communication events involve numerous factors that determine whether visitors notice, encode, process, or act upon the message (Rogers, Lamson, & Rousseau, 2000). We focused

on message processing in this study. The Elaboration Likelihood Model of Persuasion (ELM; Petty & Cacioppo, 1986; Petty, McMichael, & Brannon, 1992) guided the development of our message design and content. The ELM posits two alternative routes to persuasion: peripheral and central.

If persuasion occurs via the peripheral route, message features such as source credibility or the number of arguments cause a person to accept or reject the claims without considering their actual merits (Frewer, Howard, Hedderly, & Shepard, 1997). The peripheral route thus involves relatively non-effortful processing, and persuasion occurs as a result of factors other than the strength of message arguments (Eagly & Chaiken, 1993). Attitudes formed through the peripheral route are relatively unstable and do not predict behavior well (Trumbo, 1999).

Alternatively, if a message recipient is motivated to consider a message and is able to devote the attentional resources to do so, processing will take place via the central route. People are generally motivated to process messages that they perceive to be personally relevant or to address topics of personal interest (Eagly & Kulesa, 1997). In central route processing, arguments are evaluated critically, and the preponderance of positive or negative thoughts a person has (the type and amount of elaboration) determines whether the recipient accepts or rejects the message. A successful message will lead recipients to generate their own arguments in support of the advocated position and thereby form or reinforce a positive attitude. Because central route processing forges links between new information and prior cognitive structures, new attitudes tend to be enduring and more predictive of behavior than those formed via peripheral processing (Petty, Haugtvedt, & Smith, 1995). In this study, one of our goals was to understand how much message elaboration occurred.

Another foundation of our interventions was research on the role of cognitive heuristics and vividness in persuasion. Studies have demonstrated that the more easily an example comes to mind, the more people believe it will happen again (“availability heuristic”; Slovic, Fischhoff, & Lichtenstein, 1980). Additionally, if people are induced to imagine a scenario (“simulation heuristic”), they are more likely to think such an event will actually occur (Fiske & Taylor, 1991). The more vivid—concrete, emotional, and imagery provoking—a message is, the more persuasive it will be (David, 1998). Such findings guided us to develop concrete, vivid messages.

Resource managers hope visitors will think about their messages, recognize their merits, and act upon them now or in the future. That is, they strive to encourage central processing of their messages. Because of this, our goal was to evaluate messages designed to be processed centrally and generate beliefs consistent with the advocated message. This focused our attention on the need to develop strong arguments. For this we turned to two other bodies of theory and research: fear appeals and moral appeals.

Fear appeals. Fed deer pose a genuine threat to park visitors, which made theories about communicating risk relevant to our task. These argue that engendering fear can influence attitudes and behaviors (Witte, 1995). As recipients process a message, they appraise the threat’s severity and likelihood of occurrence (Block & Keller, 1998). Fear elicits a negative drive state and sets in motion a danger control process in which the message recipient processes the threat cognitively and considers ways to avoid it (Witte, 1992). Many times people have inaccurate or unrealistically low perceptions of the severity of risk from natural hazards (Bettman, Payne, & Staelin, 1986; Espiner, 1999; Sims & Baumann, 1983), and this is probably the case for some types of wildlife interactions. For example, in a study relating

to dingoes on Frazer Island, Howard, Lipscombe, and Porter (2001) found that most people were unaware of various risks. In cases where wildlife seem tame or friendly, as is the case with deer that beg, people may be especially likely to underestimate the risk (see Serpell, 2002). These situations should be ideal for fear appeals, which may elevate risk perceptions and thereby promote proper behavior.

A fear appeal should gain visitors' attention with a word that signals personal relevance, such as *Danger* or *Caution* (Chapanis, 1994; Cunitz, 1981) and that differentiates it from an information sign (Espiner, 1999). The signal word should be followed by a description of the hazard, its consequences, and instructions for avoiding the hazard (Adams, Bochner, & Bilik, 1998; Witte, 1993). According to Protection Motivation Theory (Rogers & Prentice-Dunn, 1997), people consider both the perceived severity of the threat and their personal vulnerability to exposure. In other words, for the threat to be taken seriously, it must be believable and seen as personally relevant. The message should clearly and graphically describe the threat and risk to a visitor, using personalized, intense, and emotional language (Witte, 1993).

Experimental studies have demonstrated the effect of fear-arousing messages, typically in the realm of health protective behaviors. Fear increases message processing, and including information on factors such as severity enhances elaboration (Baron, Logan, Lilly, Inman, & Brennan, 1994; Meijnders, Midden, & Wilke, 2001). For instance, Hale and Lemieux (1995) had subjects read fear-inducing messages about sun exposure; the resulting positive beliefs about protective behaviors exhibited moderately strong correlations with attitudes toward the behaviors. Attitudes, in turn, had a strong impact on behavioral intentions, a direct antecedent to behavior, according to the Theory of Planned Behavior (Ajzen 1985).

In one of the few examples involving wildlife, Schwarzkopf (1984) delivered a fear-arousing message regarding golden-mantled ground squirrels that successfully reduced the incidence with which people fed the animals. A fear appeal sign that informed visitors that the squirrels could carry bubonic plague and Colorado tick fever reduced squirrel feeding behavior by 75%. Another sign that asked visitors not to feed the squirrels and stated that there was plenty of natural food available only reduced feeding by 50%. The author speculated that a recent finding of several plague-positive squirrels in the area and the death of a young boy from plague likely contributed to the fear appeal's greater effectiveness.

Moral appeals. Bagozzi and Moore (1994) point out that fear appeals may not be highly effective when the goal of the message is to promote helping others. Unlike a fear appeal that focuses on self-interest, a moral appeal encourages people to behave in a manner that will help others or the environment. A major reason resource managers discourage wildlife feeding is to protect the animals' welfare, and hence moral appeals may be appropriate. Eagly and Kulesa (1997) note that many environmental behaviors are motivated by altruistic values, and therefore successful campaigns might need to appeal to those value orientations. The animal welfare appeal in Schwarzkopf's (1984) study did not directly frame the issue of feeding as a moral or altruistic one, and it did not clearly state the harm to the animals from being fed human food. This lack of clarity in explaining the issue and missing call to act on behalf of the squirrel could explain, in part, why it was less effective than the fear appeal.

There are various explanations for the effectiveness of moral appeals. From an emotion-focused perspective, Bagozzi and Moore (1994) demonstrated that public service announcements that aroused empathetic negative emotions such as sadness or anger led to greater attitude change and stronger behavioral intentions than rational messages. The

arousal of sympathy, empathy, or compassion motivates change in behavior (Davis, Conklin, Smith, & Luce, 1996). In an alternative explanation, norm activation theorists argue that moral appeals lead to altruistic helping behavior by making people aware of adverse consequences of actions and arousing feelings of personal responsibility—i.e., by activating a personal norm (Harland, Staats, & Wilke, 1999; Schwartz, 1970). Empirical studies of environmentally protective behaviors support both of these theoretical contentions. For instance, Kaiser et al. (1999) found that feelings of responsibility had a strong, direct impact on intentions to use alternative transportation or reduce driving. Shelton and Rogers (1981) reported that an appeal highlighting the suffering of whales led to a stronger intention to support anti-whaling efforts than an appeal without such content.

Gender and Wildlife Beliefs

We sought to understand the effects of fear and moral appeals on visitors' beliefs. However, a likely moderating factor is gender. Several studies have shown that men and women have different beliefs, attitudes, and feelings toward wildlife (Zinn & Pierce, 2002). For example, Dick and Hendee (1986) reported that women were more likely than men to respond to wildlife in urban parks, and Hills (1993) found higher levels of empathy for animals among women than men. Kellert and Berry's (1987) thorough analysis described men as generally more utilitarian, dominionistic, and informed about wildlife management, while women were more humanistic and moralistic. Stern, Dietz, and Kalof (1993) concluded that women were more likely than men to accept messages that link environmental problems to potential harm to people or other species. Such findings led us to question whether men and women might react differently to differently framed messages.

Research Questions

Our study sought to answer several research questions: (1) Does a fear appeal or moral appeal lead to greater change in belief? (2) Do fear and moral appeals lead to cognitive elaboration on the arguments presented? (3) Do women and men differ in their beliefs about the consequences that occur when visitors feed wildlife? (4) Does the impact of interventions depend on gender?


Methods

Study Area


The research took place in a campground in Shenandoah National Park in Virginia. Deer are quite common throughout the area and are largely habituated to people. In the campground and an adjacent picnic area, deer commonly come to beg for food, and visitors are often seen feeding the animals a variety of human and natural foods. Shenandoah National Park has identified this as a major problem, and there are painted brown signs along many park roads stating the fine (\$25) for feeding wildlife.

Interventions

The ELM points out that message features can prompt peripheral processing and that peripheral cues themselves can sometimes pique enough interest to initiate central route processing (Eagly & Kulesa, 1997). We hoped to isolate central route processing effects and eliminate any inadvertent peripheral effects. Therefore, we held as many message features as



Attention All Campers - Danger!



Never feed deer.


Although deer may appear tame and gentle, they are wild. Deer are unpredictable creatures and could seriously injure you.

If you feed a deer, it...


- may suddenly bite you.
- may kick you with its powerful legs and sharp hooves.
- may gore you with its hard, pointed antlers.
- may expose you to diseases that could make you very sick.

Protect yourself and your family. Never try to feed or approach deer or other wildlife in the park.

Figure 1. Fear appeal message.



Attention All Deer - Danger!



Never accept food from humans.

Although visitors mean well by offering you food, accepting even one apple could seriously hurt you.

Human food may taste good, but it...

- may make you sick.
- may make you fat and slow – an easy target for predators and cars.
- may make you trust all humans – making you easy prey for hunters.
- may make you dependent on humans and unable to find natural food.

Protect your health. Resist the temptation and never accept food from humans.

Figure 2. Moral appeal message.

possible constant across our two interventions. For instance, both had the same number of statements and the same graphics. The language was colorful, but relatively simple so that most visitors could comprehend the message (Petty et al., 1992). While we did not pre-test comprehensibility specifically, we did have prior knowledge that Shenandoah National Park visitors tended to be highly educated; in fact, only 2.1% of the survey respondents had less than a high school education. Also, pre-study interviews about deer feeding were conducted in Shenandoah National Park. These interviews were used to develop the content of the survey, as well as the wording of the signs and survey instrument. The signs were structured and presented in a manner that would facilitate processing (e.g., brief, bulleted text). The "Attention" line of the sign was in size 20 point font, and the bulleted content was 14 point. The signs were not meant to be read from a distance.

Fear appeals must convey the likelihood of injury and its severity. These considerations led to a message with graphic descriptions of personal injuries that could occur (Figure 1). For ethical reasons associated with research in a natural setting, the specific claims had to be real, and we took them from cases recorded in Shenandoah and elsewhere. The message was personal ("you may be injured") rather than impersonal ("park visitors may be injured").

Moral appeals should include a description of the consequences of action, cultivate a sense of personal responsibility, and induce empathy or sympathy. Therefore, the moral appeal message provided information about the negative consequences of feeding for the deer and strove to promote a sense of personal responsibility for acting in a way that would help the deer (Figure 2). Unlike the fear appeal, the moral appeal spoke to the deer, not the campers. This was done to enhance empathy via perspective taking (Bagozzi & Moore, 1994).

The moral appeal's novel approach was also intended to interrupt scripted reactions to the signs (Moscardo, 1999; Werner, Rhodes, & Partain, 1998). We reasoned that a more typical park message design would have been scanned and dismissed as falling within people's prior schemas for standard park signs. According to Garcia-Marques and Mackie (2001), a sense of familiarity with a type of message deters people from processing it carefully, and we felt that the claims in the moral appeal might seem familiar to Shenandoah visitors. This led us to adopt the novel tone of our message.

Experimental Design

In a quasi-experimental design, message effects were assessed by comparing beliefs of campers under treatment and control periods. The control condition was simply the ambient information about deer, bears, and other wildlife present in the park prior to the study. All campers had the opportunity to read messages about proper food storage and not feeding wildlife in the campground regulations and signs located around the campground.

Inattention is a major obstacle to communicating with recreationists in outdoor settings (Bitgood, 2000). Our messages were rather plain, and this exacerbated the likelihood that campers might overlook or ignore them. Therefore, we taped them to campground picnic tables where visitors would congregate and a message would seem novel and attract attention. This also ensured that the message was placed where the temptation to feed was most likely to occur. Each experimental condition (control, moral appeal, and fear appeal) was randomly assigned to two weekends between July 9 and August 15, 1999. During interventions, the appropriate sign was taped onto all picnic tables at each campsite on a Friday,

before weekend visitors arrived. The signs measured approximately 8.5 X 5.5 inches. On Saturday and Sunday mornings, a researcher walked through the campground and all adult (16 years and older) campers present at their campsites were asked to fill out a two-page anonymous questionnaire. The researcher left a survey with each camper who agreed to participate in the study, while she continued on to another campsite to approach other potential respondents. The researcher returned about a half an hour later to retrieve the completed surveys.

Instrument

The self-administered questionnaire asked respondents their level of agreement (on five-point rating scales) with belief statements taken directly from the two messages (five items from the moral appeal, four items from the fear appeal). These would indicate whether messages were attended and encoded (Lang, 2000). If the messages were effective, respondents in a treatment condition should agree more strongly with statements from that treatment message than people in the control group. However, the items taken verbatim from the appeals give little insight into the elaboration process, which involves people generating their own thoughts that are either consistent with or contradict message claims. When people carefully consider the information and feelings they have on an issue (i.e., elaborate on message arguments), the attitudes formed tend to be more stable over time and predictive of behavior (Petty & Cacioppo, 1986). Because the goal of the sign is to change attitudes over the long term, it was important to understand whether the messages were being processed through the central route (elaboration) or simply reacted to peripherally, which might result in temporary acceptance of the message arguments but not long-term attitude and behavior change. Therefore, we included additional items related to, but not directly from, the two messages (five items related to the fear appeal, three items related to the moral appeal) in an attempt to assess elaboration beyond message content. If respondents in the fear appeal treatment agreed more strongly with the fear-related items than respondents in the moral appeal or control groups, we would conclude that the fear appeal induced elaboration. The same reasoning applied to the moral appeal.

The survey also included questions to address variables that could potentially influence responses, such as basic demographic information (gender, age, and education), past experience in Shenandoah National Park, number of deer seen during the trip, and the importance of wildlife viewing to the trip. Although behavior was not the primary focus of our study, we included a question asking which of several deer-related behaviors (photographing, approaching, following, or feeding) people had done during their current trip.

Analysis

One-way Analyses of Variance (ANOVAs) compared mean belief strength across treatments. Post-hoc pairwise comparisons were conducted using the Tukey-Kramer method. To investigate the relationship of gender to beliefs and the interaction of gender with treatment effects, two-way ANOVAs were performed, with treatment and gender as fixed factors. Finally, the effect of the appeals on self-reported behaviors was evaluated with chi-square tests. In all tests, alpha was set at 0.05.

Although we did not conduct manipulation checks to verify that the fear and moral appeals were discrete, factor analysis confirmed that the survey items representing the fear and moral constructs were distinct from each other. Reliability analyses found that the fear

Fear appeal statement	Mean (<i>SD</i>) Agreement			<i>F</i>	<i>p</i>
	Control	Moral	Fear		
Deer sometimes give people diseases if they get too close.	-0.3 ^a (1.27)	-0.3 ^a (1.15)	0.2 ^b (1.35)	6.98	.001
Deer sometimes gore people with their antlers if they get too close.	-0.2 ^a (1.07)	-0.1 ^a (1.14)	0.5 ^b (1.13)	11.15	<.0005
If people get too close to them, deer sometimes kick people.	0.2 ^a (1.18)	0.3 ^a (1.14)	0.8 ^b (1.10)	7.58	.001
Deer could bite if people get too close.	0.1 ^a (1.28)	0.4 ^a (1.11)	1.0 ^b (1.17)	15.14	<.0005

Note: Means based on a 5-point Likert-type scale from -2 (strongly disagree) to +2 (strongly agree). Values with different superscripts within the same row are different at $\alpha=.05$, Tukey-Kramer post-hoc pairwise comparisons.

Table 1. Mean Agreement with Statements Taken Directly from the Fear Appeal

and moral appeal items had acceptable levels of internal reliability (Cronbach's alphas 0.76 and 0.80, respectively).

Results

More than 100 campers were surveyed under each experimental condition (control $n = 111$, moral appeal $n = 115$, fear appeal $n = 116$). The campers in general responded positively to filling out the survey. The few refusals (8.5%) were mostly from individuals who were cooking or preparing to leave their campsite, and a few did not speak English.

Visitor Characteristics

A slightly higher percentage of the surveys were completed by women (51.7%) than men

Moral appeal statement	Mean (SD) Agreement				
	Control	Moral	Fear	<i>F</i>	<i>p</i>
People should not feed deer because they					
will lose their ability to find natural foods.	1.5 (0.96)	1.5 (0.70)	1.5 (0.82)	0.23	.80
Human food could make deer sick.	1.3 ^{ab} (0.92)	1.5 ^a (0.71)	1.1 ^b (0.91)	4.81	.009
Deer that are fed are more likely to get hit by cars.	1.0 (1.08)	1.0 (0.96)	0.8 (0.98)	0.89	.41
Deer that are fed are more likely					
to get shot by hunters.	1.1 (1.06)	0.9 (1.09)	1.0 (1.05)	0.35	.70
Feeding deer helps them to avoid predators.	-1.3 (0.87)	-1.5 (0.78)	-1.3 (0.87)	1.56	.21

Note: Means based on a 5-point Likert-type scale from -2 (strongly disagree) to +2 (strongly agree). Values with different superscripts within the same row are different at $\alpha=.05$, Tukey-Kramer post-hoc pairwise comparisons.

Table 2. Mean Responses to Items Taken Directly from the Moral Appeal

(48.3%). The average age of survey respondents was 37.6 years, and ages ranged from 16 to 80. Campers were generally well-educated, with 87% having attended at least some college. There were no significant differences in gender, age, or education among treatments. The majority of campground visitors (78%) had previously visited Shenandoah National Park.

For most visitors (68–71%), wildlife viewing was an important aspect of the current trip, although only a few (9–12%) said it was their primary reason for visiting. This suggests that the topic of wildlife had high personal relevance, which should increase the likelihood of central route processing (Petty & Cacioppo, 1979). Almost all people (99.4%) reported seeing deer in the park prior to filling out the survey. More than half of all campers had seen at least 10 deer, and 8.5% reported seeing more than 30 animals.

Fear-related statement	Mean (<i>SD</i>) Agreement			<i>F</i>	<i>p</i>
	Control	Moral	Fear		
I am scared of deer.	-1.6 (0.73)	-1.7 (0.67)	-1.6 (0.74)	0.39	.68
It is not very likely that a deer would hurt me if I tried to feed it.	-0.0 ^a (1.25)	-0.0 ^a (1.14)	-0.5 ^b (1.28)	6.56	.002
A deer that approaches people for food is unlikely to behave aggressively.	-0.2 (1.24)	-0.4 (1.09)	-0.6 (1.22)	2.55	.08
As long as you don't try to touch them, deer aren't very dangerous.	1.2 (1.12)	0.9 (1.16)	1.1 (1.22)	1.14	.32
Having deer too close can endanger small children.	-0.3 ^a (1.24)	0.0 ^a (1.22)	0.4 ^b (1.32)	9.46	<.0005

Note: Means based on a 5-point Likert-type scale from -2 (strongly disagree) to +2 (strongly agree). Values with different superscripts within the same row are different at $\alpha=.05$, Tukey-Kramer post-hoc pairwise comparisons.

Table 3. Mean Agreement with Statements Related to the Fear Appeal

Influences of Interventions on Beliefs

Items taken from interventions. Respondents who had received the fear appeal were significantly more likely than either control or moral appeal recipients to agree with all four fear appeal statements (Table 1). Between 26% and 43% of control respondents and 29% to 58% of moral appeal respondents agreed with each of the four items. The fear appeal increased agreement to between 46% (deer can give diseases) and 74% (deer can bite). Although the campers subjected to the fear appeal were more likely to agree that deer could be a danger, the intensity of this sentiment was not always strong. Campers on average were

Moral-related statement	<u>Mean (SD) Agreement</u>				
	Control	Moral	Fear	<i>F</i>	<i>p</i>
Fed deer are more likely to eat garbage.	1.4 (0.92)	1.4 (0.70)	1.3 (0.84)	0.50	.61
It is OK to feed deer natural foods like wild apples, grass, or acorns.	-0.9 (1.32)	-0.9 (1.19)	-0.9 (1.22)	0.06	.94
One person feeding deer doesn't really make a difference.	-1.3 (1.09)	-1.3 (1.04)	-1.2 (1.07)	0.37	.69

Note: Means based on a 5-point Likert-type scale from -2 (strongly disagree) to +2 (strongly agree). Values with different superscripts within the same row are different at $\alpha=.05$, Tukey-Kramer post-hoc pairwise comparisons.

Table 4. Mean Responses to Items Related to the Moral Appeal

largely neutral in their belief that deer could give people diseases or gore people if they got too close. However, beliefs about the possibility of being kicked or bitten were stronger among fear appeal recipients.

Among the five items taken directly from the moral appeal, the only one to which the campers receiving the moral appeal responded differently from either of the other two groups was the statement that human food could make deer sick (Table 2). All visitors agreed moderately strongly with the statements in the moral appeal about the negative impact feeding has on deer, whether they had received the moral appeal or not; the lowest level of agreement (60–71%) was that fed deer are more likely to be hit by cars. Shenandoah campers appeared well aware of the negative consequences to deer when deer become accustomed to being fed.

Elaboration on message content. Respondents also indicated their level of agreement with other statements related to the messages about deer-human interactions. A higher level of agreement with these items under the relevant intervention would indicate that elaboration took place, because respondents would have had to make inferences from what they had read. Results show some evidence of elaboration on the fear message. The item about risk to children seems especially to have generated elaboration (Table 3). The difference

Statement ¹	Control ²		Moral		Fear		<i>F</i>	<i>p</i>	Main effect ³
	M	F	M	F	M	F			
<u>Fear Appeal</u>									
Give diseases	-0.6	-0.2	-0.4	-0.2	0.0	0.4	4.05	.001	T, G
Bite	0.1	0.1	0.4	0.5	0.9	1.0	6.09	<.0005	T
Kick	0.2	0.3	0.1	0.4	0.8	0.7	2.98	.01	T
Gore	-0.2	-0.2	0.0	-0.2	0.6	0.3	4.87	<.0005	T
Not dangerous	1.1	1.2	1.1	0.8	1.1	1.1	0.75	.59	ns
Endanger children	-0.3	-0.3	0.0	0.0	0.6	0.3	4.02	.002	T
Scared of deer	-1.7	-1.6	-1.7	-1.7	-1.7	-1.5	0.04	.82	ns
Won't hurt me	0.3	-0.4	0.0	-0.1	-0.3	-0.8	5.18	<.0005	T, G
Not aggressive	-0.2	-0.3	-0.3	-0.5	-0.6	-0.5	1.12	.35	ns
<u>Moral Appeal</u>									
Lose ability	1.2	1.7	1.4	1.7	1.5	1.5	2.44	.03	G
Sick	1.1	1.5	1.3	1.7	1.0	1.2	4.67	<.0005	T, G
Hit by cars	0.9	1.0	1.0	0.9	0.9	0.7	1.02	.42	ns
Shot	1.0	1.2	0.8	1.1	1.0	1.0	0.76	.58	ns
Avoid predators	-1.2	-1.4	-1.4	-1.6	-1.2	-1.4	1.57	.17	ns
Eat garbage	1.2	1.6	1.3	1.6	1.4	1.3	2.21	.05	T*G
Natural foods OK	-0.8	-0.9	-0.6	-1.2	-0.9	-0.9	0.98	.43	ns
One person	-1.3	-1.4	-1.1	-1.5	-1.1	-1.2	1.46	.20	ns

¹See Tables 1 to 4 for full text of statements

²M = Male; F = Female

³Significant overall effect ($\alpha = .05$). T = main effect for treatment; G = main effect for gender; T*G = interaction effect; ns = no statistically significant effects.

Table 5. Effect of Gender and Treatment on Mean Belief Strength

between control and treatment means was 0.7 on the five-point scale, and the percentage of people who agreed with this statement increased from 32% to 53%. Although respondents receiving the fear appeal were more likely to evaluate deer as a threat for two of the five fear-related items, they were just as likely as people in the other two treatments to disagree with the statement that they were scared of deer (92–97% disagreed). Consistent with their general lack of fear of deer, people in all groups believed that it was unlikely that a deer could be dangerous, unless they tried to touch it (77–82% agreed).

	Percent			χ^2	<i>p</i>
	Control	Moral	Fear		
Stop to watch deer	93.6	93.0	91.5	0.38	.83
Photograph	56.9	34.8	47.5	11.11	.004
Approach	33.9	29.6	26.3	1.60	.45
Follow	8.3	5.2	4.2	1.79	.41
Feed	5.5	0.9	0.8	7.02	.03

Table 6. Effect of Treatments on Self Reported Behaviors

There were no differences in agreement with items related to, but not directly addressed in, the moral appeal (Table 4). All groups agreed nearly unanimously (83–89%) that fed deer are likely to eat garbage and disagreed (83–88%) that the actions of one person would not make a difference.

The Relationship of Gender to Belief

Two-way ANOVAs revealed several differences between men and women in the intensity of beliefs associated with the appeals. For the nine fear or fear-related items, six had a main effect of treatment, two had a main effect of gender, and no interactions were statistically significant (Table 5). Women were more likely than men to agree that deer can confer disease, and women were more likely to agree that deer will hurt people.

For the eight moral or moral-related items, a main effect of gender was observed for two items, while treatment showed a main effect for only one item. Women agreed more strongly that fed deer would lose their ability to find food and become sick from eating human foods. The item related to deer eating garbage showed a significant interaction effect, with men agreeing more under the fear appeal and less under the moral and control conditions, but women showing lower levels of agreement under the fear appeal and higher levels under the control and moral appeal. No other interactions were significant.

Behavior

Most visitors (>90%) in all treatments said they stopped to watch when they saw deer in the park (Table 6). Significantly more people in the control and fear conditions than the moral appeal condition photographed deer. Treatments had no effect on the percentage of people who approached or followed deer. However, although few people admitted to feeding deer, the percentage in the control condition (5.5%) was significantly higher than in either the fear (0.8%) or moral appeal (0.9%) condition, and the two treatments did not differ. While self-reports of illegal behavior likely underestimate the actual level of feeding that took place, pre-test interviews revealed that visitors were willing to freely admit to and discuss

their deer feeding actions. Although posted signs stated that it was illegal to feed deer in the park, the fines were relatively low (\$25), and visitors said that they felt a ranger would simply talk with them instead of imposing the fine.

Discussion

Belief Change (Cognitive Elaboration)

Communication via signs is always challenging; many studies show that people pay little attention to signs, and attention can vary dramatically with slight changes in sign placement and design (Arndt, Screven, Benusa, & Bishop, 1993; Bitgood, 2000; Thompson & Bitgood, 1988). Although we did not observe whether people read our signs, their placement on picnic tables should have enhanced attention. The significant effect of the fear appeal suggests that many people did read them. The two messages had identical designs (graphics, font size, message structure) and placement, and if the fear appeal attracted attention there is no reason to think that the moral appeal did not. However, the personal risk associated with the fear appeal may have resulted in more visitors reading the entire message than the moral appeal, which suggested danger to the deer.

Fear appeal. Data from the control group suggest that the statements in the fear appeal were not part of many visitors' pre-existing belief structures about deer, although there was considerable individual variation. Together, the evidence from the two sets of questions directly from and related to the fear appeal demonstrates a statistically significant change, moderate in magnitude, in beliefs about the dangers posed by deer. These findings are consistent with those of several studies that show fear appeals to enhance elaboration (Baron et al., 1994). For example, Meijnders et al. (2001) found that fear-arousing messages about the greenhouse effect designed to promote use of low-energy light bulbs had a significant impact on both issue-relevant cognitive responses and attitudes. Their study showed that messages with information specifically related to the threat led to more elaboration than messages whose information was unrelated to the threat itself. Keller and Block (1996) contend that people elaborate more on messages in which the adverse consequences are directed toward the self as opposed to others, because people have more knowledge of themselves, which permits more rapid elaboration and encoding. Such reasoning could account for the greater success of the fear appeal in our study, which was directly related to the threat and directed at respondents personally.

Moral appeal. Moral appeals work by activating personal norms, fostering a felt obligation to act (Nordlund & Garvill, 2002). Norm activation theorists argue that linking the desired outcome to social or altruistic values can be more effective than self-interested appeals. However, moral appeals can fail because people do not feel that the message is aimed at them personally (Campbell & Babrow, 2004). Techniques to increase empathetic response can help overcome this barrier. Schultz (2000) argues that perspective-taking—"the vicarious experience of another" (p. 395)—increases empathy and concern for others. Others (e.g., Campbell & Babrow) have found empathy to increase arousal, which in turn increases message processing. Our moral appeal was designed both to activate a personal norm and to arouse empathy by using second-person language directed at the deer and graphically describing the dangers fed deer face.

The moral appeal was unsuccessful in changing beliefs about the negative impacts to deer from feeding. This may have been because visitors were already relatively knowledge-

able about the negative impacts to deer (i.e., there may have been a ceiling effect). For example, all treatment groups agreed fairly strongly (86–94%) that deer could lose their ability to find natural foods and that human food could make deer sick (74–89%). Nevertheless, other statements had means nearer the neutral point with the potential to change, but did not.

Keller and Block (1996) argue that, in low-fear situations, people do not have sufficient motivation to process messages carefully. Researchers who endorse the heuristic-systematic model of persuasion believe people's innate tendency is to process superficially unless they are motivated to do otherwise (Eagly & Kulesa, 1997). We know from the control group responses that Shenandoah visitors are not afraid of deer, and the moral appeal did nothing to enhance feelings of risk. Therefore, it is possible that the message was insufficiently arousing to provoke central route processing or elaboration.

One important aspect of our moral appeal was its tone of sentimental humor (Weinberger & Gulas, 1992). We intentionally used this approach because atypical messages capture more attention and generate more thoughts (Stafford & Stafford, 2002). However, humorous messages have had mixed effects on audience cognition and attitudes, and Fisher (1997) argues that humor may distract people from processing message arguments deeply. In general, humor seems to capture attention well and create positive feelings toward the message or its sender (Weinberger & Gulas), but it may have little effect on learning. In retrospect, our message may have prompted a chuckle rather than serious deliberation. Future research might include manipulation checks on the emotional reactions to messages to help identify the mechanisms by which differently framed messages affect visitors. There is also a need to test moral appeals that do not use humor.

Gender

The literature offers a mixed picture of the role of gender in beliefs, attitudes, and values toward wildlife. While Kellert and Berry (1987) identified gender as one of the most important demographic factors, others (e.g., Czech, Devers, & Krausman, 2001) have found minimal differences between men and women in views on species preservation or support for conservation policies. Most studies simply describe differences between men and women without attempting to develop or test theoretical explanations, and hence it becomes difficult to understand when and why gender would relate to attitudes and beliefs (Zinn & Pierce, 2002). Typical correlational studies, though permitting analysis of moderation and mediation if well designed (e.g., Dougherty, Fulton, & Anderson, 2003), are limited in their ability to shed light on the socio-cultural processes by which men and women come to differ.

Like most other studies (Zinn & Pierce, 2002), we looked for differences between men and women, basing our expectations on prior findings. Dougherty et al. (2003) studied attitudes toward controlling overpopulations of deer and discovered that men were significantly more accepting of lethal control. Women, on the other hand, perceived the personal impact of lethal control to be greater. Similar to Dougherty et al. and Eldrige and Gluck (1996), our findings suggest that women have somewhat stronger sympathy for the physical well-being of deer. Zinn and Pierce argue that women are more concerned about specific, local risks, especially if caused by human action. Our findings are consistent with this conclusion. However, women and men were equally affected (or not affected) by the different appeals.

Impact of Messages on Self-Reported Behavior

In the control condition, 5.5% of people said they fed deer during their trip. If this number is accurate—if anything, it is likely to be an underestimate—the number of parties feeding deer at Shenandoah is quite large. If self-reports are to be trusted, both treatments influenced *behavior* equally, reducing incidence to below 1%, but the fear appeal had substantially greater effect on cognition than the moral appeal. This finding highlights the need for future research to include measures of both cognitive change and actual behavior.

Management Implications

Wildlife feeding is a serious issue for resource managers. Wildlife-related recreation is increasing and people especially seek opportunities to interact with or observe animals in their natural habitat. This research contributes insight into types of indirect interventions that might help address the problem of inappropriate behaviors.

Communication theorists point out that messages must target salient beliefs, which requires a close understanding of the audience (Ham & Krumpal, 1996). People's attitudes toward specific behaviors, which are reasonably good predictors of intentions to engage in those behaviors, are composed of many different beliefs and the evaluations associated with those beliefs (Eagly & Kulesa, 1997). Therefore, managers need to identify beliefs that are most important as well as those that are amenable to change in the desired direction (Fishbein & Yzer, 2003). Focusing on claims that matter to biological specialists may have little effect on visitors who care about other things (Ham & Krumpal). An excellent example of this principle is found in the "Be Dingo-Smart" campaign, which targets visitors' erroneous belief that dingoes' thin, bony bodies indicate that they are starving (Howard et al., 2001).

Our findings suggest that managers should work to strengthen the belief that wild animals can be hazards to people rather than focus on beliefs that people already hold related to the impacts to deer. Beliefs about the severity of injury from deer were especially amenable to change at Shenandoah, but new ways should be explored to increase perceived vulnerability because people generally say they are not afraid of deer or personally vulnerable. Video displays of visitors being injured may be necessary to gain attention and shock visitors into believing the risks. Also, provision of statistics such as the number of visitors injured per year may help to convey the magnitude of threat.

Although we did not find that the moral appeal affected cognition, we are hesitant to dismiss the use of such interventions at this point, particularly because it appears that the moral appeal may have affected behavior as much as the fear appeal. Current research on attitudes and behaviors shows that attitudes and other cognitions only guide behavior when they are readily accessible in memory (Schultz, 2000). People have many attitudes and beliefs that are potentially applicable to a given situation, such as feeding a wild animal, but only the accessible ones will direct behavior. A park visitor may believe that twinkies harm deer, but also believe that her children need opportunities to interact with nature, and whichever belief is most accessible will be the stronger behavioral guide. Attitudes that have been frequently or recently activated are more accessible (Fazio, 1990; Fazio & Williams, 1986). Our findings suggest that Shenandoah visitors are already fairly knowledgeable about the negative consequences that feeding has on the deer. Although communications may not *change* such beliefs, simply reminding people of them before they have the opportunity to feed deer may be sufficient to reduce the level of feeding (Moscardo, 1999). If true, this has

significant implications for placement of interventions in park settings. Signs would need to be placed where optimal in time and space in relation to where behavior occurs (Bator & Cialdini, 2000). Our research—because it used cued recall questions—could not be used to make inferences about attitude accessibility, so we cannot know whether accessibility accounted for the moral appeal's impact on behavior. Studying attitude accessibility in an uncontrolled leisure setting will undoubtedly prove difficult, but this seems to be an important area of research.

Study Limitations and Future Research

Although our research sheds some light on the processes of persuasion and cognitive elaboration, there were several limitations. First, our measures of elaboration were somewhat superficial, and future research should explore other techniques, such as thought listing (Cacioppo, von Hippel, & Ernst, 1997). Additionally, our specific questionnaire items used to measure elaboration may have been more tangential for the moral appeal than the fear appeal. The moral-related items had to do with feeding behaviors, and less directly with deer health, whereas the fear-related items were clearly an extension of the items explicitly addressed in the fear appeal.

Three other elements not addressed in this study would be good to include in future research. First, we did not measure attitudes, which are often conceptualized as the direct antecedents to behavioral intentions (Ajzen, 1985; Armitage & Christian, 2003). However, it seems reasonable to think that, in our case, beliefs are tightly linked to attitudes (e.g., if a person believes that feeding deer hurts deer, this is likely to contribute to a negative attitude about feeding deer). Second, we did not observe behavior directly, and there are many influences on behavior beyond cognition and attitudes, such as the expectation of reward (Neuwirth, Dunwoody, & Griffin, 2000). It is possible that the psychological rewards or excitement of interacting with wild animals override cognitive inhibitions. Finally, we did not include direct measures of emotion, which could potentially be informative in understanding campaigns related to wildlife, both in terms of people's reactions to messages and their motivations to interact with wildlife.

Conclusions

Wildlife often plays a central role in tourism experiences. According to Dick and Hendee (1986), 90% of people who responded to wildlife in an urban park said the experience was positive. Managers need to find ways to permit encounters with wildlife while still protecting the animals (Orams, 2002; Reynolds & Braithwaite, 2001). Communication—although only one strategy—holds significant promise. Carefully tailored messages that take into account the visitor's mindset and motivations are most likely to succeed (Medio, Ormund, & Pearson, 1996; Orams & Hill, 1998).

Our findings indicate that fear appeals could be highly effective. They also highlight the lack of belief among Shenandoah National Park visitors that deer could hurt them. Because wildlife feeding has negative consequences for both wildlife and visitors, further research would be welcome to clarify attitudes of park visitors toward wildlife and wildlife feeding and develop intervention techniques that are more successful in reducing feeding behavior.

References

- Adams, A., Bochner, S., & Bilik, L. (1998). The effectiveness of warning signs in hazardous work places: Cognitive and social determinants. *Applied Ergonomics*, 29(4), 247-254.
- Ajzen, I. (1985). From intentions to actions: A Theory of Planned Behavior. In J. Kuhl & J. Beckmann (Eds.), *Action-control: From cognition to behavior* (pp. 11-39). Heidelberg: Springer.
- Armitage, C. J., & Christian, J. (2003). From attitudes to behaviour: Basic and applied research on the Theory of Planned Behaviour. *Current Psychology: Developmental, Learning, Personality*, 22(3), 187-195.
- Arndt, M. A., Screven, C. G., Benusa, D., & Bishop, T. (1993). Behavior and learning in a zoo environment under different signage conditions. *Visitor Studies: Theory, Research and Practice*, 5, 245-251.
- Bagozzi, R. P., & Moore, D. J. (1994). Public service advertisements: Emotions and empathy guide prosocial behavior. *Journal of Marketing*, 58(January), 56-70.
- Baron, R., Logan, H., Lilly, J., Inman, M., & Brennan, M. (1994). Negative emotion and message processing. *Journal of Experimental Social Psychology*, 30, 181-201.
- Bator, R. J., & Cialdini, R. B. (2000). The application of persuasion theory to the development of effective proenvironmental public service announcements. *Journal of Social Issues*, 56(3), 527-541.
- Bettman, J., Payne, J. W., & Staelin, R. (1986). Cognitive considerations in designing effective labels for risk information. *Journal of Public Policy and Marketing*, 5, 1-28.
- Bitgood, S. (2000). The role of attention in designing effective interpretive labels. *Journal of Interpretation Research*, 5(2), 31-45.
- Block, L. G., & Keller, P. A. (1998). Beyond protection motivation: An integrative theory of health appeals. *Journal of Applied Social Psychology*, 28(17), 1584-1608.
- Brown, F. S., & Koran, J. J. (1998). Learning from ruins: A visitor study at Uxmal. *Curator*, 41(2), 121-131.
- Cacioppo, J. T., von Hippel, W., & Ernst, J. M. (1997). Mapping cognitive structures and processes through verbal content: The thought-listing technique. *Journal of Consulting and Clinical Psychology*, 65(6), 928-940.
- Campbell, R. G., & Babrow, A. S. (2004). The role of empathy in responses to persuasive risk communication: Overcoming resistance to HIV prevention messages. *Health Communication*, 16(2), 159-182.
- Chapanis, A. (1994). Hazards associated with three signal words and four colours on warning signs. *Ergonomics*, 37, 265-275.
- Cunitz, R. J. (1981). Psychologically effective warnings. *Hazard Prevention*, 17, 5-7.
- Czech, B., Devers, P. K., & Krausman, P. R. (2001). The relationship of gender to species conservation attitudes. *Wildlife Society Bulletin*, 29(1), 187-194.

- David, P. (1998). News concreteness and visual-verbal association: Do news pictures narrow the recall gap between concrete and abstract news? *Human Communication Research*, 25(2), 180-201.
- Davis, M. H., Conklin, L., Smith, A., & Luce, C. (1996). Effect of perspective taking on the cognitive representation of persons: A merging of self and other. *Journal of Personality and Social Psychology*, 70, 713-726.
- Dick, R., & Hendee, J. (1986). Human responses to encounters with wildlife in urban parks. *Leisure Sciences*, 8, 63-77.
- Dougherty, E. M., Fulton, D. C., & Anderson, D. H. (2003). The influence of gender on the relationship between wildlife value orientations, beliefs, and the acceptability of lethal deer control in Cuyahoga Valley National Park. *Society and Natural Resources*, 16, 603-623.
- Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes*. Orlando, FL: Harcourt Brace Jovanovich.
- Eagly, A. H., & Kulesa, P. (1997). Attitudes, attitude structure, and resistance to change: Implications for persuasion on environmental issues. In M. H. Bazerman, D. M. Messick, A. E. Tenbrunsel & K. A. Wade-Benzoni (Eds.), *Environment, ethics, and behavior: The psychology of environmental valuation and degradation* (pp. 122-153). San Francisco: New Lexington Press.
- Eldridge, J. J., & Gluck, J. P. (1996). Gender difference in attitudes toward animal research. *Ethics and Behavior*, 6(3), 239-256.
- Espiner, S. R. (1999). *The use and effect of hazard warning signs: Managing visitor safety at Franz Josef and Fox Glaciers*. Science for Conservation, Report 108. Wellington, NZ: Department of Conservation.
- Fazio, R. H. (1990). Multiple processes by which attitudes guide behavior: The mode model as an integrative framework. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 23, pp. 75-109). New York: Academic Press.
- Fazio, R. H., & Williams, C. J. (1986). Attitude accessibility as a moderator of the attitude-perception and attitude-behavior relations: An investigation of the 1984 presidential election. *Journal of Personality and Social Psychology*, 51(3), 505-514.
- Fishbein, M., & Yzer, M. C. (2003). *Using theory to design effective health behavior interventions*. *Communication Theory*, 13(2), 164-183.
- Fisher, M. S. (1997). The effect of humor on learning in a planetarium. *Science Education*, 81, 703-713.
- Fiske, S. T., & Taylor, S. E. (1991). *Social cognition*. New York: McGraw Hill.
- Frewer, L. J., Howard, C., Hedderly, D., & Shepard, R. (1997). The elaboration likelihood model and communication about food risks. *Risk Analysis*, 17(6), 759-770.
- Garcia-Marques, T., & Mackie, D. M. (2001). The feeling of familiarity as a regulator of persuasive processing. *Social Cognition*, 19(1), 9-34.

- Hale, J. L., & Lemieux, R. (1995). Cognitive processing of fear-arousing message content. *Communication Research*, 22(4), 459-474.
- Ham, S. H., & Krumpe, E. E. (1996). Identifying audiences and messages for nonformal environmental education: A theoretical framework for interpreters. *Journal of Interpretation Research*, 1(1), 11-23.
- Hammit, W. E., Dulin, J. N., & Wells, G. R. (1993). Determinants of quality wildlife viewing in Great Smoky Mountains National Park. *Wildlife Society Bulletin*, 21(1), 21-30.
- Harland, P., Staats, H., & Wilke, H. A. M. (1999). Explaining proenvironmental intention and behavior by personal norms and the theory of planned behavior. *Journal of Applied Social Psychology*, 29(12), 2505-2528.
- Hills, A. M. (1993). The motivational bases of attitudes toward animals. *Society & Animals*, 1(2), 111-128.
- Howard, J., Lipscombe, N., & Porter, A. (2001). *The tourist, the dingo, and interpretation on Fraser Island, Queensland*. Paper presented at the IAA Conference 2001, Alice Springs, Australia.
- Kaiser, F. G., Ranney, M., Hartig, T., & Bowler, P. A. (1999). Ecological behavior, environmental attitude, and feelings of responsibility for the environment. *European Psychologist*, 4(2), 59-74.
- Keller, P. A., & Block, L. G. (1996). Increasing the persuasiveness of fear appeals: The effect of arousal and elaboration. *Journal of Consumer Research*, 22(4), 448-459.
- Kellert, S. R., & Berry, J. K. (1987). Attitudes, knowledge, and behaviors toward wildlife as affected by gender. *Wildlife Society Bulletin*, 15, 363-371.
- Lang, A. (2000). The limited capacity model of mediated message processing. *Journal of Communication*, 50(1), 46-70.
- McCool, S. F., & Braithwaite, A. M. (1992). Persuasive messages and safety hazards in dispersed and natural recreation settings. In M. Manfredi (Ed.), *Influencing human behavior: Theory and applications in recreation, tourism, and natural resources management* (pp. 293-326). Champaign, IL: Sagamore Publishing.
- Medio, D., Ormond, R. F. G., & Pearson, M. (1996). Effect of briefings on rates of damage to corals by scuba divers. *Biological Conservation*, 79, 91-95.
- Meijnders, A. L., Midden, C. J. H., & Wilke, H. A. M. (2001). Communications about environmental risks and risk-reducing behavior: The impact of fear on information processing. *Journal of Applied Social Psychology*, 31(4), 754-777.
- Moscato, G. M. (1999). *Making visitors mindful: Principles for creating sustainable visitor experiences through effective communication*. Champaign, IL: Sagamore.
- Neuwirth, K., Dunwoody, S., & Griffin, R. J. (2000). Protection motivation and risk communication. *Risk Analysis*, 20(5), 721-734.
- Nordlund, A. M., & Garvill, J. (2002). Value structures behind proenvironmental behavior. *Environment and Behavior*, 34(6), 740-756.

- Olson, E. C., Bowman, M. L., & Roth, R. E. (1984). Interpretation and nonformal education in natural resources management. *Journal of Environmental Education*, 15, 6-10.
- Orams, M. B. (1996). A conceptual model of tourist-wildlife interaction: The case for education as a management strategy. *Australian Geographer*, 27(1), 39-51.
- Orams, M. B. (2002). Feeding wildlife as a tourism attraction: A review of issues and impacts. *Tourism Management*, 23, 281-293.
- Orams, M. B., & Hill, G. J. E. (1998). Controlling the ecotourist in a wild dolphin feeding program. *Journal of Environmental Education*, 29(3), 33-38.
- Petty, R. E., & Cacioppo, J. T. (1979). Issue involvement can increase or decrease persuasion by enhancing message relevant cognitions. *Journal of Personality and Social Psychology*, 37, 1915-1926.
- Petty, R. E., & Cacioppo, J. T. (1986). The elaboration likelihood model of persuasion. *Advances in Experimental Social Psychology*, 19, 123-205.
- Petty, R. E., Haugtvedt, C. P., & Smith, S. M. (1995). Elaboration as a determinant of attitude strength: Creating attitudes that are persistent, resistant, and predictive of behavior. In R. E. Petty & J. A. Krosnick (Eds.), *Attitude strength: Antecedents and consequences* (pp. 93-103). Hillsdale, NJ: Erlbaum.
- Petty, R. E., McMichael, S., & Brannon, L. (1992). The elaboration likelihood model of persuasion: Applications in recreation and tourism. In M. Manfredo (Ed.), *Influencing human behavior: Theory and applications in recreation, tourism, and natural resources management* (pp. 77-101). Champaign, IL: Sagamore Publishing.
- Reynolds, P. C., & Braithwaite, D. (2001). Towards a conceptual framework for wildlife tourism. *Tourism Management*, 22, 31-42.
- Rogers, R. W., & Prentice-Dunn, S. (1997). Protection motivation theory. In D. S. Gochman (Ed.), *Handbook of health behavior research* (Vol. 1, pp. 113-132). New York: Plenum Press.
- Rogers, W. A., Lamson, N., & Rousseau, G. K. (2000). Warning research: An integrated perspective. *Human Factors*, 42(1), 102-139
- Roggenbuck, J. W. (1992). Use of persuasion to reduce resource impacts and visitor conflicts. In M. Manfredo (Ed.), *Influencing human behavior: Theory and applications in recreation, tourism, and natural resources management* (pp. 149-208). Champaign, IL: Sagamore Publishing.
- Schultz, P. W. (2000). Empathizing with nature: The effects of perspective taking on concern for environmental issues. *Journal of Social Issues*, 56(3), 391-406.
- Schwartz, S. H. (1970). Moral decision making and behavior. In J. Macaulay & L. Berkowitz (Eds.), *Altruism and helping behavior: Some psychological studies of antecedents and consequences* (pp. 127-144). New York: Academic Press.

- Schwarzkopf, S. K. (1984). Feeding of golden-mantled ground squirrels by park visitors at Crater Lake National Park. Research Paper CPSU/OSU 84-9. Corvallis, Oregon: National Park Service Cooperative Park Studies Unit.
- Serpell, J. A. (2002). Anthropomorphism and anthropomorphic selection – Beyond the 'cute response.' *Society & Animals*, 10(4), 437-454.
- Shelton, M. L., & Rogers, R. W. (1981). Fear-arousing and empathy-arousing appeals to help: The pathos of persuasion. *Journal of Applied Social Psychology*, 11, 366-378.
- Sims, J. H., & Baumann, D. D. (1983). Educational programs and human response to natural hazards. *Environment and Behavior*, 15, 165-189.
- Slovic, P., Fischhoff, B., & Lichtenstein, S. (1980). Risky assumptions. *Psychology Today*, 14, 280-285.
- Stafford, T. F., & Stafford, M. R. (2002). The advantages of atypical advertisements for stereotyped product categories. *Journal of Current Issues & Research in Advertising*, 24(2), 25-37.
- Stern, P. C., Dietz, T., & Kalof, L. (1993). Value orientations, gender, and environmental concern. *Environment and Behavior*, 25, 322-348.
- Thompson, D., & Bitgood, S. (1988). The effects of sign length, letter size, and proximity on reading. In S. Bitgood, J. T. Roper & A. Benefield (Eds.), *Visitor Studies: Theory, Research, and Practice* (pp. 101-112).
- Trumbo, C. W. (1999). Heuristic-systematic information processing and risk judgment. *Risk Analysis*, 19, 391-400.
- Weinberger, M., & Gulas, C. (1992). The impact of humor in advertising: A review. *Journal of Advertising*, 21(4), 35-60.
- Werner, C. M., Rhodes, M. U., & Partain, K. K. (1998). Designing effective instructional signs with schema theory: Case studies of polystyrene recycling. *Environment and Behavior*, 30(5), 709-735.
- Witte, K. (1992). Putting the fear back into fear appeals: The extended parallel process model. *Communication Monographs*, 59, 329-349.
- Witte, K. (1993). Message and conceptual confounds in fear appeals: The role of threat, fear, and efficacy. *Southern Communication Journal*, 58, 147-154.
- Witte, K. (1995). Fear as motivator, fear as inhibitor: Using the extended parallel process model to explain fear appeal successes and failures. In P. A. Andersen & L. K. Guerrero (Eds.), *Handbook of communication and emotion: Research, theory, applications, and contexts* (pp. 423-450). San Diego, CA: Academic Press.
- Zinn, H. C., & Pierce, C. (2002). Values, gender, and concern about potentially dangerous wildlife. *Environment and Behavior*, 34(2), 239-256.

An Action Research Appraisal of Visitor Center Interpretation and Change

Philip L. Pearce
Professor

Gianna Moscardo
Associate Professor

Tourism Program
School of Business
James Cook University
Townsville Qld 4814 Australia
Ph.: 7 4781 5134
Fax: 61 7 4781 4019
E-mail: Philip.Pearce@jcu.edu.au

Abstract

This study uses an action research framework to evaluate changes to the visitor center-based interpretation of a natural environment. The context for the study is Australia's Flinders Chase National Park, located in an isolated tourism region, namely Kangaroo Island in the state of South Australia. The island and the park are best known for the opportunities visitors have to see many forms of Australian wildlife. Surveys of over 700 visitors were conducted in 1999 and these results were used to inform the design of interpretation in a new and much larger visitor center. In 2004 further survey work with 450 visitors was conducted. The second study specifically reported on the overall effectiveness of the new center in influencing visitors' satisfaction with the interpretation. The results demonstrate the value of action research in shaping interpretive practice.

Keywords

visitor centers, action research, tourism research, southern Australia

Introduction

Visitor centers are an important part of the tourism and interpretation landscape in many countries. Such centers are common in North America, the United Kingdom, Australia, New Zealand, and increasingly in Asia and Europe. The term *visitor center* as used in this research refers to clearly labeled buildings where staff provide information to the public for

the purposes of enhancing and managing the visitor experience (c.f. Pearce, 1991; Hobbin, 1999). Although there is a traditional association of visitor centers with national parks and public heritage sites, visitor centers are also common in urban areas and at transport nodes such as border crossings (Fesenmaier & Vogt, 1993). Visitor centers can have several overlapping functions and the pattern of these functions can be used as a way of classifying different types of centers. There are, for example, some centers that provide principally promotional material; others attempt to control and filter visitor movement patterns in an area and still others act as a substitute for an attraction by providing their own types of visitor entertainment and diversion (Fallon & Kriwoken, 2003; Pearce, 2004). These patterns of activity often give rise to different names for visitor centers, with some cultures and countries preferring the label interpretive center for those focussed on visitor control and engagement. Such centers have a stronger visitor education component while terms such as *welcome centers* and *information centers* are used where the more marketing-oriented activities prevail.

The study reported in this paper showcases an opportunity in interpretation research. At core, the opportunity lies in the wider application of action research to interpretation planning and practices (Wadsworth, 2005). The organization of the present research focuses on interpretation planning and was conducted for one specific visitor center using action-research principles. The context for this research involves the replacement of an existing visitor interpretive center on Kangaroo Island in South Australia with a new and larger facility. The action research approach used in this study elevates the activities of researchers to that of valued partners in the interpretation team rather than external auditors and commentators. Such involvement does not amount to a compromise in researcher integrity, but rather requires independent appraisal of information and the delivery of the implications of research in a timely fashion for operational change. The specific task of this paper is to report the outcomes of an action research initiative achieved through two linked studies and associated meetings conducted in 1999 and 2004. These studies in turn shaped and then evaluated the interpretive efforts of the new visitor center at the Flinders Chase National Park.

Action Research

The roots of action research lie in the continuing attempts of social science researchers to make a difference (c.f. Cooper et al., 2004; Flyvbjerg, 2001). The derivation of the term action research is often traced to one of sociology's founding figures, Kurt Lewin, who suggested that one way of understanding an organization was to help change it (Lewin, 1947). He characterized action research as comparative research on the conditions and effects of various forms of social action. An important part of Lewin's writing about action research was to highlight that such research usually involves repeated research inputs to assess the state of a system and to monitor changes in the system. Action research is, however, unlike more traditional quasi-experimental studies that investigate interventions and change from a distance (c.f. Cook & Campbell, 1975; Shadish et al., 2002), because action researchers are themselves agents of change through collaboration, in that they feed research results directly into real world problems (McTaggart, 1988; Wadsworth, 2005).

O'Brien (1998) concludes that action research fundamentally seeks to study a system and concurrently to collaborate with members of the system in changing it. The nature of the change is a jointly negotiated and shared common direction deemed to be desirable by

all parties. More than one term is used to label this kind of research and synonyms for action research include *participatory research*, *collaborative inquiry*, and *action learning*. Action research has developed a considerable body of adherents and it is an important technique in educational and clinical research, counselling studies, and community development (Cameron & Gibson, 2005; Kidd & Kral, 2005).

There are a number of divisions recognized within action research and studies on interpretation can be seen as fitting most directly into one of these groupings. McTaggart (1991) identifies two sub-classes of particular interest, practical action research and emancipatory action research. Practical action research exists when a facilitator or external party (such as a university research team) establishes cooperative relationships with practitioners. The external party assists the practitioners to articulate their values and concerns and then, further, helps to plan and evaluate the actions. Emancipatory action research is a more radical social process and involves changing the consciousness and values of the group. Studies of interpretation are more likely to fall into the category of practical action research whereas research in communities involving power and social inequity issues are more likely to be involved in emancipatory action research.

There are some important guidelines in the literature on action research which help plan and guide such studies (Kemmis & McTaggart, 1988). Many of the specifications for good action research are common to those applying to research in general but there are some specific areas for attention. Action research should be conceived in phases or stages and these phases are critical to the assessment of intervention effects. In the academic reporting of action research, attention should be given to the nature of the relationships established between the researchers and the community of interest. The kinds of rapport established may help explain the extent to which the initial research was adopted or stimulated change. Further, the rapport may help explain access given to researchers to help evaluate and monitor change. In a methodological sense the nature of action research also raises some scientific dilemmas. It can not always be expected that action research is guided by neat theoretically derived hypotheses, as many real-world situations are over-determined, in that many competing forces produce the observed outcomes. This is not an apology for poor social science but recognition that results may be complex and need careful examination and inspection due to multiple situational forces. As Wadsworth (2005) suggests, action research may be underreported in the academic literature because it is localized and outcomes oriented rather than neatly designed to be publication focused.

Several considerations from the literature on action research guide the study reported here. It is important to specify the context for action research initiatives so that any generalization or wider implications from the localized study can be fully appreciated. It is also important to report the nature of the relationships with the community or organization, as this helps define the kinds of researcher access and inputs to the process of change. Additionally, while reporting of results is likely to follow general social science reporting standards, there must be detailed explanations and descriptions of the research process to help track any deviations from conventional research methods (such as changes in survey instruments) caused by the relationships or political processes. It is perhaps important to return to Lewin (1947) in setting out these caveats about action research. In particular, it is valuable to emphasize that action research is not just problem solving or consulting advice to management, but a genuine attempt to record systematically “research on the conditions and effects of various forms of social actions” (1947: 34).

The Setting

The English navigator Matthew Flinders provided the name Kangaroo Island in 1802. Flinders, having survived a ferocious gale somewhat typical of these stormy waters, was surveying Australia's southern coast and landed on the island to investigate the black shapes seen by his men. The abundance of a darkly colored, thickly coated species of kangaroo prompted the name (Toft, 2002). In the 21st century, Flinders Chase National Park at the western end of Kangaroo Island is on the periphery of the periphery; that is, it is an 800-square-kilometer wilderness little touched by human settlement. Altogether the island is 100 kilometers long by 40 kilometers wide and has only 4,000 inhabitants, most of whom live near the eastern shoreline. This community is removed from the rest of the state of South Australia by a rough and deep strait across which there is limited daily boat transport, but there is some access by air to the state capital of Adelaide.

A combination of the remote location and the sparse human settlement has preserved Kangaroo Island as an area of exceptional abundance of Australian wildlife. The Flinders Chase National Park borders the entire western coastline of the island. It includes large tracts of densely vegetated and slightly rolling low hills. It is thus an extensive, untouched sanctuary for not only kangaroos, but also echidnas, seals, penguins, goannas, koalas, platypus, numerous birds, and snakes. The geological formations on the coastline are striking examples of wind- and sea-eroded granite caverns. The stirring tales about the shipwrecks, which were plentiful along this wild coast, provide a further diversity of sites and themes for visitors.

The South Australian National Parks and Wildlife Service (SANPWS), the administrative body responsible for the Flinders Chase National Park, began operating a small, single room visitor administrative facility in the late 1980s. The center was sited at the southern and principal entrance to the park. The rise of national and international interest in wildlife tourism during the 1990s created a surge in visitor numbers to Kangaroo Island. Visitor numbers more than doubled in the decade of the 1990s, reaching a record high for a total annual figure of almost 200,000 by the end of the period. Although only a portion of these visitors (circa 40%) came to the western end of the island, the increasing numbers were causing several stresses. In particular, there were pressures on the unsealed roads at the key sites and the physical capacity of the small visitor facility was of concern. A state government political decision was made to construct a new, large-scale visitor center as both a symbolic and operational management tool. It was intended to function as an interpretive facility to maintain the image of Flinders Chase and boost the island's tourism standards and experiential quality. Additionally, the possibility of influencing visitors' travel patterns and movements in the park were seen as possible through the visitor center's interpretation and information. The scale of this visitor center construction was not trivial with over A\$7.5 million (US\$6 million) being invested in the new complex. This figure represents one of the more expensive efforts at interpreting an Australian environment (c.f. Fallon & Krikowoken, 2003).

The Conceptual Basis of the Studies

While action research is the key guiding methodological style of the study and its requirements dictate a number of issues in conducting the work, the model of mindfulness was employed as a guide to assessing the interpretation itself. Evaluation studies in interpretation are increasingly being buttressed by theoretical and conceptual schemes to guide the survey



Figure 1. The visitor center at Flinders Chase in 1999



Figure 2. The visitor center at Flinders Chase in 2004

and interview work of researchers (Bitgood et al., 1988; Uzzell & Ballantyne, 1998; Moscardo, 1999). One guide to understanding interpretation lies in the application of the generic concept of mindfulness (Langer, 1989; Moscardo, 1999). The mindfulness-mindlessness distinction draws attention to the mental state of visitors interacting with interpretive materials and proposes that there are key stimulus factors as well as key visitor factors that promote visitor attention to information, retention of information, and ultimately satisfaction with the visitor experience. Mindfulness refers to the active processing of information where visitors are concentrating on adding new information to their existing knowledge. By way of contrast, mindlessness represents the process where individuals are following existing routines and scripts in the processing of material and, while they may appear to be concentrating, they are not actually renovating and reorganizing what they know. Some of the key stimulus factors promoting mindfulness include communication efforts that are novel, multisensory, use questions, connect to visitors' previous interests, promote good orientation, and offer variety across the whole interpretive experience (see Moscardo (1999) and Pearce (2005) for a full discussion and outline of the mindfulness model in tourism settings). In this study the mindfulness model was integral to the design of the research effort and was particularly used to offer advice to the new visitor center planning team.

Outline and Goals of the Research

Working within an action research framework, two linked studies were conducted. The first study reports work carried out on visitor needs for interpretation as assessed in 1999. At that time (refer Figure 1) and as noted previously, there was only a very small visitor facility at the park. There was very limited interpretation in this small building. The second study reports on the work carried out in 2004 after the construction of a new visitor center. The goal of the first study was to describe the needs of visitors for interpretation at the park. A second goal of this first study was to use this description of visitors' needs for interpretive information to make recommendations for interpretive content in the new visitor center. The purpose of the second study in 2004 was to describe visitors' evaluation of interpretation at the new Flinders Chase National Park Visitor Center. The dominant goal of the research overall lies in examining visitors' reactions to the newly provided interpretation resulting from the outcomes of the action-oriented research built on the mindfulness model.

Methodology

Overview

The research is presented in two stages. The 1999 study and its implications for interpretation planning are considered first. Then the second study, conducted in 2004 and appraising the visitors' reactions to the interpretive efforts in the new center, is portrayed. In order to be consistent with the requirements of action research the researcher-practitioner relationships are initially outlined.

Researcher-practitioner Interaction

Initial contact was made between the researchers and staff from SANPWS as a part of a national project evaluating wildlife based tourism management issues. At that meeting interpretive staff from SANPWS reported that funding for a new interpretive center for

Flinders Chase National Park had recently been announced and that they would appreciate assistance with its planning and design. The principal funding for the studies was not provided by the South Australian organization but was instead sourced through the ongoing research activities of the group as a way of expanding and building the national research applications of their ideas and concepts. This structure enabled a degree of independence and moved the work away from a consultancy basis and readied it for an action-research format with the researchers able to provide an independent but participatory voice.

The sequence or spiral of interaction that defines action research was applied as follows. A meeting between key staff managing the visitor center project and the researchers took place in early 1999. This meeting planned the first survey of visitors' interpretive requirements for the new center and this was undertaken in September 1999. The report on this work, complete with some recommendations for interpretation content, was presented in person to the planning team for the new visitor center in February 2000. There was discussion with practitioner staff about this work over a series of meetings and seminars. The researchers and the planning team remained in contact during the construction phase. The visitor center was opened in late 2003 and an evaluation of visitor responses to the new interpretation was carried out in September 2004. Again the researchers received funds from independent sources to conduct this work. Advice and the main findings of the study were communicated in November 2004 and a formal report on the work was completed in August 2005.

The 1999 Study Method Details

Procedure

A team of university tourism researchers, all with established records of conducting surveys with visitors in natural environment contexts, travelled to South Australia as a part of the independent funding sponsoring this study. Following earlier planning meetings with the South Australian Parks and Wildlife Service staff, it was agreed that the research staff would personally hand out questionnaires, which would then be completed by the visitors. Additionally it was agreed that the research staff would remain close by to answer questions, to clarify issues, and to encourage respondents to complete all of the survey form. Two quota sampling approaches were adopted. Moderately large sample sizes were considered necessary to explore breakdowns in the data analysis and to permit confidence in the findings. In collaboration with the practitioners who thought there might be important differences among visitors in their interpretive needs, it was agreed that a balanced quota of self drive (target $N=300$) and coach tour visitors ($N=300$) be surveyed. Similarly it was agreed in discussion and for similar reasons that approximately equal numbers of visitors who had been through the park ($N=300$) as well as those about to enter the park should be targeted ($N=300$). These two quota targets did overlap, so a daily monitoring of progress towards these mutual goals was required. The pre-visit and post-visit structure meant there were subtle differences in question wording for these different respondents but the variations are of minor interest in reporting the results reflecting simply changes of tense relating to the survey timing for each group. The last week in September and three days in October were chosen for the survey period on the advice of the practitioners. This time of the year was classified as a high-visitation period due to local and interstate school holidays and, additionally, it was considered to be a period when international visitors were more

likely to be present. In terms of seasonality and weather, it is mid-spring on the island in September with temperature ranges typically from a maximum of 12 to 25 degrees Celsius (about 53 to 77 degrees Fahrenheit). On any day during the survey period, researchers would disperse to any one of nine sites on the island selected for ease of access to visitors. The sites consisted of lunch and picnic areas, transport nodes and other national park sites in addition to the main Flinders Chase visitor facility location. At all sites, appropriate managerial permission was sought to distribute the surveys and remain on site to collect the forms. All potential independent respondents were approached during the times the researchers were at the sites. Typically, this meant approaching all the people at the site at the time since the pace and sequencing of visitors at most sites permitted requests to participate be made to all of the visitors present. In situations where there were too many visitors to survey at once, every second travel party was approached and one person asked to assist. The request was alternated between males and females if the travel party contained people of different genders. Permission to approach coach passengers on group tours was sought from the relevant coach companies and managers. Tour group passengers were accessed more readily due to knowledge of their schedules and likely arrival times. The research team kept a daily tally of tour group visitors (these were mainly large coach visitors) bearing in mind the need to reach the quotas that had been set. This quota was reached and indeed exceeded after seven days.

Survey Questions

The instrument developed to assess visitor needs for interpretation was built on a range of similar surveys used in other interpretive contexts and which had resulted in peer-reviewed academic publications. In particular, question formats for visitor demographics and interests in interpretive materials were directly linked to such sources (Woods & Moscardo, 1996). Nevertheless, the action-research format requires many questions tailored to a particular setting. The following categories of information were requested in the survey, with the most important interpretive material embedded in the larger context of assessing visitor attitudes to the park. In the order they appeared on the self-completion survey form, the questions were place of residence, independent or tour group category, visit history, visit duration, motivation to visit the Flinders Chase (a closed question with 12 motive items built on the travel career motivation work of Beard and Ragheb (1983) and Pearce (1988)), wildlife viewing interest (a question with five alternatives linked to a specialist interest, a general interest, partial interest, disinterest, or actively avoiding wildlife), an open-ended question (used in previous studies) of what questions visitors would like to ask about wildlife, a closed-ended question identifying 16 themes for the interpretation in the future visitor center and rated on four levels of interest, a question on the adequacy of the available information (three response categories: not enough, about right, too much), an item on further facilities required (open ended), questions on Flinders Chase site visit patterns or intended visit patterns, satisfaction with wildlife experiences on a 0 to 10 point scale (to explore this issue in depth (c.f. Ryan, 1995)), open-ended questions on how to improve wildlife viewing, satisfaction with fifteen specific other features of the park (five-point scale), overall satisfaction with the park (0 to 10) and some further demographic questions, such as age, travel party size and composition, and gender. Some of these questions were generated by requests from the practitioners to satisfy their curiosity about issues other than interpretive design considerations. Such material was considered and analyzed in the report but was

Facility	Percent of tour group suggesting improvement (N = 142)	Percent of independent visitors suggesting improvement (N = 223)	Total suggesting improvement (N = 365)	Percent not very satisfied or not at all satisfied
Roads	19	37	33	65
Better Camping facilities	6	9	8	33
Visitor Center	23	35	31	30
Improve Toilets	11	10	11	23
Quality of Information in visitor center	20	20	20	21
Better signage/maps	3	15	12	15
More short walks	3	7	6	6

Table 1: Suggested improvements and levels of dissatisfaction with Flinders Chase National Park facilities in 1999 (N=365)

not directly used in the suggestions made about interpretive design. The questionnaire was pre-tested off site by the researchers; there were no issues with ambiguous wording and completion times tended to be of the order of 14 minutes. The multiple formats and response styles of the questions were deliberate strategies to maintain respondent attention and to collect a mix of structured and respondent initiated information. The survey was only conducted in English.

Respondents

In total 710 visitors provided completed survey forms. There was a 97% response rate to the surveys, thus establishing the value of the direct distribution and collection method used in this study. The few respondents who refused were non English speakers. The required 300 person quotas were all exceeded in the time the researchers had for the work with 312 tour group visitors (44% of the total) and 398 independent visitors being sampled (56% of the total). The pre visit to Flinders Chase group consisted of 345 visitors (48% of the total) with 365 post Flinders Chase visitors (52%). The cross classification of these two quotas was relatively well balanced; pre-visit tour group visitors comprised 24% of the total, post-visit tour group visitors made up 20% of the total, pre-visit independent visitors amounted to 24% of the total and post-visit independent visitors were the most numerous at 32% of the total. In the overall sample, 47% of the total visitors were male. The distribution across the age ranges was quite evenly spread with between 17 and 21% for all age groups between 20 and 60 years with 17% over 60 years of age and 8% under 20 years old. In terms of visitor origins, 73% were Australian with 80% of these from three states (South Australia, New

% of the sample rating the following as Very Interesting	Pre Visit (N=345)	Post Visit (N=365)
1. Wildlife in FCNP	61%	72%
2. Interesting geographical features	52%	61%
3. Hints on how to see wildlife	52%	54%
4. How visitors can minimise impacts on FCNP environment	50%	51%
5. How visitors can minimise their impacts on wildlife	47%	48%
6. The giant animals that once roamed the area	41%	41%
7. Feral animal management	39%	35%
8. The plants of FCNP	36%	44%
9. Aboriginal occupation and connections	35%	27%
10. Ecosystems	32%	32%
11. Shipwrecks	31%	32%
12. Weed management	31%	27%
13. Fire management	30%	26%
14. Biodiversity	29%	29%
15. Lighthouses	25%	28%
16. Pastoral land use	14%	14%

Table 2: Interest in Topics for a New Visitor Center (N = 710)

South Wales and Victoria). The 27% of international visitors were mainly from Europe (40%), North America (20%), and the United Kingdom and Ireland (20%). Few visitors were travelling alone (4%) with most in spouse, family groups, or friendship groups (46%, 27%, and 23% respectively). On average, 80% had never been to Kangaroo Island before, although this figure was higher for the tour group visitors (90% compared to the independent travellers (66%).

Results

The main goal of the first study was to profile the interpretive needs of the visitors in 1999.

Some questions in the survey provide a context for the overall importance of these interpretive needs and some responses are directed at the preferred interpretive content. Table 1 provides an overview of the suggested improvements requested for the Flinders Chase National Park. The responses on this occasion are only from the post-visit visitors, as only such visitors can comment with authority on the existing provision of services. The data reported in Table 1 includes both the percent of tour group and independent visitors who seek the improvements as well as the percentage of respondents overall saying they were not very satisfied or not at all satisfied with this feature.

The information provided in Table 1 highlights some common services required for the whole park, but the needs for an improved visitor center with better quality information were key items identified. There was also a need for better maps and orientation as further interpretive and information requirements.

A more specific set of responses to the themes of interest in a new visitor center are depicted in Table 2. There was relatively little difference between the tour group and independent travellers in the overall themes of interest and accordingly, the information in Table 2 addresses only the pre-visit and post-visit responses.

There are only some small differences in the two groups portrayed in Table 2, but in a broad sense, the post-visit tourists have a slightly heightened interest in wildlife, the geographical features and the plants of the region. These specific interest are demonstrated further in the responses to the question, "What would you like to ask about the Flinders Chase National Park?" The relevant pre-visit and post-visit questions for both the tour groups and the independent visitors are depicted in Table 3.

In responses to the post-visit questions, there is evidence of a heightened appreciation of the need for information on how to see wildlife from the tour group visitors. The interest in the history and the original nomination of the park declines slightly and more questions directed at the management of the setting appear.

Action Research Implications

The findings from the 1999 survey provided some starting points for the interaction between the researchers and the park interpretive personnel as to how to better serve all visitors in a new visitor center. Several important summary points were discussed and extracted from the core results. The differences amongst separate groups of visitors were not large, particularly in terms of overall interest areas. This starting point had some fundamental implications permitting the design of a center with a small core of common purposes rather than necessitating a multi-layered resource reaching substantially different audiences. The interest in seeing wildlife better was a dominant concern. The interest level in the local farming community and lifestyle was low. Signage and maps were seen to be a weak point in the general array of visitor services. As visitors became familiar with the area, as indicated by their post-visit responses, there was an enhanced interest in the management of the setting, as well as its geographical features. The range of topics for possible inclusion in visitor center interpretive displays was large and included the extinct megafauna and the archaeological sites relating to their discovery, fire management, feral animal control, and shipwrecks. There was some interest in indigenous history, but rather less in pastoral land use. The desire for more short walks within the park could also be applied to the area adjacent to the visitor center and raised the possibility of walks extending from, returning to, and linked into the center's interpretive effort. The researchers' interest in mindfulness and the need to

Question – Pre-Visit	Tour group visitors (%) (N = 171)	Independent visitors (%) (N = 174)	Total pre-visit sample (%) (N = 345)
Where do I find/see wildlife?	11	22	19
Are visitors careless?	14	17	16
Why was F.C. selected for a National Park?	4	14	11
How much does it cost to maintain the park?	2	8	6
What can I see/do there?	5	4	4
Question – Post-Visit	Tour group visitors (%) (N = 142)	Independent visitors (%) (N = 223)	Total post-visit sample (%) (N = 365)
Where do I find the wildlife – information on finding the wildlife?	27	16	19
When will the roads be sealed/completed?	7	18	14
Will there be more guided tours/presence of guides in the future?	2	10	7
How is wildlife/environment maintained with large visitor numbers?	7	5	5
Why was F.C. selected for a National Park – history/geography of the Park?	2	6	5

Table 3: Most Popular Questions Respondents Would Like to Ask About Flinders Chase National Park

design engaging exhibits was reflected in some of the visitor survey responses with one category of suggested improvements as reported in Table 1 specifically mentioning interactive and high-quality visitor displays.

On the basis of the survey and the discussion of the survey responses with the park staff, a report was written in the year 2000 outlining several guiding principles pertaining to and targets for the interpretive space in the new center. These suggestions, built specifically around the summary points extracted from the survey and discussed previously, were put together with no specific consideration of budgets and spaces available. The recommendations could not be read as technical guidelines but rather as overarching concerns and blueprints for desirable content guided by a mindfulness-inducing directive for the design of the displays. The key project personnel then took these superordinate concerns and worked with interpretation design fabricators and artists to construct the final displays.

The 2004 Survey Method Details

Procedure

The 2004 survey was conducted by five university student volunteers who spent some time with the researchers developing their interviewing skills. Since it was important to access visitors who had been to the newly constructed center, the survey sites in the 2004 study were restricted to the park itself, the visitor center exit areas, and the adjacent car park area. An explicit instruction for the volunteers was to approach all available visitors exiting the park or visitor center car park, but a requirement of the study was that the visitors had to have completed both their time at the visitor center and the park before returning the survey. The researchers set quotas for the number of independent travellers and the number of visitors accessing the park using tour group companies. A total target sample was established as 200 independent travellers and 200 tour group visitors. In other respects the approach to the visitors followed that used in 1999, which was to remain in the vicinity while visitors completed the survey they had been asked to complete. A small exception to this procedure in 2004 was that some large tour groups took the surveys with them and promised to return a set of surveys to the research team using a drop-off box at a transport or ferry terminal node. The return rate for the surveys in 2004 was 89%, with some of the tour group visitors who accepted the survey forms apparently either not completing them or being unable to return them to the collection points. There were some visitors, as in 1999, who did not accept the surveys due to their expressed concerns about their English language skills. The surveying was conducted in the last week in September including a weekend and five days of school holidays. It was equivalent to the period in 1999.

Survey Questions

The format of the 2004 survey followed the style of the 1999 survey form. The participation of the practitioners was again important in checking and reviewing the questions, thus ensuring that all parties were confident that the necessary array of information to make an assessment of the visitor center interpretation was collected. There was a mix of open-ended and closed questions with a variety of response scales to maintain participant attention to the task. In the 2004 survey, participants were asked for their responses to questions concerning their motivation for visiting the Flinders Chase National Park, wildlife viewing experiences, time spent in the park and areas visited, the importance of a range of visitor

Motivation	Percent rating as important	
	1999	2004
See wildlife	69	68
Get close to nature	61	59
Experience wilderness	56	56
Visit scenic spots	40	51
Learning experience	33	29
Get away from others	21	17
Rest and relaxation	31	27
Be physically active	18	21
Someone else wanted to come	17	13
Visit historic site	23	24
Spend time with family/friends	37	27

Table 4: Comparison of the motivational profiles of the 1999 (N = 710) and 2004 (N = 450) samples

center services (six closed questions), an estimate of the time spent at the interpretive displays, the most enjoyable features of the center, their perceptions of what they thought they had learned and the extent of this learning, further questions they would like to ask about the park, their satisfaction with the park overall (0 to 10 scale), their wildlife experience (0 to 10 scale), and items pertaining to their satisfaction with features of Flinders Chase National Park (1 to 4 scale). There was an identical list of questions recording visitor demographics and trip characteristics as in the 1999 survey. The survey was only provided to potential respondents in English.

Respondents

A total of 450 respondents were surveyed in the allocated time period. The number of independent travellers surveyed was 239 and the number of tour group passengers was 211. These figures exceeded the set targets for the study. It was agreed with the practitioners and based on sample survey statistical design that a total of 400 respondents overall would permit a good comparison with the 1999 data, since there was less pressure to assess detailed sub-divisions of the data on this occasion (Nardi, 2003).

Feature	% of Sample who reported the feature as most enjoyable*
Fossils	18%
Touch table	10%
Whole Center	8%
Animal skins	8%
Touch screens	7%
Information on animals	6%
Prehistoric animal paintings & information	5%
Historical information	5%
Aboriginal story	4%
Hands on/interactive display	3%

*Only one response per visitor

Table 5: Most Enjoyable Feature of Flinders Chase National Park Visitor Center (N=450)

Time	% of Sample
No time at all spent at interpretive displays	24% }
10 minutes or less	22%
11-20 minutes	26% }
21-30 minutes	21%
31-60 minutes	4%
>60 minutes	3% J
For all visitors who actually used the display area, mean time spent at interpretive displays was estimated as 22 minutes.	

Table 6: Visitors estimates of the time spent at interpretive displays at Flinders Chase National Park Visitor Center (N=450)

Outcome	Percent of the sample who spent time in the interpretive center
<p>How much they thought they learnt</p> <p style="text-align: right;">Not much 4%</p> <p style="text-align: right;">A little 22%</p> <p style="text-align: right;">Some 47%</p> <p style="text-align: right;">A lot 27%</p>	
<p>Main things learnt</p> <p style="padding-left: 20px;">Information about wildlife 18%</p> <p style="padding-left: 20px;">Formation of the island/geology 14%</p> <p style="padding-left: 20px;">History of the area (general) 8%</p> <p style="padding-left: 20px;">Aboriginal history 5%</p> <p style="padding-left: 20px;">Conservation issues 5%</p> <p style="padding-left: 20px;">Mega fauna 4%</p> <p style="padding-left: 20px;">Flora 1.5%</p> <p style="padding-left: 20px;">Shipwrecks 1.5%</p>	

Table 7: Visitor perception of their learning from interpretive displays in the Flinders Chase National Park Visitor Center (N=342)

Topic area	Learnt not much / a little	Learnt some	Learnt a lot
	(N=89)*	(N=161)	(N=92)
Wildlife	61%	86%	74%
Geology	39%	34%	48%
General History	19%	21%	23%
Aboriginal History	16%	8%	11%
Conservation	3%	1%	5%
Mega fauna	3%	1%	2%
Flora	3%	5%	2%
Shipwrecks	-	3%	7%
Park Activities	3%	1%	5%

*Percentage figures refer to columns and multiple responses allowed in terms of indicating topics where visitors felt they had learned certain amounts.

Table 8: Topic areas in the visitor center and visitors' self-reported amount learnt (N=342)

The 1999 and 2004 samples are broadly comparable, especially in terms of previous experience, and the number of intrastate visitors (23% and 25%) and age (means of 48 years and 45 years) although there are more international visitors proportionately (45% to 26%) and more families in the 2004 data (57% to 22%). The major motivational and wildlife viewing differences that emerged in the comparison of the two groups are reported in Table 4.

The motivational profiles as featured in Table 4, even more than the demographic profiles, confirm the strong similarities for the two samples, as the rankings and percentage agreements are closely aligned.

Results

The key results from the 2004 survey can be used to define the perceptions of the interpretation at the newly constructed Flinders Chase National Park Visitor Center. The value and the importance of the visitor center and its attributes were assessed, and from

the structured response set, five items were described as very important by a high percentage of visitors in their responses to the new center. The three interpretive items of most interest were information to improve and plan my visit experience (rated as very important by 50% of the respondents), how to find my way around the park (rated as very important by 38% of respondents), and detailed information on wildlife viewing (rated as very important by 28% of the respondents). Two functional items (the toilets and the café) were also rated as very important features by 55% and 18% of respondents respectively.

Additionally a number of measures were recorded which assist in commenting on the visitors' responses to the interpretation from the 2004 survey. Information on the time reported as being spent at the visitor center and the features of the center seen as most enjoyable are presented in Tables 5 and 6.

The results reported in Table 5 and Table 6 together show that there is a spread of interest in the themes of the visitor center interpretive materials and that this interest occupies visitors for a reported average of over 20 minutes. In Table 7 and Table 8 the visitors self-reported learning also provides a positive appraisal of the interpretive efforts. Only 4% of respondents report that they learned not much while 75% of visitors said they learned quite a lot or a lot.

It can also be seen in Table 8 as a positive feature of the interpretive displays that there is a widespread distribution of the main things which visitors felt they learned. This spread of the main things learned can be seen as resulting from the provision of information to suit many interest areas. Further, in the 1999 data as already reported, visitors indicated that they most wanted wildlife information. It is noteworthy therefore that almost one fifth of the 2004 visitors thought that information about wildlife was the main thing they had learned from the center.

There are also results from the 2004 survey that provide findings that visitors to Flinders Chase National Park are very satisfied with their experience. An independent *t* test comparing the 1999 mean (8.0) and the 2004 mean (8.9) was statistically significant: $t = 21.56, p < .01$. Previous research undertaken by the research team in other Australian settings has demonstrated, using the same kinds of scales, that this 2004 score of 8.9 is equivalent to the very best reef and rainforest visit satisfaction scores obtained from visitors in Queensland and above visitor satisfaction scores with wildlife in the well publicized wildlife sites at New Zealand's Otago Peninsula. It is possible to interpret the scale of satisfaction as above 8.5 being equivalent to outstanding, 8.2 to 8.4 very good, 8.0 to 8.2 as good, 7.5 to 7.9 as sound, below 7.5 as moderate, and below 7.0 as requiring attention and definite improvement (cf. Noe, 1999).

Additionally this very high level of satisfaction is consistently manifested throughout the component parts of the experience which were measured on the 0 to 4 scale, where 3.5 is outstanding, 3.0 to 3.4 very good, 2.6 to 2.1 good, and below 2.1 is sound. In the 2004 results, all the component scores were over 3.0, which indicated no weak links or trouble spots in the site specific satisfaction scores. This finding is supported by high intention-to-return scores and by a broad distribution of the best features of the FCNP experience. No one feature dominated, indicating that there was not a single reliance on one site for the overall satisfaction score. In 2004, in the open-ended questions on what visitors would like to ask park staff, there is a decline in the overall information requested with only 7% seeking wildlife-based information compared to 19% reporting such questions in 1999. Satisfaction

with wildlife viewing rises significantly from 7.9 in 1999 to 8.4 in 2004 (independent t test: $t=14.56, p<.01$).

Discussion

Much has changed in the world, in the world of tourism, and in the presentation of Flinders Chase National Park since 1999. The global tourism environment has seen terrorism and security threats that have been far-reaching in scope (Jafari, 2005). Tourist demand for certain kinds of tourism products has been changing with a notable increase in an emphasis on time spent with friends and family in secure settings (South Australian Tourism Commission, 2004). The standard of interpretive facilities and customer care in international settings continues to expand and improve and the Flinders Chase National Park Visitor Center is an excellent local example of this upgrading of facilities to enhance visitor experience and promote sustainable tourism.

The 2004 visitor survey provides, in overall terms, a very positive appraisal of the management of the Flinders Chase National Park tourism experience and the center that serves that aim. It endorses comprehensively the effectiveness of the recently constructed interpretation at the visitor center in terms of visitor self-reported learning and satisfaction. In a modest way these positive outcomes support the action research model pursued in this study and endorse the application of the mindfulness model as a guiding set of ideas in setting up the display materials.

A distinctive feature of the survey results is the high level of motivation for viewing wildlife. Compared to other Australian settings where wildlife is present, the results still stand out as a dominant interest. This motivational background is important in interpreting the findings, as such high expectations might be difficult to satisfy. To be more specific, the visitor evaluation of the visitor center itself is very positive. The enjoyment of the visitor displays is very good (3.2) on the structured four-point scale, there is considerable variety in the most enjoyable feature reported, again indicating no single reliance on any one outstanding exhibit, and the mean time spent by those visiting the interpretive displays was estimated to be 22 minutes. Mean scores can be somewhat misleading in terms of skewed distributions, with a few very long times raising the average. Such distortions are not evident in Table 6, with 28% of visitors spending more than 20 minutes in experiencing the exhibits. This time refers only to displays in and around the building.

Additionally, it can be strongly argued that the overall satisfaction score with viewing wildlife (8.4 on a 0 to 10 scale in 2004) can be interpreted as a very good satisfaction score and is a reflection in part of the success of the interpretive center. This link is confirmed by the change in question asking from the 1999 to the 2004 survey. In the 1999 survey, the dominant question asked was how to see wildlife 19%, whereas in 2004 it had declined to 7%. At the same time the assistance for seeing wildlife and the cues provided in the center can be seen to underlie the improvement in satisfaction with wildlife viewing (7.9 in 1999 and 8.4 in 2004, t test =14.56, $p<.01$). This increase in wildlife viewing satisfaction mirrors a statistically significant total increase in satisfaction with the FCNP experience which also rises from 8.0 in 1999 to 8.9 in 2004. This is a large and important jump, taking the qualitative meaning of the total assessment from good to outstanding (c.f. Pearce, 2006). It is a clear result of enhanced visitor satisfaction across the time span considered.

This detailed study of one visitor center, albeit one representing an expensive effort at interpretation should not be seen simply as a locally relevant example of action-oriented

interpretation research. Instead, the value of the study lies in the cycle of action research and practitioner-researcher interaction which underlies this study and which in the larger view finds the effects of research induced change to be successful. It is very common in the research literature in tourism interpretation and leisure studies to note in the final remarks of a paper that managers should pay attention to the research that has just been presented. The research reviewed here is an actual instance of managers paying attention to such research. The study suggests there is promise in an action-research approach to interpretation studies. There is, of course, always more to do in evaluating interpretive efforts and actions. In the case of the visitor center studied here, recommendations for future studies to maintain the rapport between the researchers and the South Australian National Parks and Wildlife Service could include the pursuit of several agendas. Visitor-based studies with tour groups of different types may unearth some specific issues with certain operations. Non-English-speaking visitors could be assessed with appropriately translated surveys and may represent a hidden group of visitors needing more attention. A check on the satisfaction scores in a different season could assess the year-round adequacy of the interpretive information and visitor center functions. A wider approach to the evaluation of the center that includes administrative, community, and tour operation perspectives would add to the highly positive visitor appraisal conducted in this study. Further work can also be recommended and returning in another two to three years for a second visitor center evaluation could indicate the success of maintaining the quality and provision of the services. Finally, parallel appraisals of other visitor centers and iconic sites in South Australia and beyond would provide important comparative information.

References

- Beard, J., & Ragheb, M. (1983). Measuring Leisure Motivation. *Journal of Leisure Research*, 15 (3), 219-28.
- Bitgood, S., Patterson, D., & Benefield, A. (1988). Exhibit design and visitor behavior: Empirical relationships. *Environment and Behavior*, 20(4), 474-491.
- Cameron, J., & Gibson, K. (2005). Participatory action research in a poststructuralist vein. *Geoforum*, 36, 315-331.
- Cook, T., & Campbell, D. (1975). *Quasi-experimentation: Design and analysis for field settings*. Chicago: Rand McNally.
- Cooper, C.P., Craig Smith, S.J., & Ruhanen, L. (2004). *Knowledge management and tourism*. Madrid, Spain: World Tourism Organization.
- Fallon, L.D., & Kriwoken, L.K. (2003). Community involvement in tourism infrastructure – the case of the Strahan Visitor Center, Tasmania. *Tourism Management*, 24, 289-308.
- Fesenmaier, D., & Vogt, C. (1993). Evaluating the economic impact of travel information provided at Indiana welcome centers. *Journal of Travel Research*, 31(3), 33-39.
- Hobbin, S. (1999). Accreditation of Queensland visitor information centers: A consumer-based perspective. *Journal of Vacation Marketing*, 5(4), 387-399.

- Jafari, J. (2005). Bridging out, nesting afield: Powering a new platform. *The Journal of Tourism Studies*, 16(2), 1-5.
- Kemmis, S., & McTaggart, R. (1988). *The Action research Planner*. Third edition. Geelong, Victoria: Deakin University.
- Kidd, S.A., & Kral, M. J. (2005). Practicing participatory Action research . *Journal of Counseling Psychology*, 52, 2, 187-195.
- Langer, E.J. (1989). *Mindfulness*. Reading, Mass.: Addison-Wesley.
- McTaggart, R. (1991). *Action Research. A short modern history*. Geelong, Victoria: Deakin University
- Moscardo, G. (1999). *Making visitors mindful: Principles for creating sustainable visitor experiences through effective communication*. Champaign, Illinois: Sagamore Publishing.
- Moscardo, G. (2005). Peripheral tourism development: Challenges, issues and success factors. *Tourism Recreation Research*, 30(1), 27-43.
- Nardi, P.M. (2003). *Doing Survey Research. A guide to quantitative methods*. Boston: Pearson Education.
- Noe, F.P. (1999). *Tourism service satisfaction*. Champaign, Illinois: Sagamore.
- O'Brien, R. (1998). *An overview of the methodological approach of action research*. Faculty of Information Studies, Toronto; University of Toronto.
- Pearce, P.L. (1988). *The Ulysses factor: Evaluating visitors in tourist settings*. New York: Springer Verlag.
- Pearce, P.L. (1991). Visitor centers and their functions in the landscape of tourism. In G. Moscardo & K. Hughes (Eds), *Visitor centers: Exploring New Territory*. Townsville: James Cook University.
- Pearce, P.L. (2004). The functions and planning of visitor centers in regional tourism. *Journal of Tourism Studies*, 15(1), 8-17.
- Pearce, P.L. (2005). *Tourist behaviour: Themes and conceptual schemes*. Clevedon, UK: Channel View.
- Pearce, P.L. (2006). The value of a benchmarking approach for assessing service quality satisfaction in environmental tourism. Prepared for: E. Laws and B. Prideaux (Eds), *Tourism and hospitality services management: An international case book*. p235-250. London: Continuum.
- Ryan, C. (1995). *Researching tourist satisfaction: Issues, concepts, problems*. London: Routledge.
- Shadish, W., Cook, T., & Campbell, D. (2002). *Experimental and Quasi-experimental designs for generalised causal inference*. Boston: Houghton Mifflin Company.
- South Australian Tourism Commission (2004). *Visitors to South Australia*. Adelaide: South Australian Tourism Commission.

- Toft, K. (2002). *The Navigators*. Potts Point, Sydney: Duffy and Snellgrove.
- Uzzell, D., & Ballantyne, R. (1998). *Contemporary issues in heritage and environmental interpretation: Problems and prospects*. London: The Stationery Office.
- Wadsworth, Y. (2005). 'Gouldner's Child?' Some reflections on sociology and participatory action research. *Journal of Sociology* 41, 3, 267-284.
- Woods, B., & Moscardo, G. (1996). Adding value to tourist operations through interpretation: Is interpretation good for tourism or is tourism good for interpretation. In Fifth Annual Interpretation Australia Association Conference Interpretation in Action, Bendigo, 30th November - 3rd December 1996 (pp. 109-113).

**Teacher
Persistence in
Implementing
EE: Implications
for the
Interpretive
Community**

Julie Athman Ernst

Assistant Professor
University of Minnesota, Duluth
SpHC 110, 1216 Ordean Court
Duluth, MN 55812
218-726-6761
jernst@d.umn.edu

Abstract

There are a variety of barriers that deter teachers from using environmental education (EE), including state curriculum standards and testing, lack of funding and transportation, lack of training, and misconceptions about what EE is. Despite these barriers, some teachers persist in using EE. Because teachers and students in the formal educational setting often are a key audience for interpretive centers, it would be useful to understand teachers' motivations for using EE and what helps them overcome barriers to integrating EE into their curriculum. Survey research was conducted with 70 K–12 teachers to investigate what they perceive as the strongest influences on their decisions to implement EE and their abilities to do so. Results indicated personal environmental literacy knowledge and skills, environmental sensitivity, and teaching context as key influences on teachers' use of EE. Implications for the interpretive community related to providing teacher training and marketing school-based programs are discussed.

Keywords

environmental education, teacher, professional development, teacher training, environmental literacy, environmental sensitivity

Introduction and Literature Review

Implications of today's "accountability era" in formal education and its emphasis on state curriculum standards and testing are often discussed within the interpretive and environmental education (EE) communities. In many schools, this accountability emphasis has led to teaching subject areas in isolation, a textbook-oriented curriculum, and a tendency to abandon programs that are viewed as extras, even though they offer valuable learning opportuni-

ties (Franklin, 2004). For informal learning centers (parks, zoos and aquaria, museums, farm education centers, etc.) that offer EE programs, this accountability emphasis often has resulted in program revision in support of educational standards, or as described by Gruenewald and Offei Manteaw, “playing the achievement game” (2007, p. 171), and a decreased demand for field trips and classroom-based EE presentations.

While the standards-based movement in formal education often deters teachers from using EE, one of the conceptual areas commonly addressed by informal learning centers, there are additional reasons why teachers do not incorporate EE methods and materials into their classrooms. A lack of training in EE, for example, is another major barrier to infusing EE within the school curriculum (Ham & Sewing, 1988; Lane & Wilke, 1994). Related to lack of training are the barriers of lack of content knowledge and lack of pedagogical knowledge (Kim & Fortner, 2006). Since only about 10% of teachers have taken EE courses as a part of their preservice preparation program (Survey Research Center, 2000) and less than 10% of all teacher colleges require a practicum in EE (Elder, 2003), it is likely that many teachers have had little exposure to how EE can supplement their formal curricula and the knowledge and skills needed to do so.

Beyond training, other barriers limit teachers’ use of EE. Simmons (1989) found that an overwhelming majority of EE curricular guides were science-oriented, which reinforces the notion of infusing EE only into science classes. Further, teachers have tended to perceive the educational opportunities of natural settings as primarily science- or recreation-based (Simmons, 1993). Thus, teachers who teach subjects other than science often perceive EE as irrelevant to their curriculum. Beyond conceptual barriers, a variety of logistical barriers, such as lack of planning time, administrative support, transportation, and funding, continue to be cited as deterrents to the use of EE (Ham & Sewing, 1988; Monroe, Scollo, & Bowers, 2002; Thompson, 2004). Interestingly, in light of the wave of EE criticism in the mid-1990s (see National Environmental Education Advancement Project, 1996), resistance from parents and the potentially controversial nature of environmental education are not frequently cited by teachers as barriers to EE (Survey Research Center, 2000).

However, there are teachers who persist in incorporating EE into their curricula, despite these barriers. Shuman and Ham’s *Model of Environmental Education Commitment* (1997) is useful for those thinking about teacher persistence in the implementation of EE, despite barriers. Shuman and Ham suggest that teachers’ attitudes toward teaching EE, subjective norms, and perceived behavioral control related to teaching EE influence their commitment to teach EE. According to their model, “the stronger the teachers’ commitments to teach EE, the greater the probability that they will overcome existing barriers and actually carry out the behavior” (p. 30). In his framework, *Elements of Success in Environmental Education*, May (2000) suggests the importance of a school climate conducive to EE, as well as teachers with the knowledge and skill base to teach EE whose teaching style, content orientation, and personal behaviors are compatible with EE. Stevenson (2007) suggests teachers who are highly committed to and competent in EE can overcome barriers to implementing EE in their classrooms.

The constraint negotiation literature in leisure research further sheds light on teachers’ implementation of EE in spite of barriers. Research on leisure participation shows that constraints do not necessarily reduce or prevent participation in leisure activ-

ities (Kay & Jackson, 1991); consequently, participation is not dependent on the absence of constraints, but on the negotiation through them (Jackson, Crawford, & Godbey, 1993). Constraint negotiation is used as a framework for understanding how people can and often do engage in leisure activities despite obstacles. In the leisure research literature, negotiation of constraints refers to overcoming obstacles to participation through effort and initiative (Samdahl, Hutchinson, & Jacobson, 1999). For example, negotiation strategies in a leisure context might include resisting gender role expectations, better organizing one's time, making time for oneself, and taking lessons—all of which may help overcome obstacles to participation in the leisure activity.

Whether or not one is successfully able to negotiate through the constraints to participate in the desired activity depends on the strength of those constraints and the strength of one's motivation (Jackson, Crawford, & Godbey, 1993). Thus, the interrelationships among constraints, negotiation, and motivation are integral to understanding participation in leisure (Hubbard & Mannell, 2001). However, much of the research on constraint negotiation has focused on categorizing negotiation strategies, rather than on understanding the role of motivation in the constraint negotiation process (Hubbard & Mannell, 2001).

Just as leisure constraints do not always reduce or prevent leisure participation, barriers to EE do not always reduce or prevent teachers from implementing EE. Applying the concept of constraint negotiation to teachers and EE, teachers' persistence in implementing EE despite the barriers they face can be understood as the interplay of constraints, motivation, and negotiation strategies. Whether or not a teacher is successful in overcoming barriers (constraints) to implementing EE depends on the relative strength of the barriers (constraints), as well as one's motivation for implementing EE and the negotiation strategies used.

Thus, the purpose of this study, phrased in the language of leisure research, was to identify sources of motivation and negotiation strategies used by teachers implementing EE, as well as to identify constraints and the relative strength of those constraints. Using phrasing more common in the EE research literature, the purpose of this study was to identify influences on teachers' decisions to implement EE (motivational sources), influences on teachers' abilities to implement EE in spite of barriers (negotiation strategies), and barriers (constraints). Because teachers and students often are a key audience for informal learning centers and EE is a commonly addressed conceptual area at these centers, informal learning centers that engage in EE could use this understanding to guide the development and delivery of teacher training and the development and marketing of their school-based programs to teachers. Thus, through an exploration of what motivates teachers to overcome barriers and the negotiation strategies used in doing so, insights can be gained into how to better work with those teachers already using EE and how to reach teachers who are not using EE.

Based on the evolution of the constraint negotiation literature (from an understanding of constraints that prevent leisure participation, to describing motivational sources and negotiation strategies people use to overcome constraints, to building models of the constraint negotiation process), a study focused on teachers who implement EE despite barriers (the "doers") can be justified. Previous EE research (Ham & Sewing, 1988; Lane & Wilke, 1994; Monroe, Scollo, & Bowers, 2002; Thompson, 2004) has provided an understanding of the barriers to EE (what deters and prevents teachers from implementing EE). A

picture of why and how teachers implement EE despite barriers is beginning to emerge in the literature (May, 2000; Shuman & Ham, 1997; Stevenson, 1997), but is not thoroughly understood. This understanding is needed before future research, involving empirical comparison of “doers” and “non-doers,” theoretical specification, and model building, can be undertaken. The study described here was intended as a precursor to follow-up research, where a case-control design and logistic regression will be used to compare users and nonusers to determine the factors that influence and constrain the use of EE.

Research Questions

The following questions were explored in this study:

1. What do teachers who have chosen to use and persist in using traditional, supplemental forms of EE perceive as the strongest influences on their decisions to do so?
2. What do these teachers perceive as the strongest influences on their abilities to implement EE?
3. What do these teachers perceive as the strongest barriers to EE?

Methods

Questionnaire Development

For this study, EE was defined using the UNESCO definition: “a process of developing a world population that is aware of and concerned about the total environment and its associated problems, and which has the knowledge, skills, attitudes, motivation, and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones” (1978).

A three-section questionnaire was developed as part of a larger, national study exploring variations in teachers’ use of EE. The first section of the questionnaire used a two-column format, with the same 69 items clustered conceptually in each column. These items, representing potential positive influences, were developed from the EE literature and conversations with teachers. This two-column format stemmed from the possibility that what influences one’s decision to use a particular type of EE may differ from what influences one’s ability to implement it. Further, this two-column format paralleled the constraint negotiation literature, which suggests the importance of understanding both sources of motivation and negotiation strategies. Thus, the first column represented motivational sources (*To what extent did each of the following influence your decision to use EE?*), and the second column represented negotiation strategies (*To what extent did each of the following facilitate your implementation of EE?*). The response format for each item used a rating scale, ranging from a value of 1 (*no influence/did not help*) to 4 (*very strong influence/very strongly helped*); the response, *does not apply/did not experience*, was scored zero. Space was provided at the end of this section for teachers to list other influences on their decisions and abilities to use EE that weren’t captured in the items above.

The second section of the questionnaire addressed potential barriers, stemming from EE literature base, and was composed of 18 items. The response format for these items ranged from a value of 1 (*was not an obstacle/did not experience*) to 5 (*very strong obstacle*).

The third section of the questionnaire included a series of questions for gathering

demographic data and determining type of EE used. Respondents had the opportunity to select one of two approaches: traditional, school-based EE or environment-based education. *Traditional, School-Based EE* was defined as programs and approaches that aim to foster environmental literacy through short-term, hands-on activities. This form of EE usually supplements existing courses or lessons (e.g., using an ecological activity as a springboard for writing, reading, and art assignments), but sometimes serves as a stand-alone course (e.g., an environmental science class). In this approach, teachers often rely on programs and materials developed and/or delivered by EE organizations or informal learning centers. Examples of EE within this category include lesson-level or stand-alone field trips or field investigations, classroom presentations delivered by environmental educators or interpreters from informal learning centers, outdoor activities, ecology games, and supplemental activities from EE curricula.

In contrast, *Environment-Based Education* was defined as a form of school-based EE where the local environment serves as a context for integrating multiple disciplines or core subject areas and as a source of real-world learning experiences. Learner-centered, project-, issue-, or problem-based teaching methods are used, with a focus on skill development and application in real-world settings and increasing the relevancy of what students are learning. Teachers tend to use this approach for a significant share of students' learning experiences across subject areas, relying more on students' interests and input and less on pre-developed EE programs delivered by environmental educators or interpreters. Examples of this approach include place-based education, *Environment as an Integrating Context for Learning*, and *Investigating and Evaluating Environmental Issues and Action*.

The questionnaire was reviewed by a panel of experts, including three EE researchers and one social scientist. They examined the questionnaire to ensure completeness and congruency among items and the research questions. The revised survey was pilot tested with 15 teachers at a local school. A reliability analysis using Cronbach's alpha correlation coefficient was conducted on the clusters of conceptually related questionnaire items. The reliability of these item clusters ranged from $\alpha = .77$ to $.97$. The reliability of the section on barriers was $\alpha = .82$, using Cronbach's alpha correlation coefficient. Based on corrected item total correlations and pilot participants' feedback, revisions to several items were made.

Sampling and Questionnaire Administration

A convenience sample of 287 K–12 teachers currently using EE was used for the first phase of the larger, national study investigating teachers' use of EE. Convenience sampling was used to identify teachers who currently use EE, as there is no database or list of all the teachers in the U.S. using EE. As explained earlier, only teachers using EE were invited to participate in the study, as this research was intended as an exploratory, precursory step to future research comparing teachers who use EE with teachers who do not. These 287 teachers had responded to electronic invitations to participate that had been posted on various EE- and education-related listservs. Two weeks after the questionnaire was mailed by postal service, a follow-up e-mail with a questionnaire attachment was sent to all 287 teachers, encouraging them to return the questionnaire if they had not already done so.

Of the 200 respondents (a 70% response rate), 70 teachers reported choosing to use

Composite	Reliability ^a
Environmental sensitivity	.80
Environmental literacy knowledge and skills	.84
Positive environmental attitudes	.84
Receptiveness to EE	.76
Environment-based education training	.75
EE training	.65
Training in environmental content	.65
Other professional development in EE	.62
Teaching context	.77
Supportive school climate	.87
Awareness of positive student outcomes	.78

Note. $N = 200$.

^aReliability calculated using Cronbach's alpha

Table 1. Questionnaire Composites and Reliability

and currently using traditional, school-based EE (such as the use of field trips to informal learning centers, classroom presentations by local EE organizations, and supplemental EE curricula). The remaining respondents reported using environment-based education—more comprehensive, systemic approaches to EE, such as place-based EE or *Environment as an Integrating Context* programs.

Teachers using environment-based education were not included in the portion of the study presented here, as the purpose of this portion was on helping interpreters and environmental educators learn how to better work with those teachers currently using EE and to ultimately reach those who are not. Because integrated, environment-based approaches tend to be more student-centered and project-focused than traditional forms

Composite	Mean ^a value for influence on decision to use EE	Mean ^a value for influence on ability to use EE
Environmental literacy knowledge and skills	2.83	2.87
Environmental sensitivity	2.79	2.79
Teaching context	2.64	2.63
Receptiveness to EE	2.45	2.42
Awareness of positive student outcomes	2.36	2.44
Positive environmental attitudes	2.22	2.34
Supportive school climate	1.71	1.82
Other professional development in EE	1.56	1.60
Training in environmental content	1.55	1.56
Environment-based education training	1.40	1.39
EE training	1.38	1.43

Note. $n = 70$.

^a0 = Not an Influence/Does Not Apply; 1 = Minor Influence; 2 = Somewhat of an Influence; 3 = Strong Influence; and 4 = Very Strong Influence.

Table 2. Influences on Teachers' Decisions to Use and Ability to Implement EE

of EE, teachers using environment-based education tend to rely less on classroom presentations by outside organizations and pre-developed field trips routinely offered to schools by informal learning centers. Thus, it is likely that the teachers encountered by interpreters and environmental educators at informal learning centers use traditional forms of EE, rather than systemic, environment-based instructional approaches.

Because environment-based education tends to shape a teacher's overall instructional strategy and focus more on improving students' learning in the core subject areas, rather than fostering environmental literacy (Ernst, 2004; NEETF, 2002), it is likely that the influences and barriers differ across the two approaches. While a comparison of teachers using traditional forms of EE with teachers using environment-based education would be interesting and useful, the analysis involved is beyond the scope of this portion of the study and the intended purpose and audience of this article.

Of the 70 teachers who reported using EE, 13 were male, 40 were female, and 17 did not specify male or female. Fifty-three of these teachers taught in public schools. Thirteen teachers taught in an urban setting, 22 in a suburban setting, and 35 in a rural

Barrier	Mean ^a
Lack of funding	2.88
Lack of planning time	2.59
Emphasis on state testing	2.44
Emphasis on state standards	2.30
Lack of transportation	2.30
Lack of training or professional development	2.13
Concerns regarding safety, liability, and classroom management	1.97
Lack of procedural/pedagogical knowledge	1.89
Lack of environmental content knowledge	1.83
Lack of community interest/partners	1.76
Lack of administrative support	1.63
Lack of parent support	1.48
Lack of natural area to study	1.45
Comfort level with traditional teaching	1.45
Counter to school climate	1.34
The grade level I teach	1.27
Lack of comfort in the outdoors	1.24
The subject area I teach	1.14

Note. $n = 70$.

^a1 = Not an Obstacle/Did Not Experience; 2 = Minor Obstacle; 3 = Somewhat of an Obstacle; 4 = Strong Obstacle; and 5 = Very Strong Obstacle.

Table 3. Barriers to Teachers' Use of EE

setting. Thirty-one of the teachers taught in elementary schools, 14 taught in middle schools, and 25 taught in high schools. The majority of the elementary teacher respondents taught all subject areas, and the majority of the middle and high school teacher respondents were science teachers.

Data Analysis

Using the data from all 200 teachers, scaling procedures (item analyses and factor analyses) were used initially to analyze the conceptually-clustered questionnaire items. Through an iterative process focused on data-reduction, items were re-clustered and re-analyzed until the items in each cluster fit both conceptually and statistically. Each of the resulting 11 clusters was labeled with a description of influences contained within the cluster (a researcher-constructed typology, as in Patton, 1990). An EE researcher and a social scientist reviewed the revised clusters of items, along with their researcher-constructed typologies. These clusters, which will be referred to as composites from this point forward and their corresponding Cronbach's alpha reliability coefficients are listed in Table 1. An internal consistency estimate of the reliability of the barrier section of the questionnaire was conducted, and the Cronbach's alpha reliability coefficient for this section was .85.

Using the data from the subset of 70 teachers, means were calculated for each of the composites to determine the three composites that were perceived by teachers as having the strongest influence on their *decisions* to use EE (the three strongest sources of motivation); means also were calculated for each of the composites to determine the three composites that were perceived by teachers as having the strongest influences on their *abilities* to implement it (the three negotiation strategies perceived as having the strongest influence); see Table 2. In addition, means were calculated for each of the barriers to determine which were perceived by teachers as the strongest barriers to their implementation of EE; see Table 3. Because of the possibility of differences between elementary teachers and secondary teachers, independent-samples t tests were conducted for each of the 11 composites representing influences on decisions to use EE, the 11 composites representing influences on ability to implement EE, and each of the 18 barriers.

Results and Discussion

Perceived Influences on Teachers' Decisions to Use and Ability to Implement EE

Teachers indicated the following three composites were the strongest influences on both their decisions to use EE (sources of motivation) and on their ability to implement EE (negotiation strategies):

- *Environmental literacy knowledge and skills* – knowledge of ecological concepts and environmental issues, skills in using environmental action strategies, and participation in environmental action, such as environmental community service or environmental organizations
- *Environmental sensitivity* – personal interest in nature or the environment or high comfort level in the outdoors, often stemming from “significant life experiences,” such as frequent contact with nature as a child, spending time in the outdoors with an adult role model, or witnessing environmental degradation

- *Teaching context* – the grade level and subject areas taught, the school setting (urban, suburban, rural), and the type of school (public, private, charter, etc.)

The means of these three influences corresponded to a rating of between *somewhat of an influence* and *strong influence* (means between 2.0 and 3.0 on a scale ranging from 0 to 4.0; see Table 2).

The influence of knowledge and skills relating to environmental literacy and environmental sensitivity makes sense. A personal interest relating to nature or fond memories of time spent outside as a child with an adult role model may be powerful motivators for teachers to pass these experiences along to their students. Knowledge and skills relating to environmental literacy (a personal knowledge of environmental issues and the skills that can be employed to address these issues) could be strong motivators to persist in using EE, even in the face of obstacles. Likewise, knowledge of ecological concepts, environmental issues, and participation in environmental action, for example, may be strong facilitators in helping teachers feel “able” use a form of instruction that is more issue- and action skill-oriented than traditional instruction.

The influence of teaching context is less clear, as the demographic data showed teachers relatively distributed across grade level and school setting. Teachers were, however, primarily from public schools. It is unclear why teachers in this study perceived the public school setting as a positive influence on their use of EE. One might assume it would be easier for teachers to implement EE in private or charter schools, where curricular and schedules might be more flexible. On the other hand, most of the teachers who were middle school and high school teachers taught science, and the majority of elementary teachers taught all subject areas, including science. Given the common teacher perception that EE is best suited for science, a perception that is reinforced through preservice training (Ham & Sewing, 1988), this strong influence of teaching context might be explained by subject area taught. This explanation is supported by examining individual items within this composite: The item, “Subject I Teach,” corresponded with a rating of *strong influence* for both influencing decision to use EE and ability to implement EE ($M = 2.93$ and $M = 2.90$ respectively).

None of the 11 composites corresponded to a rating of *strong* or *very strong influence*. The three strongest influences corresponded to a rating of between *somewhat of an influence* and *strong influence*. This may suggest that the strongest influences on teachers’ decisions to use and abilities to implement EE were not reflected in the questionnaire. On the other hand, teachers’ responses from the open-ended portion of the questionnaire did not generate any influences that were not represented in the questionnaire’s items or composites. Thus, it may be that a single composite may be less influential than a set of composites collectively influencing a teacher to use EE.

Perceived Barriers to Teachers’ Use of EE

The following five barriers were perceived as the strongest barriers to the implementation of EE: (a) lack of funding, (b) lack of planning time, (c) emphasis on state testing, (d) emphasis on state standards, and (e) lack of transportation (means reported in Table 3). These results are consistent with previous literature on barriers to EE (Franklin, 2004; Ham & Sewing, 1988; Monroe, Scollo, & Bowers, 2002). However, the means of these five strongest barriers corresponded to a rating of *minor* to *somewhat of a barrier* (means

between 2.0 and 3.0 on a scale ranging from 1.0 to 5.0; see Table 3). Perhaps this suggests that to the “doers” (those who persist in implementing EE), barriers are only minor stumbling blocks to implementing EE; but to the non-doers, barriers may be perceived as obstacles that prevent implementation.

Differences Between Elementary and Secondary Teachers

There were significant differences between the elementary and secondary teachers on two composites—environmental sensitivity and teaching context. Secondary teachers perceived environmental sensitivity as a stronger influence than elementary teachers on both their decisions to implement EE and their abilities to implement EE, $t(64) = 2.76$, $p = .01$ and $t(63) = 3.15$; $p < .01$ respectively. Secondary teachers also perceived teaching context as a stronger influence than elementary teachers on both their decision to implement EE and their ability to implement EE, $t(63) = 2.75$; $p = .01$ and $t(62) = 2.64$; $p = .01$ respectively. While these differences existed, environmental sensitivity and teaching context were among the top three strongest influences for both elementary and secondary teachers.

There also were significant differences between the elementary and secondary teachers on two barriers. Secondary teachers perceived lack of natural area to study as a stronger barrier than elementary teachers, $t(63) = 3.54$; $p = .025$. Secondary teachers also perceived concerns regarding safety, liability, and classroom management as a stronger barrier than elementary teachers, $t(62) = 3.19$; $p < .01$.

Implications for the Interpretive Community

What does this mean for the interpretive community and for those informal learning centers that offer EE? While there are several factors that limit the generalizability of this study (the convenience sampling method, teachers’ self-identification of their approach to EE, and the less-than-desirable reliability of several composites), this study raises areas for further consideration as interpretive sites develop and implement professional development opportunities for teachers and as they develop and market their school-based programs. In the face of today’s “accountability era” and amidst an increasing number of obstacles that make implementing EE more difficult for teachers, interpreters, and environmental educators, and informal learning sites that offer EE may find the following recommendations helpful:

1. *Provide opportunities for teachers to develop environmental sensitivity and personal knowledge and skills relating to environmental literacy.* Based on the teachers in this study, teachers either did not have training in EE or their training wasn’t very influential on their use of EE. Further, lack of training wasn’t perceived as a strong barrier to their implementation of EE. While some may interpret this finding as cause to abandon training efforts, it may instead suggest that the type of EE training teachers are receiving needs to be adjusted. According to a study by the National Consortium for Environmental Education and Training, professional development in EE for inservice teachers has been primarily science-oriented rather than interdisciplinary and is often focused developing skills to use specific EE curricula or programs (Wade, 1996). Wade has asserted, “If EE is to grasp the opportunity afforded by current reform efforts to enrich formal educational systems, the field must thoroughly reevaluate its approach to teacher education” (p. 12).

Based on the results of this study, personal interests relating to nature or the environment and environmental knowledge and action skills were strongly influential on teachers' use of EE. Perhaps helping teachers become more comfortable in the outdoors or helping them learn outdoor classroom management techniques, for example, would be the type of professional development needed to encourage teachers to bring students outside the traditional classroom. Teachers also may benefit from professional development in the form of opportunities to bond with the natural world or service project opportunities involving both natural and built environmental systems to see where their environmental actions make a difference, helping foster a sense of personal responsibility and commitment to environmental sustainability. The results of this study remind the interpretive community to think broadly and creatively about professional development, incorporating not only content knowledge and pedagogical skills, but the procedural knowledge and affective components of environmental literacy, as well.

2. Recognize the importance of teaching context in your efforts to market your school-based programs and professional development opportunities for teachers. Based on the results of this study, teaching context (and the item "Subject Taught," in particular) was a strong influence on elementary teachers' use of EE and an even stronger influence on secondary teachers' use of EE (the majority of whom were science teachers). This may be explained by the EE literature suggesting teachers often view EE as most relevant to science curriculum (Simmons, 1993). Thus, there is a need and opportunity for targeting teachers of subject areas other than science, particularly at the middle and high school levels. The interpretive community may be missing a critical audience of teachers (and ultimately their students) who would be more likely to implement EE in their classrooms and bring students out to interpretive sites if they understood the relevance of EE to a range of subject areas. Thus, rather than simply marketing your school-based programs or professional development opportunities as "EE," efforts to label and/or describe your program in a way that captures its relevance to a range of subject areas or a range of teachers may be useful.

3. Devise ways to work with teachers to reduce barriers or teachers' perceptions of barriers to EE. The results of this study suggest teachers' perceive lack of funding, lack of planning time, state standards and testing, and lack of transportation as the strongest barriers to EE. Yet teachers' perception of these strongest barriers corresponded to a rating of only a minor obstacle. Thus, efforts to reduce teachers' perceptions of these barriers might be more useful when targeting teachers not using EE (non-doers), but not as integral to working with teachers who already implement EE. In efforts to reach the non-doers, interpretive sites could work to either reduce the actual barrier or teachers' perception of the strength of the barrier, so that these barriers are viewed as surmountable. For example, sites could reduce the lack of funding and lack of transportation barriers by bringing programs to schools, thereby reducing transportation costs for schools. Or interpretive sites could help facilitate more efficient use of teachers' planning time by reducing the logistical planning involved in visiting interpretive sites or streamlining the program registration process.

4. Market school-based programs to teachers who care about the environment, yet don't already know about your programs. While this may seem obvious, there is a tendency to

advertise programs using the same mailing list from the prior year or to focus on teachers who have participated in previous programs. The results of this study, however, suggest another potential audience of teachers—those who already demonstrate environmental sensitivity or environmental literacy knowledge and skills. Teachers who are personally active in the outdoors or involved in environmental organizations may likely be the teachers who feel your programs are worth the effort in overcoming the obstacles of teaching outside the traditional classroom walls.

5. Market your school-based programs directly to teachers, as well as to school administrators. Based on the results of this study, individual teachers persist in carrying out EE, even when they are in school settings that make implementing EE difficult. Perhaps surprisingly, teachers indicated that a school climate conducive to EE had only a minor influence on their use of EE. Thus, there likely are teachers carrying out EE, even in school settings that make implementing EE difficult. Consequently, a flyer explaining an interpretive site's school-based programs may not get past a school principal faced with the pressures of high-stakes testing. But in the hands of individual teachers, the results may be quite different!

Recommendations for Future Research

Because the focus of this study was understanding the influences on teachers' decisions and abilities to use EE despite barriers, future research investigating influences on teachers who do not use any form of EE is the logical next step toward more conclusive recommendations. Additional research, as suggested earlier, could be conducted to determine how influences on teachers' use of traditional EE differ from influences on teachers' use of the more comprehensive, integrated forms of EE; this would be of interest to those wanting to encourage more systemic, integrated use of EE among those already inclined to use EE. Future researchers could also investigate the role of social norms, as the influences on teachers' who *feel* they should or are required to implement EE (for example, teachers at a school where EE is encouraged or mandated) might differ from the more intrinsic influences on teachers' who have chosen to do so.

Returning to the constraint negotiation literature, future research might include investigating the interrelationships among motivation, negotiation, and constraints. For example, in the leisure research literature, a "balance proposition" has been suggested: Carroll and Alexandris (1997) found participation in recreational sport to be negatively correlated with higher levels of constraint and positively correlated with higher levels of motivation; in addition, the correlation between motivation and constraint was negative (in Hubbard & Mannell, 2001). While this may be one way in which constraint, negotiation, and motivation could be interconnected and linked to participation, there may be other competing models. Likewise, future EE research could be conducted to examine competing models of the ways in which constraint, negotiation, and motivation are linked to implementation of EE.

Conclusion

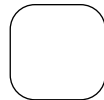
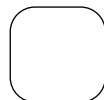
Those who work at interpretive sites know well the value that interpretive and EE programs contribute to formal education. Yet the reality of today's standards-based movement and its high-stakes testing often discourage teachers from taking advantage of

what the interpretive community has to offer. There will always be “competing factors” for our programs. Thus, taking time to understand what motivates teachers to persist in implementing EE, in spite of obstacles, and then responding accordingly can be an important avenue for helping ensure our programs achieve their educational and environmental potential.

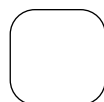
Works Cited

- Elder, J. (2003). *A field guide to environmental literacy: Making strategic investments in environmental education*. Manchester, MA: Environmental Education Coalition.
- Ernst, J. & Monroe, M. (2004). The effects of environment-based education on students' critical thinking skills and disposition toward critical thinking. *Environmental Education Research*, 10(4), 507-522.
- Franklin, J. (2004, Summer). Planting the seeds of knowledge: How environmental literacy helps students achieve. *ASCD Curriculum Update*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Gruenewald, D. & Offei Manteaw, B. (2007). Oil and water still: How No Child Left Behind limits and distorts environmental education in U.S. schools. *Environmental Education Research*, 13(2), 171-188.
- Ham, S. & Sewing, D. (1988). Barriers to environmental education. *Journal of Environmental Education*, 19(2), 17-24.
- Hubbard, J. & Mannell, R. (2001). Testing competing models of the leisure constraint negotiation process in a corporate employee recreation setting. *Leisure Sciences*, 23, 145-163.
- Jackson, E., Crawford, D., & Godbey, G. (1993). Negotiation of leisure constraints. *Leisure Sciences*, 15, 1-12.
- Kay, T. & Jackson, G. (1991). Leisure despite constraint: The impact of leisure constraints on leisure participation. *Journal of Leisure Research*, 23, 301-313.
- Kim, C. & Fortner, R. (2006). Issue-specific barriers to addressing environmental issues in the classroom: An exploratory study. *Journal of Environmental Education*, 37(3), 15-22.
- Lane, J. & Wilke, R. (1994). Environmental education in Wisconsin: A teacher survey. *Journal of Environmental Education*, 24(4), 9-14.
- May, T. (2000). Elements of success in environmental education through practitioner eyes. *Journal of Environmental Education*, 31(4), 4-11.
- Monroe, M., Scollo, G., & Bowers, A. (2002). Assessing teachers' needs for environmental education services. *Applied Environmental Education and Communication*, 1, 37-43.
- National Environmental Education Advancement Project. (1996, Fall). EE criticism: Challenge and opportunity. The Environmental Education Advocate. Retrieved January 11, 2006 from www.uwsp.edu/cnr/neeap/publications/Newsletter/1994-1998/f96ee.htm

- National Environmental Education Training Foundation. (2002). *A new opportunity for environment-based education*. Washington, DC: NEETF.
- Patton, M. (1990). *Qualitative evaluation and research methods*. Newbury Park, CA: Sage Publishing.
- Samdahl, D., Hutchinson, S., Jacobson, S. (1999). Navigating constraints: A critical commentary on negotiation in leisure studies. In *Abstracts of Papers Presented at the Ninth Canadian Congress on Leisure Research*. Wolfville, Nova Scotia: Acadia University Printing Services.
- Shuman, D. & Ham, S. (1997). Toward a theory of commitment to environmental education teaching. *Journal of Environmental Education*, 28(2), 25-32.
- Simmons, D. (1993). Facilitating teachers' use of natural areas: Perceptions of environmental education opportunities. *Journal of Environmental Education*, 24(3), 8-16.
- Simmons, D. (1989). More infusion confusion: A look at environmental education curriculum materials. *Journal of Environmental Education*, 19(2), 35-42.
- Stevenson, R. (2007). Editorial to special issue, Revisiting schooling and environmental education: Contradictions in purpose and practice. *Environmental Education Research*, 13(2), 129-137.
- Survey Research Center. (2000). *Environmental studies in the K-12 classroom: A teacher's view*. College Park, MD: University of Maryland Survey Research Center.
- Thompson, G. (2004). Environmental education in Alberta: Barriers and bridges. *EECOM News (Canadian Association of Environmental Education and Communication)*, 3.
- United Nations Educational, Scientific, and Cultural Organization (UNESCO). (1978). *Final report: Intergovernmental conference on environmental education*. Organized by UNESCO in cooperation with UNEP, Tblisi, USSR, October 1997, Paris: UNESCO ED/MD/49.
- Wade, K. (1996). EE teacher in-service education: The need for new perspectives. *Journal of Environmental Education*, 27(2), 11-17.



**I N S H O R T :
R E V I E W S
A N D
R E P O R T S**



An Applied Evaluation at a Living History Museum

Jamie J. Peterson

College of Saint Catherine

jppeterson@stkate.edu

Author's note: This research project was sponsored by a grant from the Center for Urban and Regional Affairs' Community Assistantship Program at the University of Minnesota. Also, the author thanks Kathy Dummer for her support in writing the article.

An Applied Evaluation at a Living History Museum

Recently, Historic Murphy's Landing (HML), a living history museum of an 1800s village in the Minnesota River Valley, created new children's programs and underwent a formative evaluation to assess program implementation and to provide information about the visitor's experience. The evaluation was unique because it was not a strict application of evaluation research in which the program format, content, and delivery were held constant throughout the evaluation period. The stakeholders did not want to wait until the end of the evaluation period/visitor season to obtain feedback and then revise their programs. Instead, they wanted to use evaluation data as it became available to improve their programs and increase the number of visitors to the park. Thus, the evaluation "broke the rules" of a methodologically rigorous evaluation study as preliminary results and recommendations were shared during the evaluation and the programs changed midseason.

Although this evaluation plan met the goals of the stakeholders, statistical analyses and final reports could not make definitive conclusions regarding the visitor's experience, as the programs changed regularly. Thus, the question is posed: Is such an applied approach to evaluation more or less helpful than conducting a methodologically rigorous evaluation? Following is a brief description of how an outside evaluator conducted such an applied formative evaluation with a participatory component.

Evaluation Plan/Design

The primary guiding question of the evaluation was: How do children and teachers experience their field trip to HML? A secondary question was: What do children learn while they are at HML?

The participatory approach was used, as it is oriented toward informing stakeholders (HML management and interpreters) and not necessarily advancing theory (Patton, 2004). The evaluation focused upon first-hand experience and involvement in the programs to understand what it was like to be a visitor. Further, a naturalistic approach was used, as HML was studied unobtrusively without any manipulation or control (Fitzpatrick, Sanders, & Worthen, 2004). Data collection focused upon obtaining a detailed understanding of the programs. This combined participatory and naturalistic approach to evaluating HML made it more likely that the evaluation would capture as many of the visitors' experiences, issues, and concerns as possible.

Participants

HML serves a diverse population that includes schools, childcare groups, summer camps, church groups and other youth groups. Children who visited were typically between the ages of five and 12. School groups were composed of 25 to 100 students generally of the same age and were accompanied by a licensed teacher with parent chaperones. Childcare and summer camp (CSC) groups were typically composed of 50 to 200 children of diverse ages and were accompanied by chaperones with varying licensing and teaching backgrounds. Church and other youth groups were typically smaller, with 20 children of diverse ages of children, and were led by group organizers and parent chaperones. Because the background of the chaperones was not requested, and children typically referred to their group leaders as "teachers" regardless of their chaperone's actual title, all chaperones are referred to as teachers.

The evaluation population was all children's groups who visited between June and November. During the summer, the majority of the groups who visited were large CSC groups, and during the fall, the majority of the groups who visited were school groups. Large groups were randomly selected for observation by drawing numbers. Small groups were purposively selected for observation when possible. Within each group selected for observation, teachers and children were randomly selected to complete an evaluation. Due to logistical and time constraints, more data was collected in the summer. Children completed 317 evaluations, 305 in the summer and 12 in the fall. Teachers completed 53 evaluations, 47 in the summer and six in the fall.

The program director, assistant director, and interpretive staff also participated in the evaluation.

Data Collection

Observation

A large component of the evaluation was observing program implementation and observing how groups participated in programs. Interpreters were aware of the ongoing evaluation and teachers were told of the evaluation and observation as well. In most cases, the observer would follow a group as if a member. Children quickly grew accustomed to having an observer and the majority of teachers seemed comfortable with the observer as well. The teachers' inattention to the observer was evidenced by numerous comments teachers made that could be subtly overheard. In addition to these "unobtrusive observations," occasionally at the end of the program, teachers or children would be queried about the program.

Evaluations

Because the children who visited HML ranged in age from five to 12, the children's evaluations needed to be versatile enough to collect data from a large age range. The evaluations asked children to respond to questions by circling either a happy face, neutral face, or sad face. Each face had a word beneath it that corresponded with the expression. For instance, one question was: "My field trip to Murphy's Landing was" followed by a happy face with the word "fun" beneath it, a neutral face with "ok," and a sad face with "not fun." Each evaluation also included an open-ended question, such as: "One thing I learned today," or "My favorite part of Murphy's Landing was." The questions were alternated on evaluations because both attained useful information, but the evaluation needed to be kept short to ensure the children would have enough time to complete it. If children were unable to read or write, an adult or older child would assist them.

The stakeholders wanted to gain an idea of how children would answer the questions often asked after a field trip: "What was Murphy's Landing like?" and, "What did you learn?" Thus, the evaluation did not attempt to assess specific learning outcomes, but was concerned with what children enjoy and "take away" from the program. The stakeholders reasoned that if children responded with answers such as, "It was fun," and, "I learned that beads were valuable for trade," that teachers and parents might be more inclined to visit HML again and/or make referrals because it was an enjoyable learning experience.

The teacher's evaluation also needed to be completed quickly while teachers monitored their group, thus it was composed of mainly objective questions. The majority of questions were rated on the scale: *strongly disagree* (-2), *disagree* (-1), *neutral* (0), *agree* (1), *strongly agree* (2). Teachers were asked to rate how well they agreed with statements such as: "The children learned as much as I expected them to learn about life in the 1800s," and, "The number of buildings we were able to visit was appropriate to our program." The evaluation concluded with space for general comments.

Informal and Formal Interviews

The nine interpreters who performed most of the programs were informally queried before and after the programs to gain an understanding of how they prepared, implemented lesson plans, and reacted to the program after the groups left. The program director and assistant director were also interviewed formally about program design and implementation.

Procedure

Evaluation activities focused upon gathering information about the intended and actual visitor experience. Therefore, in addition to the aforementioned data collection methods, written materials such as lesson plans, curriculum packets given to teachers, and promotional materials were reviewed.

At the end of each program selected for observation, evaluations were randomly distributed to teachers and children. Often, at the end of the program, the evaluator and interpreters would discuss observations, results from the evaluations, and the interpreter's thoughts on how well the program proceeded. In the beginning, interpreters' initial impression of the program did not always match that of their visitors', according to observations and evaluation results. Interpreters were at times surprised when children or teachers commented on aspects of the program they marked as "ok," "not fun,"

or “neutral” when the interpreter thought the participants were enjoying the program. Throughout the evaluation period, this informal sharing of preliminary results seemed to help interpreters learn how to more accurately understand the visitor’s experience and pick up on the visitor’s cues when they were or were not enjoying the program. Further, if interpreters made small changes to program implementation (such as describing buildings they walked by instead of simply walking by the buildings without comment), they were able to receive instant feedback regarding this change, and understand how small changes could make a rather large impact upon the visitor’s experience.

Additionally, a few times during the summer and fall, the interpreters gathered to discuss the programs. Interpreters shared successful and less successful experiences in implementing the programs and meeting the needs and expectations of the groups. During such meetings, descriptive statistics (e.g., means, standard deviations, modes) and evaluation comments were shared. Observations were also described in terms of how the program was intended to be implemented, the variety with which interpreters implemented the programs, and the visitors’ experiences of the programs. Based upon these preliminary results, interpreters addressed the issues raised with each program. For instance, one issue was making a particular program more hands-on for the children. When solutions to issues were proposed and deemed appropriate (such as passing around items for the children to touch and hold), the change was immediately implemented.

Evaluation Results and Conclusion

As the evaluation study was not a strict application of evaluation research in which the program format, content, and delivery were held constant, statistical analysis of the data posed a considerable challenge. Overall analyses of the data could not accurately reflect the experience a visitor had in June and another’s experience in October. Further, separating the data by month, season, or type of group was not possible as the sample was small and more data was collected in June and July than in August through November.

However, statistical analyses that were conducted provided a tentative answer to the first guiding question, “How do children, chaperones, and teachers experience their field trip to HML?” revealing that visitors generally enjoyed their visits to HML. Only 17.4% of the teachers responded in neutral or negative terms that their trip did not meet their expectations. And, only 2.6% of children responded that their trip was not fun. A correlation between the months in which HML was evaluated and teachers’ responses to this question yielded a weak but positive, and significant correlation, indicating that as the evaluation progressed, teachers’ experiences improved, $r(46) = .295, p = .046$. Conversely, there was a negligible correlation between month and children’s responses was, $r(311) = .088, p = .120$. Again, these correlations are confounded by the type of groups attending and must be considered tentatively.

Analyses of the teachers’ responses to “I would recommend visiting Murphy’s Landing to other groups” and children’s responses to the item “I would like to come back and visit Murphy’s Landing again” were also fairly positive. Nearly 85% of the teachers *agreed* or *strongly agreed* they would recommend HML with no teachers disagreeing. Just over 45% of the children said they would like to return and another 45% said they would *maybe* return to HML.

Observations of the groups added further information that statistics could not capture, such as the differences in how school groups and CSC groups experienced the programs

and how the teachers of the groups interacted with the children at the park differently.

The conclusions and recommendations from this evaluation resulted in both minor and major changes to how the staff at HML entertains its visitors. Minor changes include relatively simple things like describing all buildings groups walk by and interpreters “checking in” with teachers midway through the programs to ensure they are meeting expectations. Major changes include offering an “open day” in which children’s groups can visit HML for a self-guided tour through the park and bring a picnic lunch to eat on site.

Program staff extended their gratitude for the evaluation and seemed to have learned from the evaluation and used that information to improve their programs. However, the many limitations to conducting such an “applied” evaluation questions the overall value of the evaluation. If the evaluator insisted upon conducting a more methodologically rigorous evaluation study, could more valid and valuable results and recommendations have been offered? It is difficult to know whether changing the programs as the staff received feedback contributed to HML achieving its goal of improving the visitor’s experience and increasing the number of visitors to the park through word-of-mouth. However, the stakeholders were satisfied with the evaluation and importantly, felt capable of conducting informal and smaller-scale evaluations of future programming. Thus, another question may be whether this more applied approach might be of value for programs with similar goals.

References

- Fitzpatrick, J. L., Sanders, J. R., & Worthen, B. R. (2004). *Program evaluation: Alternative approaches and practical guidelines* (2nd ed.). Boston, MA: Pearson Education.
- Patton, M.Q. (2002). *Qualitative research and evaluation methods* (3rd ed.). Thousand Oaks, CA: Sage Publications.

APPENDIX

Manuscript Submission:

Instructions to Authors

Purpose

The purposes of the *Journal of Interpretation Research* are to communicate original empirical research dealing with heritage interpretation and to provide a forum for scholarly discourse about issues facing the profession of interpretation. The *Journal* strives to link research with practice. The *Journal of Interpretation Research* is published by the National Association for Interpretation, the preeminent professional association representing the heritage interpretation profession.

General Information

The primary function of the *Journal* is to disseminate original empirical research regarding interpretation. However, the *Journal of Interpretation Research* takes a broad view of the field of interpretation and publishes manuscripts from a wide-range of academic disciplines. The primary criteria for deeming a manuscript appropriate for the *Journal* are whether it adds to the current state-of-knowledge for practitioners, researchers, academics, or administrators who work in the field of interpretation.

In recognition of how diverse the relevant literature is, the *Journal* will also publish reviews of recent books, government publications, original literature reviews, and bibliographies dealing with interpretation. Abstracts from dissertations, private consultant materials, and reports from public agencies will be published in the *Journal* in a section called, "In Short: Reports and Reviews." This section will also provide an outlet for summaries of research studies with limited scope. Interpretation research often consists of small "in-house" program evaluations and basic visitor studies. The purpose of this section is to communicate current research activities, allow readers to identify colleagues with similar interests, and provide practitioners and administrators with useful information and direction for conducting their own mini-research projects. Submissions for the "In Short: Reports and Reviews" section should be limited to 800 to 1,000 words and will be reviewed by the editor and two associate editors.

Additionally, the *Journal* will publish thought pieces that exhibit excellence and offer original or relevant philosophical discourse on the state of heritage interpretation. The "In My Opinion" section of the *Journal* encourages the

development of the profession and the practice of interpretation by fostering discussion and debate. Submissions for the “In My Opinion” section should be limited to 1,000 to 1,200 words and will be reviewed by the editor and two associate editors.

Research Manuscript Submission Guidelines

All research manuscripts will be reviewed anonymously by an associate editor and by at least two other reviewers. Based on the nature of the manuscript, special efforts will be made to identify well-qualified associate editors and reviewers to evaluate the manuscripts. From the recommendations of the associate editor, the editor will make the final decision of the manuscript’s disposition and communicate this information to the author.

Manuscripts

Manuscripts will be accepted with the understanding that their content is unpublished and not being submitted elsewhere for publication.

- All parts of the manuscript, including title page, abstract, tables, and legends, should be typed in 12-point font, and double-spaced on one side of 8-1/2” x 11” or A4 white paper.
- Margins should be 1” on all sides.
- Manuscript pages should be numbered consecutively in the top right corner.
- All papers must be submitted in English. Translations of papers previously published in other languages will be considered for publication, but the author must supply this information when the manuscript is submitted.
- Maximum length of manuscripts shall be 30 double-spaced pages (including all text, figures, tables and citations). The editor will consider longer manuscripts on an individual basis.

Titles

Must be as brief as possible (six to 12 words). Authors should also supply a shortened version of the title, suitable for the running head, not exceeding 50 character spaces.

Affiliation

On the title page include full names of authors, academic and/or other professional affiliations, and the complete mailing address of the author to who proofs and correspondence should be sent. An e-mail address and phone and fax numbers should also be included. As all manuscripts will be reviewed anonymously, the name(s) of the author(s) should only appear on the title page.

Abstract

Each paper should be summarized in an abstract of no more than 150 words. The abstract will preface the paper and should be a comprehensive summary of the paper’s content, including the purpose or problem, methods, findings, and implications or applications. It should enable the reader to determine exactly what the paper is about and make an informed decision about whether to read the entire paper.

Abbreviations and references to the text should be avoided. All abstracts shall be listed on the *Journal of Interpretation Research* Web site (www.interpnet.com/JIR).

Keywords

Authors must supply five (5) to ten (10) key words or phrases that identify the most important subjects covered by the paper.

References and Citations

Include only references to books, articles, and bulletins actually cited in the text. All references must follow the *Publication Manual of the American Psychological Association* (APA), 5th edition. References in the text should cite the author's last name, year of publication, and page (if appropriate). All references used in the text should appear at the end of the typed script in alphabetical order using APA style.

Examples of references:

McCool, S., and Braithwaite, A. (1992). Persuasive Messages and Safety Hazards in Dispersed and Natural Recreation Settings. In M. Manfredo (Ed.), *Influencing Human Behavior*. Champaign, IL: Sagamore Publishing.

Ryan, C. and Dewar, K. (1995). Evaluating the Communication Process Between Interpreter and Visitor. *Tourism Management*, 16(4): 295-303.

Tilden, F. (1977). *Interpreting Our Heritage* (2nd ed.). Chapel Hill: University of North Carolina Press.

Figures

All figures must be discussed in the text and numbered in order of mention. *Each figure must be submitted in camera-ready form.* Photocopies are not acceptable. Digital art of appropriate quality and resolution are acceptable. Figures must be submitted either as black-and-white glossy photographs or as photostats (bromides). Label each figure with article title, author's name, and figure number by attaching a separate sheet of white paper to the back of each figure. Do not write on the camera-ready art. Each figure should be provided with a brief, descriptive legend. All legends should be typed on a separate page at the end of the manuscript.

Tables

All tables must be discussed in the text and numbered in order of mention. Each table should have a brief descriptive title. Do not include explanatory material in the title: use footnotes keyed to the table with superscript lowercase letters. Place all footnotes to a table at the end of the table. Define all data in the column heads. Every table should be fully understandable without reference to the text. Type all tables on separate sheets; do not include them within the text.

Permissions

If any figure, table, or more than a few lines of text from a previously published work are included in a manuscript, the author must obtain written permission for publication from the copyright holder and forward a copy to the editor with the manuscript.

Copyright

Under U.S. copyright law, the transfer of copyright from the author to the publisher (National Association for Interpretation, DBA *Journal of Interpretation Research*) must be explicitly stated to enable the publisher to ensure maximum dissemination of the author's work. A completed copyright form sent to you with the acknowledgment must be returned to the publisher before any manuscript can be assigned an issue for publication.

Proofs

All proofs must be corrected and returned to the publisher within 48 hours of receipt. If the manuscript is not returned within the allotted time, the editor will proofread the article, and it will be printed per his/her instruction. Only correction of typographical errors is permitted. The author will be charged for additional alterations to text at the proof stage.

Submission

Please submit an original and three copies of your manuscript to the address below. Authors whose manuscripts are accepted for publication must submit final manuscripts electronically or on computer disk.

Contact

If you have comments or questions regarding the *Journal of Interpretation Research*, please contact the editor:

Carolyn Widner Ward
Editor, *Journal of Interpretation Research*
Associate Professor, Interpretation
Humboldt State University
Environmental and Natural Resource Sciences Department
Arcata, CA 95521

phone: 707-826-5639
fax: 707-826-4145
e-mail: cjw5@humboldt.edu

Subscriptions

If you have questions regarding subscription rates or delivery services, please contact the National Association for Interpretation toll-free at 888-900-8283 or by mail at P.O. Box 2246, Fort Collins, CO 80522.