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<td>Dept of Horticulture, Forestry, and</td>
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<td>Moscow, Idaho</td>
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A Note from the Editor

I have had lots of conversations lately about research, the Journal and the field of interpretation in general. Many of the conversations were uncomfortable and unsettling. Questions were asked that were challenging and difficult to answer, but made me think… made us all think. If we, as professionals in the field, are unwilling or unable to ask difficult questions, to challenge the status quo, to advance the ideas, then who will?

One of the more challenging conversations has been the quality and quantity of interpretation research that has been produced and submitted to the Journal in the last several years. I have been the editor of the Journal since 2004, and since that time we have (with the exception of one year, produced two issues per year). We have had 185 articles submitted since 2004, and the average number of submissions per year is 14. This year, 27 articles have been submitted which is a refreshing change but nowhere near submission levels of similar other Journals.

While our direct reach is on par with many other similar Journals, the actual circulation and accessibility of the Journal is much less. Accessibility is impacted by many factors but two key ones are the number of subscriptions and the availability of the Journal through on-line searchable data bases. While we have more subscriptions than many of the top peer-reviewed Journals in our field, we do not have wide on-line accessibility. But this is about to change.

Responding to the need to bring interpretation research into the 21st Century, we are undertaking a strategic plan for how to begin to transition the Journal into a platform that will be searchable and accessible by all those practicing the art and science of interpretation. Currently, if you do a search for an article in JIR or JIR itself, you can only find it on NAI’s website and none of the articles are searchable independently. It is great the back issues of the Journal are available on the NAI website, but they are not in a searchable database easily accessible to a wider audience. As a researcher, reaching the widest potential audience with your work is critical, and soon, the Journal of Interpretation Research will be a more attractive option for authors.

The quality of submissions is a much more difficult conversation and more nuanced than numbers alone would inform. There are several factors that impact this from my perspective and hearing from colleagues across the country including the overall support for interpretive services in agencies, the support and encouragement of interpretation research in general, the competition for publication in the eyes of researchers up for tenure...
and promotion, and the overall value and leadership of research in the profession itself. There is not as much research taking place in the United States in the field of interpretation as there has been in the past. Budgets in most agencies for interpretation have continued to decline (or remain flat) and support for research has suffered as a result. With limited resources available in most parks and public lands, the services and divisions that can document and defend the need for financial support are the ones that often receive a bigger slice of the dwindling pie. But without financial support for research, showing defensible impacts becomes more and more challenging, and this all feeds into the vicious cycle. In addition, I hear from field managers and administrators that much of the research conducted in the field of interpretation is not answering key questions that they need information about to direct decisions and practices. For example, one question I receive the most calls about is how to demonstrate cost/benefit of interpretive programs and document desired management and resource protection outcomes.

All of this pressure on researchers and authors often means that they are not producing multiple research manuscripts per year, and thus the overall ‘value’ of each publication for them professionally increases dramatically. This ties into a previously mentioned aspect of JIR; it is not easily searchable and accessed by the larger community. The few precious articles that are produced by researchers are often submitted to other peer-reviewed Journals because they will be found by more colleagues, cited more in other literature and thus more ‘valuable’ professionally. This issue we will soon be addressing.

This leads to the last item impacting overall quality of and number of submissions, how research itself is valued in the field. The Journal is a mere reflection of the field and is, in and of itself, not the promoter of and supporter of research but the conduit through which it is communicated. NAI is considered by most of us to be the leader in the ‘profession’ of interpretation. As such, taking a leadership role in the advancement of research, the funding of research and the promoter of the value of research will help tremendously in the advancement of the practice of research (and thus the practice of interpretation itself). When more research is funded and conducted, valued by members of the tribe, and used by practitioners and managers to guide decisions, we will all benefit and the discipline itself will advance.

It takes us all to move forward, to carefully examine what we do, why we do it and whether or not it works. Research is conducted because we want to know more, and because we want to do better. It must be made applicable to the practitioner, the manager, and the public. It needs to answer useful questions, and ask the unanswerable ones. In order to understand the best use of precious economic, human, and biological resources, research must be adequately funded. It should not be treated as an external afterthought to programming, but instead included as an integral part of the process. The survival of interpretation depends on the critical examination of what is done, how it is done, and what results from it. Research is the foundation of the practice of the science of interpretation.

As my former professor used to say, we all stand on the shoulders of the giants that came before us. Thanks to all the previous Editors and leaders who established the Journal, current and past Associate Editors and Advisory Board Members who have given their time and expertise over the years, and NAI for providing leadership and helping to facilitate the conversations that advance the field. I want to thank those that are asking hard questions, challenging the answers and thinking. I look forward to many more conversations to come with you all. Thank you all for your time and commitment to Interpretation.

—C
RESEARCH
Choosing Illustrations of Spider (Faces) for Best First Impressions in Natural History Interpretive Programs

A Program Component Analysis

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Abstract
This study demonstrates that faces of spiders that are neotenic are perceived as less scary than others, if not cute. A convenience sample of adults (n=69) at a university distributed 15 photographs spider faces along a ruler based on perceived scariness. Six of the seven photographs of jumping spiders (Family Salticidae) were ranked as least scary. Results suggest that using illustrations of jumping spiders to create a positive affective first impression in interpretive programs about spiders is a reasonable assumption. Spiders in the jumping spider family may be viewed as a “gateway spider.” This study illustrates a research and design approach termed Program Component Analysis (PCA), in which a design question for only a component of a program is subjected to systematic analysis.

Keywords
Program Component Analysis (PCA), interpretation, illustrations, neoteny, spider phobia, first impressions

Introduction
Research and evaluation of interpretation often focus on outcomes and impacts for entire programs. Fewer studies have sought to inform the effects of smaller design decisions within programs that interpreters make through their choices of specific examples, illustrations, or props. This paper illustrates the value of conducting Program Component Analysis (PCA) of topics and methods that could be designed into interpretive experiences. As an example, a PCA was conducted through the analysis of people’s preferences for different families of spiders in the form of illustrations.
To illustrate the value of PCA, this study investigated the relative appeal of illustrations of different types of spiders. Spiders are a common program topic among interpretive naturalists and natural history museums. In all the research on animal preferences we could find, spiders were treated as a monolithic group and results suggest they are universally disliked and feared animal. In contrast, this study examined the relative appeal of illustrations of different spider species that might be used in written materials or in interpretive talks about spiders.

Literature Review
Persuasion theory, basic writing instruction, educational pedagogy and interpretive methods place a great deal of emphasis on how written documents and programs begin and end. Yet, we know little about what sorts of specific natural history topics, content and processes make the strongest first and last impressions on learners. Research on the psychology of first impressions has demonstrated that people make extremely rapid evaluations of other people and situations, and that these first impressions are often reasonably accurate and actionable (Harris & Garris, 2008). Additionally, a striking research finding on the psychology of first impressions, is that these impressions, right or wrong, are persistent and persuasive (Digirolamo & Hintzman, 1997; Harris & Garris, 2008; Gillath, Bahns, Ge, & Crandall, 2012; Velasco, Kings, Jones, Spence, 2013). Adding even more importance to the need to carefully craft first impressions within programs, research documents that human nervous system resists unlearning first impressions, even when later experiences are contradictory (Miller, Westerman, & Lloyd, 2004). These findings from social psychology, marketing research, and persuasion theory suggest that the effectiveness of at least some interpretation activities may be enhanced by careful design of the introductory parts of interpretation programs and writing.

Emotions and Interpretation
The neurosciences along with behavioral economics argue that much human learning and reasoning is rapid, unconscious, and shallow (Kahneman, 2013; Stanovich, 2010). Information is screened by our nervous system for emotional salience before being processed by parts of the brain involved in rational thought and emotions guiding learning (Graves, 2012; Immordino-Yang & Faeth, 2010). Based on these literatures, it seems logical that long-term retention, understanding, and elaboration of interpretive messages and other experiences will occur if interpretive experiences are crafted with emotional content (Pooley & O’Connor, 2000). Heritage interpretation explicitly embraces this approach (Brochu & Merriman, 2008).

In combination, these literatures logically suggest that the long-term effectiveness of any one interpretation episode may be a function of an introduction that is carefully designed to produce an affective response central to the topic. This emotionally laden first impression should lead to greater attention, valuing and recall of the interpretive experience. Yet, not all interpretive topics lend themselves well to producing a strong positive affective response. In the realm of wildlife education and endangered species, environmental organizations and researchers have focused primarily on large charismatic birds and mammals (Estren, 2012). Estren (2012) has poignantly argued for the need to find ways to interest people in the not-so-cute fauna. Yet it is possible that even categories of animals that are often feared or viewed as disgusting may include members that are visually appealing.
Program Component Analysis
While there has been a movement to identify so-called “best practices” for interpretation, results have been less than persuasive. “Best practices” and “evidence-based practice” have a poor history in formal education (Biesta, 2007), and attempts to use them in corporate settings have been far from successful (Rosenzweig, 2014; Senge, 2006). The results of adherence to these lists of best practices results in a rather incomplete, less than thoughtful, and impotent copying of previously successful strategies (Senge, 2006). A more appropriate goal of research and evaluation of interpretive experiences is helping interpreters develop of a mastery of their craft by contributing to an array of ideas and strategies worth applying where apropos. This inductive approach rejects the static, overly simplistic, and often contradictory lists-of-rules-that-must-be-followed mentality of “best practices.” A mastery approach seeks to inspire interpreters to be constantly learning and seeking to develop their own set of well-defined and defended methods that consistently realize, for them and their audiences, results that matter (Senge, 2006). From this perspective, good ideas are good ideas—it does not matter where they come from. Research and evaluation are one source of potentially good ideas that can be integrated into a strategic arsenal that allows interpreters to adaptively provide services in whatever context and audience they find themselves working.

Program Component Analysis is a strategy that parallels some of the initiatives of educational researchers working in formal settings. Working within a constructivist perspective, formal educational researchers have investigated a wide range of ideas that students hold about math and science. Some of this work is directly applicable to interpreters (e.g. Dove, et al, 2000; Lane, 2008). Referred to as studies of “misconceptions,” “children’s science,” “alternative frameworks,” and “untutored beliefs,” among others (Dove, 1998), these studies have provided teachers opportunities to rapidly recognize and respond to what their students know about a topic at the start of, during, or after instruction. Teachers who have chosen to embrace these research findings have found that they help students in unlearning misconceptions and replacing these alternative frameworks with currently correct scientific explanations (Gowen-Zwiep, 2008).

Given the success of alternative frameworks research, the investigation of the details of program components that are either frequently addressed or of an emerging focus in heritage interpretation seems worth exploring. In some cases, literature reviews from other fields may provide new perspectives for interpreters. For instance, interpreters working in parks and special places with geologic features should find much value in Dove’s (1998) research on children’s understandings of mountains and volcanoes. Unlike research in formal education, there is a need to investigate not just cognitions about a topic, but affective responses as interpretation is most frequently practiced in leisure contexts. Many research methods can be used, but our initial approach has been to use simple descriptive and two-variable statistics while avoiding composite variables that may mask unexpected yet interpretable results. The results of a PCA is judged on a pragmatic basis as to whether it provides a novel perspective to interpreters that they can experiment with in their design of interpretive experiences.
Spiders
While spiders easily capture the interest of natural history enthusiasts, they are widely feared by the general public. Using a sample of college students, Batt (2009) demonstrated that spiders were negatively perceived relative to birds and other mammals. Research has also demonstrated that spiders evoke the emotion of disgust along with fear (Matchett & Davey, 1991). Earlier general population studies have also documented wide spread dislike of spiders (Kellert, 1993).

Spider phobia are common, with an estimated 11% of the population in the United States having experienced debilitating fears of spiders at some point in their lives. People with spider phobias experience intense fear, avoid contexts and situations where spiders might be encountered, and tend to overestimate the sizes of spiders they encounter (Aue & Hoeppli, 2012; Magee, et al, 1996; Vassey, et al, 2012). Spider phobias probably have an evolutionary (genetic) basis as onset occurs during childhood, persist through adulthood, and as a phobia are difficult to extinguish (Ulrich 1993; Merckelbach, et al, 1996).

While phobia of spiders may be genetically predisposed, people are also predisposed to prefer animals exhibiting neoteny (Estren, 2012). Neoteny consists of infantile/juvenile characteristics that create a genetically predisposed positive affective perceptual response in humans. Estren states, “human attraction to neotenic animals relates directly to nurturing and species-propagating instincts for our own kind and also explains why, for example, we find a penguin’s waddle amusingly endearing” (p. 6). Konrad Lorenz first introduced this concept, referring to it as “Kindchenschema,” or baby schema (cited in Borgi & Cirulli, 2013). In essence, animals with characteristics similar to infant humans produce a strong positive affective response. A few characteristics of neoteny include: large eyes below the middle line of the total head, small nose, rounded fat body shape; short small appendages (arms and legs), and round chubby cheeks (Genosko, 2012). Along with preference for certain animals, neotenic attributes play a role in the physical attractiveness of females (Cunningham, et al, 1995). Many cartoon characters and dolls such as Betty Boop and Mickey Mouse exhibit these characteristics. Gould (1979) demonstrated that the form of Mickey Mouse evolved from a ratty looking mouse in 1929, when he was first created, to a much cuter neotenic character by the 1970s (Genosko, 2005). Estren (2012) listed many examples of successful product and cartoon characters such as Hello Kitty, Ratatouille star Remy, and Pogo comic strip characters as having neotenic characteristics.

Spiders and Interpretive Experiences
Like insects, spiders lend themselves to direct observation and manipulation in interpretive programs due to fewer ethical concerns in handling them than vertebrate animals. Spiders are extremely common in terms of density, with estimates between hundreds to a million spiders per acre (Bradley, 2013). While the organic agricultural community generally recognizes the role of spiders in pest control, spider phobias and fear of spider bites result in the needless use of pesticides around homes. Spiders are commonly targeted with pesticides as they are viewed as household and yard pests (Narayan, 2013). Replacing fears and phobias of spiders with fascination might reduce the indiscriminant use of pesticides. Even modern and relatively safe pesticides have been linked to childhood leukemia (Bailey, et al, 2011) and Parkinson’s disease (Narayan, 2013).

The preference for animals with neotenic characteristics was illustrated by Knight (2008), who empirically demonstrated that perceptions of endangered species of bats,
spiders, and snakes were dominated by negative attitudes in contrast to endangered mammals and birds. Estren (2012) has argued for the need to focus research on understanding how to modify public perceptions of animals that are not neotonic species. This might involve investigating differences in people’s perceptions within a taxa such as identifying the least perceptually offensive species within an order or family. Likewise, some perspectives (face only, close-ups, silhouettes, etc.) in illustrations may be more appealing than others. Stokes (2007) attempted such a study by analyzing photographs of penguins chosen for inclusion in popular adult books but most variation in people’s preferences were explained by the colors of the photographs.

Problem statement
We accepted the challenge of Estren (2012) to better understand public perception of non-cute animals. Based on the literature on relative fear of animals, we chose to examine spiders, which evoke both fear and disgust responses. Through examining the faces of spiders we hypothesized that neoteny should play a role in increased preference for jumping spiders (Family Salticidae) because two of their eight eyes are large and prominently displayed on the front of their head, they have a small “chin area” and dramatically diminutive legs compared to the often sprawling legs of other spiders. In designing this research, we are pitting an evolutionary disposition to dislike spiders against a genetic disposition to prefer animals with neotenic characteristics, in this case jumping spiders (Family Salticidae).

Methods
The study population was a convenience sample of traditional age (18–22 years old) college students and other older adults (faculty and staff) (n=69). The sample was 46.6% female and 87% were students. Research technicians approached potential participants lounging in lobbies, hallways, and classrooms at a medium-sized southern land-grant university. Participants were asked to volunteer to help with a study designed to better choose illustrations of wildlife for magazines, newsletters, and textbooks. They were then informed that the study was specifically about spiders. Two potential participants refused to participate because they were frightened of spiders. At a table with a paper ruler of 152.4 cm in length, research participants were asked to distribute 15 photographs along the ruler. Instructions allowed photos to be placed overlaying each other if the respondent thought they were similar. The ruler was graduated from 0 to 35. Participants were told that “0” represented “not at all scary” and “35” represented “very scary.” Participants then placed the photos along the ruler. One participant refused to touch the photos due to fear of spiders, asking the research technician to place the photos for her. When they finished, participants were asked to informally explain to the research technician what they saw in the photos that made the photo more or less scary.

The photos for the study were collected through Internet searches using Google images and Bing. Search terms used were “spider head” and “spider face.” Q sorts of an initial 55 photos were conducted with six people who were not biologists or involved in natural history hobbies to identify how people might categorize the photos. Through this informal process, color of the photographs was identified as a serious confound. This was consistent with what Stokes (2007) found when using color photos in a study of penguins. Consequently, photos were converted to gray scale using photo-editing software. Size of the photos was cropped to approximately 8 cm x 6.4 cm. Photos were
eliminated that were extremely similar, of poor technical quality, or the head was angled such that eye contact between research participants and the spider in the illustration was marginal. The Cronbach’s alpha for the spider face photo scale was 0.83.

When each respondent had finished placing the photos along the ruler, a technician manually recorded scores off the ruler. A small dash mark was placed on the bottom middle of the photos to assist the research technicians in accurately recording the score for each photo. Data were cleaned and median, mean, and standard deviation were calculated. Photos were ranked by means. Because PCAs are exploratory in nature, a Pearson’s product moment correlation table was prepared to look for unexpected relationships that might have practical applications.

Results

The ranking of photographs in Table 1 descriptively support the idea that spiders with two large visible eyes in the front of their face are perceived as less frightening than spiders with other eye configurations. Comments from many participants that these spiders were “cute,” “they don’t look like spiders,” or “they have big eyes” provide anecdotal support for neoteny shaping preference. References to being “cute” would be expected based on conceptualizations of neoteny. The one exception was one jumping spider photo that appeared ranked as fourth scariest. This spider was noticeably more hairy, with coarser hair, and six of its eight eyes were visible in the photograph.

The first- and third-scariest spiders were lynx spiders (Table 1). Comments from participants suggested that these spiders’ spines were perceived as “barbs,” “thorns,” or “spikes.” The sixth-scariest spider was the net-casting or ogre-faced spider. While it had proportionally larger front eyes than the jumping spiders, their eyes may have been too large. Participants described this spider with phrases such as “it looks like an alien.” This family of spiders also has large-in-diameter and very long extended legs. Short legs are a characteristic of neotenic organisms. The wolf spider faces were ranked fifth and seventh scariest (Table 1). Participants found the large hairy faces scary although some participants commented (in an amused manner) that the hairy faces “reminded them of old men.” The orbweaver spider ranked between the two lynx spiders. The orbweaver spider had spines on its legs and very coarse spine-like hairs on its pedipalps and chelicera along with six of its eight small same-sized eyes visible.

The correlation matrix (Table 2) was used in further identifying how people might respond to unforeseen characteristics of spiders. Expected moderate correlations were noted such as the two photographs (photos A & L) of lynx spiders (r=.60, p<.001). Photo A of a lynx spider was negatively correlated with Photo K of a jumping spider and uncorrelated with the other six photos of jumping spiders. The two photographs (photos C & M) of brown spiders were moderately correlated (r=.58, p<.001). All seven photographs (Photos E, F, H, I, J, K, O) of jumping spiders were correlated with correlations ranging from (r=.28, p<.05) to (r=.68, p<.001) with the exception of Photo O of a jumping spider with thick facial hairs. The strong correlation (r=.73, p<.001) of this image with Photo D of a wolf spider suggests that thick facial hair on a jumping spider is perceived as more scary.
Table 1. Ranking of images of spider faces based on perceived scariness.

<table>
<thead>
<tr>
<th>Letter Code2 and Photo Description</th>
<th>Median1</th>
<th>Mean1</th>
<th>Standard Deviation</th>
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</thead>
<tbody>
<tr>
<td>J-Family Salticidae- the Jumping Spider</td>
<td>4.90</td>
<td>6.95</td>
<td>7.46</td>
</tr>
<tr>
<td>F-Family Salticidae-the Jumping Spider</td>
<td>5.0</td>
<td>7.83</td>
<td>8.22</td>
</tr>
<tr>
<td>K-Family Salticidae-Jumping Spider</td>
<td>5.0</td>
<td>8.13</td>
<td>8.09</td>
</tr>
<tr>
<td>H-Family Salticidae-Jumping Spider</td>
<td>7.0</td>
<td>8.36</td>
<td>6.35</td>
</tr>
<tr>
<td>E-Family Salticidae-Jumping Spider</td>
<td>8.3</td>
<td>9.74</td>
<td>7.67</td>
</tr>
<tr>
<td>I-Family Salticidae-Jumping Spider</td>
<td>11.0</td>
<td>12.55</td>
<td>7.91</td>
</tr>
<tr>
<td>M-Family Sicariidae-Brown Spider</td>
<td>15.0</td>
<td>15.81</td>
<td>8.06</td>
</tr>
<tr>
<td>C-Family Sicariidae-Brown Spider</td>
<td>16.0</td>
<td>16.39</td>
<td>7.99</td>
</tr>
<tr>
<td>B-Family Lycosidae-Wolf Spider</td>
<td>17.0</td>
<td>17.49</td>
<td>8.87</td>
</tr>
<tr>
<td>N-Family Deinopidae-Net-Casting Spider</td>
<td>18.0</td>
<td>17.77</td>
<td>8.35</td>
</tr>
<tr>
<td>D-Family Lycosidae-Wolf Spider</td>
<td>19.0</td>
<td>18.86</td>
<td>8.14</td>
</tr>
<tr>
<td>O-Family Salticidae-Jumping Spider</td>
<td>19.2</td>
<td>18.90</td>
<td>7.56</td>
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<tr>
<td>L-Family Oxyopidae-Lynx Spider</td>
<td>23.0</td>
<td>20.75</td>
<td>8.13</td>
</tr>
<tr>
<td>G-Family Araneidae-Orbweavers</td>
<td>22.8</td>
<td>21.35</td>
<td>6.79</td>
</tr>
<tr>
<td>A-Family Oxyopidae-Lynx Spider</td>
<td>27.3</td>
<td>25.29</td>
<td>6.16</td>
</tr>
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1 based on a scale from 0 to 35 where 0 = not scary and 35 = extremely scary.

2 letter codes correspond to letters in the correlation matrix in Table 2 and discussion in the text.

Table 2. Pearson product-moment correlations of photographs of spider faces

<table>
<thead>
<tr>
<th>Spider Photo1</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
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<td></td>
<td>n.s.</td>
<td>n.s.</td>
<td>24*</td>
<td>n.s.</td>
<td>n.s.</td>
<td>24*</td>
<td>.34**</td>
<td>n.s.</td>
<td>n.s.</td>
<td>31**</td>
<td>.55***</td>
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<td>D</td>
<td>n.s.</td>
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<td>E</td>
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*=p<.05,**=p<.01,***=p<.001

1 See Table 1 for the types of spiders represented by the letters.
Discussion and Applications
We used a simple method of ranking photographs of spider faces to conduct a study similar to what Stokes (2007) completed with penguins. Controlling for color allowed us to identify some intra-taxa differences in human perception of spider (faces). Our findings suggest that along with comparisons of preference among animals in general that have been the norm in the past (Batt, 2009), between and within studies of single groups (Orders, Families) of animals can be productive. This study demonstrates that research can identify strategies for best presenting disliked animals that are otherwise less charismatic, less popular, and less novel as per Estren (2012). While our only a-priori hypothesis was that neoteny would help explain heightened preferences for the faces of jumping spiders, comments from participants helped us identify other potentially important perceptual cues in how people respond to spiders. For instance, the spines on lynx spiders were frequently commented on as a negative characteristic.

The correlation matrix identified one potential confound to the use of jumping spider (faces) in interpretive communications. The correlation of scariness of one jumping spider, with thick facial hairs, was correlated with only four of the six other jumping spiders. The strongest correlation in the matrix (p=.73, p<.001) was with the face of a wolf spider. Wolf spiders tend to have coarse facial hairs. This finding is actually consistent with what the theory of neoteny would predict. Infant humans do not have facial hair. The unconscious “cute” response would less likely to be evoked by a face with long coarse hair.

The strategy of doing an analysis of a single component that might be used in interpretive messaging has been shown useful in informing professional judgment. We encourage further work with Program Component Analysis with a variety of techniques and strategies across the widest variety of topics used within interpretive messaging. We suspect that this can become a rich area for doing inexpensive, exploratory, yet useful research providing results that will produce specific strategies that interpreters can experiment with in their program designs. The use of simple descriptive and bi-variate statistics allowed further unexpected discoveries in this particular study. PCA is particularly apropos to Freeman Tilden’s (1977) first principle of interpretation, “Any interpretation that does not somehow relate what is being displayed or described to something within the personality of experience of the visitor will be sterile” (p.9). Tilden’s first principle echoes the motives of educational researchers doing research on misconceptions or alternative conceptualizations (Driver, 1981) discussed earlier as a parallel to Program Component Analysis.

Limitations
To control for the confound of spiders with different colors, photos were converted to black and white/gray scale. Currently, few photos are published in media or in exhibits in black and white, so use of the findings of this research must be integrated with an understanding of the role of color in choosing illustrations.

While the faces of many jumping spiders are visible to the naked eye in the field, we tested photos of only the faces of spiders using images that were multiple-times life size. Generalizing our findings to illustrations of spiders that do not display a frontal face view is not appropriate. For instance, lynx spiders were rated as the scariest, but they can be colorful species, and the spines on the legs, which respondents repeatedly identified as a reason for finding them scary, are not nearly as visible in life-size images.
The methods we used were simple and straightforward, but respondents were asked to respond in a manner that has no known parallels in everyday life. If we were to continue with this line of work, naturalistic experiments (e.g., placing magazines with different covers in waiting rooms of businesses and recording which magazines are selected) or using eye-tracking on websites would provide behavioral data that is most likely to be predictive of future behaviors and preferences (Graves, 2011). Regardless, our findings are consistent with an existing literature about human behavior that has strong genetic dispositions. That both spider phobia and neoteny have a strong genetic basis suggest that these research findings should replicate. Additional evidence that the neoteny response overrides fear of spiders came from the often surprised and spontaneous remarks from participants that the photos of jumping spiders were “cute” or comments of doubt that “something so cute could be a spider.”

Conclusion
Based on our results, we can recommend that interpretive naturalists should consider starting programs, lectures, and magazine/internet articles with illustrations of jumping spiders when programs are designed to increase interest in spiders. Jumping spiders are the “gateway” family of spiders and show up almost exclusively as results from internet searches for “cute spiders.” Additionally, this study illustrates one of many ways to do a Program Component Analysis (PCA) study. PCA may be conducted with all types of content in heritage interpretation to identify issues worth considering in the design of specific components of an interpretive experience. Methods will vary considerably depending on the focus of the study.

Notes
Copies of the photos used in this study may be obtained from Rob Bixler (rbixler@clemson.edu). IRB protocol #2014-141.

Acknowledgments
This was an unfunded study, other than salary support for the first and last listed authors. The authors would like to thank Karin Emmons for providing extensive assistance with preparing the images and the large paper ruler needed for data collection. We would also like to thank the sometimes hesitant participants who rated the spider photos.

References


The application of the interpretive master planning process for natural and cultural resources and ecotourism to help reduce negative environmental impact on these sites

A Case Study of Ban Watchan Royal Project, Thailand

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Abstract
The purpose of this research was for developing an interpretive master planning process for natural and cultural resource ecotourism based on a sustainable design concept. The objectives for the program were to educate people and encourage participation to set up an interpretation planning approach appropriate to know community needs and opinions within the resources' sites and to assess the potential natural/cultural resources of the area, and protection to decrease environmental impacts on parks and natural areas, especially smoke from fire problems which seem to afflict almost of northern Thailand.

The applied research uses tools such as questionnaires, observations, interview data, and site surveying, as well as the participatory process with stakeholders and government staff to create area mapping, and to set up planning and facilities development by the stake holders, the local government, and local people so that they may learn about and participate in the interpretive master planning process and learn how to encourage ecotourism of this area.

The results of the research illustrated the advantage of interpretation of the natural and cultural resources with the concentration of a park or natural area to set appropriate knowledge and management learning an behavioral objectives for all users at the visitor center.

The concept of design focused on the environmental impacts and material concerns were based on sustainable design principles to maintain unique characteristics of the local people's life style and respected nature. The amount of use and facility’s size was based on the capability and support services of the park or natural area. The research team also prepared the construction blueprints and cost estimates, which were necessary
for an implementation of the interpretive plan and deliver higher benefits for local people, the public, and for the local governmental office and staff.

**Keywords**
interpretive master planning, community participation, ecotourism

**Introduction**
This article illustrates part of interpretive planning of visitor research for interpretation master planning of natural and cultural resources for ecotourism development based on a sustainable design concept: A Case Study of Ban Wat Chan Royal Project, Chiang Mai that concentrated on the interpretation process and interpretive significance was to create an experience for visitors to learn more about features/wildlife they have seen. Also to instill a positive stewardship ethic for visitors to realize the worthiness of natural resources, culture, local environment, country environment and the world environment. An important aspect in this interpretation may also be to limit inappropriate behaviors of tourists and local people and to encourage their awareness on the local environment and communities. According to Banki (1981) “People’s participation is a dynamic group process in which all members of a group contribute to the attainment of group objectives, share the benefits from group activities, exchange information and experience of common interest, and follow the rules, regulations and other decisions made by the group” and also, Tyagi (1998) reported that involvement of local people in decision making generates commitment for implementation of the programme; it enhances people’s ability to take responsibility and show competence in solving their own problems.

Thus interpretation may reduce the negative effects of tourism on the natural recreational sites, to create a story of the interpretive significance and result in having more knowledge and enjoyment for visitors as well as a good tool in administering the resource management of the area. Also for stakeholders to understand that interpretive significance presentation was a way to communicate between the natural resource stories and the visitors to help them understand the resource significance and story and a way to learn and experience more nature effectively and sustainably.

**Study Site**
In February 1979 refer to WRPC (2006). His Majesty, King Bhumibol Adulyadej of Thailand visited the study site and initiated the ‘Ban Wat Chan Royal Project’ to solve the problems of deforestation, to set the road link to the city, address poverty and opium production issues by promoting alternative crops and to lift up the standard of living for the poor villagers residing in the area. It was only about 136 kilometers from the Chiang Mai City. This area reflected peaceful aspects of nature and the fertility of the largest natural pine forests, waterfall, native wild orchids and native bird species. The study requires diverse areas of research such as forest ecology, recreation planning, and landscape designers to assess the potential of the area and possible environmental impacts on the project site. This will allow the researchers to achieve the goals in planning the study site an important protected area. The study site location is illustrated by Figure 1.
Figure 1. Accessibility and linkage to Ban Watchan Royal Project Modification from Google.com.
Interpretation Planning Model
The model of interpretation presents the following elements are considered (figure 2). The model illustrates the interpretive planning process used in the study and where our added participation of the local community and interest groups occurred.

What: The resource, theme, and sub-theme to be interpreted
Why: The specific objectives that interpretation should accomplish
Who: The visitors to the site
How/When/Where: The presentation of interpretive program and services
Implementation or Operation: To implement the various aspects of the plan
Evaluation: Evaluation of the plan should be the visitors to use the programs or services
People’s Participation: Stake holder involvement to think, to plan, to implement, and to get benefits

Research Methodology
In setting up the design for interpretation, the researchers used the following methods:

1) Survey and gather data about tourists, their activities, their opinions, and their desires for nature interpretation by the use of observation techniques and the questionnaires.

2) Survey and gather data and analysis for nature interpretation support services, the use of current facilities used for interpretation. The staff were asked questions in the survey form to assess the suitability of the facilities according to the sustainable design—both positive and negative.

3) Survey and gather data for resource interpretation potential within the area, and possible negative impacts by asking questions of the local area officials as well as looking into the acquisition and/or suggestion from visitors in order to systemize nature interpretation sites and potential sites as well as review the site physical analysis such as visual, space, slope, water drainage, soil, vegetation, and wildlife. Then create a territory map of the study site.

Analysis
1) Examine all the relevant documents such as the policy in administering Ban Watchan Royal project and other aspects of protected areas, the data to communicate the nature interpretation, as well as the model guideline in managing this site study.

2) Synthesize the data of resource potential, tourist data/user data in order to set up the overall inventory, objectives, visitor/stakeholder comments and interpretive theme. Also review nature interpretation and nature education programs or facilities in the area and design the pictures for the facilities and the format for nature interpretation according to the potential of the area by the application of sustainable design concept. Procedures on Figure 3.
Results and discussions

Visitor
In collecting the user data to survey the users’ attitudes, the researcher group used questionnaires written by the researchers. The population was from tourist statistics in a three-year period from 2003 to 2005 (WRPC, 2006) with 6,853 tourists (the calculated sample group was 400). Collecting data by an accidental random sampling of three times on the study site such as winter (high season) summer and rainy season (low season) but because of the visitors stop travel to visit Chiang Mai and other provinces due to site constraints and environmental impact, such as smog that covers northern Thailand. However, the researcher group adapted the number of sample study and 200 samples were divided into 206 Thai tourists and another group of 10 foreign tourists (10.0%). The last group was 16 officers working in the area (87.50% from the total number of officers) and applying formulas to calculate a sample size of Yamane (1973).
Figure 4. Expected activities of the visitors

- Sightseeing/waterfall: 36.4%
- Bike on trail: 28.6%
- Bird watching: 16.1%
- Hiking/nature education: 32.9%
- Cultural study: 28.2%

Figure 5. Percentage of an opinion about media to make understanding and knowledge

- Brochure/leaflet: 45.7%
- Interior exhibition: 25.5%
- Visitor center: 57.06%
- Nature trail: 50%
- Sign: 41.7%
- Interpreter: 70.2%
- Video/Slide: 24%
- Other media: 50%
Table 1. Percentage of an opinion about media to get understanding and knowledge (n=206)

<table>
<thead>
<tr>
<th>Type of Facilities</th>
<th>Percentage of an opinion</th>
<th>Mean (n)</th>
<th>Standard Deviation (SD)</th>
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<td>High (3)</td>
<td>Moderate (2)</td>
<td>Low (1)</td>
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<tr>
<td>1. Brochure/Leaflet</td>
<td>45.70 (75)</td>
<td>48.20 (79)</td>
<td>6.10 (10)</td>
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<td>2. Interior exhibition</td>
<td>25.50 (36)</td>
<td>54.60 (77)</td>
<td>19.90 (28)</td>
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<td>3. Visitor Center</td>
<td>57.05 (89)</td>
<td>32.05 (50)</td>
<td>10.90 (17)</td>
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<td>4. Nature Trail</td>
<td>50.00 (77)</td>
<td>39.60 (61)</td>
<td>10.40 (16)</td>
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<td>5. Sign</td>
<td>41.70 (63)</td>
<td>42.40 (64)</td>
<td>15.90 (24)</td>
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<td>6. Outdoor Exhibition</td>
<td>25.80 (34)</td>
<td>53.00 (70)</td>
<td>21.20 (28)</td>
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<td>7. Interpreter/Personal service</td>
<td>70.20 (120)</td>
<td>24.00 (41)</td>
<td>5.80 (10)</td>
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<td>8. Video/Slide</td>
<td>24.00 (29)</td>
<td>41.30 (50)</td>
<td>34.70 (42)</td>
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<tr>
<td>9. Other media</td>
<td>50.00 (2)</td>
<td>25.00 (1)</td>
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Note: Figures in parentheses were in number of visitors checked of each

\[ n = \frac{N}{1 + N(e^2)} \]

\( n \) = Number of sampling
\( N \) = Total of population (Annual)
\( e \) = Percentage of error acceptable sampling of 5 \% (\( e = 0.05 \))

Findings of this study indicated that most of all recreation and interpretive experiences focused on sightseeing as 36.40\% and hiking/nature education as 32.90\% (figure 4) which are expected activities that the visitor use in the study site. About the media used to encourage understanding and knowledge of the site was interpreter/personal service of 70.20\%, visitor center was 57.05\%, nature trail 50\%, and also, other media facilities design such as a local store, canteen, parking lots, and signs for the nature trail (figure 5). Detail shown on Table 1.

**People’s participation**

For the visitor/stakeholder participation section of the research was recording their opinion about interpretive facilities and the diversity of how people participated, including support from the key man (community leader) of community. The data revealed that majority about 73.35\% needs the visitor center and style, toilet 60\%, canteen building was 46.70\%, and also sign style was more suitability of 68.75\% (detailed on table 2).
A. On the left was the first meeting to key man of communities
B. Middle figure was presentation of the site potential
C. On the right was brainstorming of design propose of interpretive facilities
D. Design propose prepared exhibition for meeting

Figure 7. Interpretive theme for tourism
The big picture of this study theme (figure 7) was “Nature is Life” which is of interpretive significance for the preservation of forest and landscape ecology of the site. Hence, when the visitors and also local people begin to get started with recreational activities they will be learning about the site in the visitor center, the interpretation will brief them on activities, recreation sites, safety first, and environmental impact by media/exhibit presentations such as indoor & outdoor exhibition, studio self-guided activity; self-guided trail, self-guided auto tour, off-site, off-season media. Other interpretive media will include: sign and symbol interpretation (park/natural area management signage), and publications (brochure, leaflet, poster, booklet) before they’ve started activities. The new study site facility for interpreting suitability in the Ban Wat Chan Royal Project.

Table 2. Percentage of opinion about interpretive master planning

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<td>Interpretive Master Planning</td>
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<tr>
<td>- Suitability of development of natural/cultural interpretation system</td>
<td>35.30 (5) 52.90 (4)</td>
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<td>- Suitability of Natural interpretive theme</td>
<td>35.30 (6) 29.40 (5)</td>
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<td>- Suitability of Cultural interpretive theme</td>
<td>37.50 (6) 43.75 (7)</td>
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<td>- Suitability of site potential for developing natural/cultural interpretation system</td>
<td>29.40 (5) 47.10 (8)</td>
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<td>- Suitability of responsible organization</td>
<td>25.00 (4) 50.00 (8)</td>
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<td>- Suitability of level of participation to this study</td>
<td>11.80 (2) 58.80 (10)</td>
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<td>Landscape and interpretive facilities design propose</td>
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<td>- Suitability of site plan and facilities</td>
<td>43.75 (7) 43.75 (7)</td>
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<td>- Suitability of carrying capacity of facility (amount and quantity)</td>
<td>20.00 (3) 46.65 (7)</td>
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<td>- Suitability of zoning and functional use</td>
<td>13.30 (2) 46.70 (7)</td>
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<tr>
<td>- Suitability of site planning design propose compare between exiting condition</td>
<td>37.50 (6) 43.75 (7)</td>
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<tr>
<td>Interpretive facility styles design propose</td>
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<tr>
<td>- Suitability of design pattern of visitor center</td>
<td>13.30 (2) 73.35 (11)</td>
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<td>- Suitability of canteen</td>
<td>20.00 (3) 46.65 (7)</td>
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<td>- Suitability of community shop</td>
<td>26.65 (4) 46.70 (7)</td>
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<td>- Suitability of Toilet</td>
<td>26.65 (4) 60.00 (7)</td>
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<tr>
<td>- Suitability of sign</td>
<td>31.25 (5) 68.75 (11)</td>
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Note: Figures in parentheses were in number of visitors checked of each

Interpretive Theme
The big picture of this study theme (figure 7) was “Nature is Life” which is of interpretive significance for the preservation of forest and landscape ecology of the site. Hence, when the visitors and also local people begin to get started with recreational activities they will be learning about the site in the visitor center, the interpretation will brief them on activities, recreation sites, safety first, and environmental impact by media/exhibit presentations such as indoor & outdoor exhibition, studio self-guided activity; self-guided trail, self-guided auto tour, off-site, off-season media. Other interpretive media will include: sign and symbol interpretation (park/natural area management signage), and publications (brochure, leaflet, poster, booklet) before they’ve started activities. The new study site facility for interpreting suitability in the Ban Wat Chan Royal Project.
Conclusion

For using the interpretive master planning process for natural resources for eco-tourism based on the principle of sustainable design for this study, it was found that the planning of interpretive system on natural resources can be adapted to all areas especially natural recreation areas, cultural, and historic site were tools or media to build understanding and increase knowledge about nature, and ecology system to visitors (Veverka, 2014). This was to stimulate awareness in conserving natural resources, ecology system, the planning of landscape and the development of convenient facilities and it’s adapted from sustainable design.

There were nine factors considered: the suitability of size and the ability to facilitate people of the area, the harmony with nature, safety, usefulness, the convenience in maintenance, the vulnerability to destructive behaviors, the use of local materials, maintain or preserving local identity and its culture, and the maintenance area (USNPS, 1993). These were valued by using three levels of suitability like very suitable, moderately suitable, and little suitable. From the assessment based on sustainable design, it was found that the managing area of Ban Watchan Royal Project had low suitability. The suggestion was to consider the significance of size, the number of convenience facilities which can facilitate visitors without having impacts on the area or having the least impact. Another consideration was to think about the patterns of convenience facilities which should be simple and harmonize with local identity and local people’s way of life. The materials used should be biodegradable after use. The color of the buildings should harmonize with natural environment to maintain the ecological system to its perfect condition as much as possible. Therefore, the management team should understand the theory in planning the physical development of natural recreation and adapt it to use with the context or the geo-social of the area to preserve natural environment as much as possible.

Recreation area was suitable for eco-tourism because visitors can learn about nature/ecology system and local culture. This was because of its natural setting and there were quite a few convenience facilities. Tourists should be careful when they want to study...
nature and make sure that there won’t be effects on natural resources and ecology system. This means that people are non-consumptive users or appreciative users. By doing this, visitors were the ones who visit natural attractive places which have their uniqueness and attractiveness rather than adapting/changing nature and developing convenience facilities (Veverka, 2015). The interpretive planning of natural resources in of this site was to help tourists get the positive experience of natural study and feel satisfied with their natural environment experience. This will enhance their awareness of environmental and related conservation and resource management issues associated with natural areas. Thus, there has been a plan to develop the interpretative panels in the nature trail as well as new necessary facilities to prevent the negative impacts of tourism on these attractive sites. The design patterns used are harmonious with nature based on carrying capacity of the area.

References


IN SHORT
Evaluating the West Virginia Interpretive Guide Heritage Steward Program

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U.S. Forest Service

Abstract
West Virginia University’s Extension Service partnered with the Recreation, Parks, and Tourism Resources Program to offer an entry level certification opportunity to interpretive guides in West Virginia. The result of this partnership is the West Virginia Interpretive Guide Heritage Steward Program aimed at providing low-cost, widely available training course to guides throughout the state. The course is divided into two components—a set of online modules and an in-person skill assessment workshop. This exploratory study used a retrospective post-then-pre survey design to assess the course impact on participants’ beliefs related to the effectiveness of the course, as well as self-reported changes in interpretive competency. Results indicated the course was successful in increasing participant competence related to developing and delivering interpretive talks. This effective regionally based certification course is potentially a model that could be used to expand personal interpretive certification opportunities for guides.
Keywords
interpretation, guides, training, certification, collaboration, evaluation

Introduction
Effective interpretive guides can influence visitor satisfaction related to their experiences (Ham & Weiler, 2007; Pearce & Moscardo, 1998), raise awareness about resources (Powell & Ham, 2008; Sweeting, Bruner, & Rosenfield, 1999), and inspire visitors to return (Weiler & Ham, 2002). A guide’s ability to increase visitor understanding and connection to resources depends on a variety of skills (such as resource knowledge, customer service, etc.), but interpretive skill is paramount (McGrath, 2004). Certification can provide interpreters with a variety of benefits including increased skills and knowledge, increased professional recognition, and increased career competitiveness (Black, 2007; Interpretive Guides Association, n.d.; National Association for Interpretation, 2015; National Park Service, n.d.). But a key issue is how do interpreters acquire and improve their personal interpretive skills, as well as gain interpretive credentials?

Several national certification programs in interpretation or guiding exist in the U.S. (i.e., through the National Association for Interpretation [NAI]; the Interpretive Development Program of the National Park Service) as well as internationally (EcoGuide Certification in Australia, Interpretive Guides Association in Canada, etc.). However, cost of certification and time required to obtain certification may act as barriers to guides (Black & Weiler, 2005). National certification programs often have extensive accreditation requirements, which can result in high costs for the certifying body and training participants. Becoming a nationally certified interpreter can cost hundreds of dollars (e.g. NAI certification costs $125–$200, plus travel costs and recertification fees), making certification unattainable for many guides. Limited availability of these national certification courses can also be a barrier. For example, since 1998, it appears only nine West Virginia guides have completed the Certified Interpretive Guide training through NAI (NAI, n.d.). Similar nature education and training programs (e.g. Master Naturalist Programs) are offered by numerous state extension services (Larese-Casanova, 2011), but few focus specifically on personal interpretive training. Additionally, there are bachelor’s degree programs that offer either interpretive classes, or entire degrees focused on interpretation—but the time and financial investment is generally well beyond anyone not already in college (or soon to enter college), and not what most professional guides are seeking. Therefore, guides have to rely on national certification or go without credentials.

In addition, while specific guide training programs often conduct evaluations, as a field, interpretive guide training programs do not have standardized evaluation and assessment methods (Black & Ham, 2005; Skanavis & Giannoulis, 2009; Weiler & Ham, 2002). This lack of evaluation and resulting research constrains the improvement of current certification programs and hampers the development of new programs. These issues likely limit the number of guides receiving certification, as well as hampering the further development of effective guide training programs.

To address these challenges, West Virginia University’s (WVU) collaborative team of extension and academic faculty developed a low-cost guide training using an online course and an in-person skill assessment leading to a certification from a respected institution (WVU). Lower costs, less time commitment, and easier access should allow more guides to become formally trained in interpretation. The purpose of this
exploratory study is to evaluate the effectiveness of this guide training course to increase the participants’ self-reported competence regarding planning and delivering one type of personal interpretation program—interpretive talks. Through proper evaluation of the program, this WVU course could be a replicable, effective model for other states, regions, and organizations.

Guide Course Creation and Implementation

In 2012, the WVU Extension Service Community Resources and Economic Development (CRED) unit partnered with experts in WVU’s Recreation, Parks, and Tourism Resources (RPTR) program to create the West Virginia Interpretive Guide Heritage Steward course. The CRED unit is dedicated to providing educational programs and technical assistance to strengthen the capacity of citizens and organizations throughout the state of West Virginia. Utilizing experts in program delivery (in CRED) and interpretation (in RPTR) at WVU provided rigor as each partner was able to focus on their core strength. Additionally, costs were kept low by using existing university facilities (websites, classrooms, etc.), and existing university networks were used to reach potential participants.

While there are many facets in improving interpretive skills, this course is designed to give West Virginia guides, educators, and those interested in improving their communication the knowledge and skills needed to plan and deliver effective personal interpretive programs. Due to logistical constraints, the course specifically addresses planning and delivering interpretive talks, although the knowledge and skills learned could be applied to most other types of personal interpretation (walks, hikes, etc.). It is a 12-week course offered to groups of 10 to 15 guides/participants, and a $50 fee is currently charged to participate.

The training is divided into two components—an online course and an in-person assessment. The majority of the course is a set of self-paced, online modules offered through WVU Extension Services’ Online Community Learning System (extcommunity.wvu.edu). Five online modules were completed over a three-month period, giving guides the flexibility to fit in the course around their schedules. Participants are given two weeks to finish each module, and are required to complete an assessment for each module. Participants learn about the following topics:

- Definitions, purpose, and history of interpretation in general
- Principles and techniques for effective interpretation in general
- How to research interpretive topics and apply brainstorming techniques to develop themes/subthemes and organize personal interpretive programs
- How to develop and deliver effective interpretive talks

While other more extensive guide training programs often include a variety of topics, such as interpretive skills, resource knowledge, customer service, first aid, etc. (Black & Ham, 2005; Weiler & Crabtree, 1998), this course focuses specifically on increasing knowledge and skills related to planning and delivering interpretive talks (Ballantyne & Hughes, 2001). Each module contains readings, a presentation of key points from the readings, and an assessment (involving questions and activities to demonstrate key learning and skills for each module). Online feedback is given to each participant as
they complete the assessments from each module. Recorded interpretive talks are also included to provide course participants with examples of how to deliver an effective talk. Webinars are scheduled during the course to answer questions, discuss assessments, and provide peer-to-peer feedback on talk outlines.

After completing the online modules, participants had developed an outline for a 10-minute interpretive talk. Shortly after finishing the online component, a half-day in-person workshop is scheduled. During the in-person workshop held indoors (also due to logistical constraints), participants deliver their talks, receive and give feedback on all the interpretive talks, and are introduced to the interpretive evaluation process. Participants receive oral feedback immediately after their talk, as well as written feedback from course instructors and other course participants. After successfully completing the course, participants receive a certificate, pin, and a badge, recognizing them as a West Virginia Interpretive Guide Heritage Steward.

Methods
To date, 14 guides have completed the training in three classes. The courses were conducted in the fall of 2013, fall of 2014, and spring of 2015. Course participants included canopy tour/zip-line guides, West Virginia Master Naturalists, and volunteer guides from local non-profits.

Training program effectiveness was evaluated using a retrospective post-then-pre survey design method. The retrospective post-then-pre design is a useful way to assess self-reported changes in knowledge, skills, attitudes, or behaviors. The strengths of this design are that it reduces response shift bias, limits pretest sensitivity, and it takes less time to collect the data since it is collected all at once (Howard, 1980; Lam & Bengo, 2003; Pratt et al., 2000). Limitations of the retrospective post-then-pre design include self-reporting issues of social desirability and potential inaccuracies related to accuracy of memory and recall (Klatt & Taylor-Powell, 2005). In the retrospective post-then-pre design, both pre and post surveys are collected at the same time, after the intervention. In this case, all surveys were administered at the end of each of the in-person workshops, with the post survey administered first, and the shorter pre-survey (measuring only self-assessed interpretive competencies) administered immediately after the post survey.

The surveys collected self-reported data (including closed and open-ended questions) that measured changes in beliefs related to the effectiveness of the course, as well as changes in interpretive competencies and skills related to guiding and personal interpretation (Ballantyne & Hughes, 2001; Broun, Nilon, & Pierce, 2009). Changes in self-assessed interpretive competencies were measured on a 5-point scale from 1= “not at all competent” to 5= “extremely competent.” Post-course surveys also assessed participant beliefs related to course content and effectiveness of the training (using a five-point scale from “strongly disagree” to “strongly agree”).

Results
Overall, nine females and five males participated in the three courses. Participants ranged in age from 21 to 68. In general, participants reported the course was effective (the lowest item mean was 4.23), and most strongly agreed that the course was well structured, helpful in developing or refining their skills in interpretation, improved their ability to perform their job, and that they would recommend the course to other guides and people interested in interpretation (see Table 1).
Table 1

Participant Beliefs Related to Effectiveness of the Course

<table>
<thead>
<tr>
<th></th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>Mean</th>
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<tr>
<td></td>
<td>Count</td>
<td>%</td>
<td>Count</td>
<td>%</td>
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<tr>
<td>Course content was well-organized.</td>
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<tr>
<td>Instructor(s) demonstrated</td>
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<td>knowledge of the subject matter.</td>
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<td>Online unit readings were</td>
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<td>useful and appropriate.</td>
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<td>Online unit assessments were</td>
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<td>beneficial.</td>
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<tr>
<td>Instructor feedback for the</td>
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<tr>
<td>online assessments was helpful.</td>
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<tr>
<td>The in-person portion of the</td>
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<tr>
<td>course was beneficial.</td>
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<tr>
<td>I would recommend this course to</td>
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<tr>
<td>other guides and people interested</td>
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<td>in interpretation.</td>
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<td>This course was helpful in</td>
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<td>developing or refining my</td>
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<tr>
<td>skills in interpretation.</td>
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<tr>
<td>This course improved my</td>
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<td>ability to perform my job.</td>
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</tbody>
</table>

*Measured on five-point scale from “strongly disagree” to “strongly agree”, only on post-survey. There were no responses for “strongly disagree” and thus that column is not shown.

Table 2

Paired-Sample T-test Results of Changes in Participant Beliefs about Interpretive Competencies

<table>
<thead>
<tr>
<th>Specific Interpretive Competency</th>
<th>Pretest</th>
<th>Posttest</th>
<th>n</th>
<th>t</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I can deliver an interpretive talk.</td>
<td>3.00</td>
<td>.78</td>
<td>4.21</td>
<td>.80</td>
<td>-5.09*</td>
</tr>
<tr>
<td>I can list and explain key principles used in</td>
<td>2.21</td>
<td>.97</td>
<td>4.21</td>
<td>.70</td>
<td>-8.53*</td>
</tr>
<tr>
<td>effective interpretation.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I know specific interpretive techniques to make</td>
<td>2.64</td>
<td>1.01</td>
<td>4.57</td>
<td>.65</td>
<td>-8.71*</td>
</tr>
<tr>
<td>a talk more enjoyable and relevant.</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>I can write an effective theme and subthemes.</td>
<td>2.46</td>
<td>1.27</td>
<td>4.38</td>
<td>.65</td>
<td>-4.81*</td>
</tr>
<tr>
<td>I can tailor a talk to meet the needs of an</td>
<td>3.36</td>
<td>1.15</td>
<td>4.64</td>
<td>.50</td>
<td>-3.99*</td>
</tr>
<tr>
<td>audience.</td>
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<td></td>
</tr>
<tr>
<td>I can effectively organize an interpretive talk.</td>
<td>2.71</td>
<td>1.07</td>
<td>4.50</td>
<td>.76</td>
<td>-5.34*</td>
</tr>
</tbody>
</table>

*=p<.01; Measured on a 5-point scale from 1=”not at all competent” to 5=”extremely competent”
Paired-sample t-tests were calculated to compare self-assessed changes in interpretive skills and competencies before and after taking the course. Results indicated the course had a significant positive impact on their self-reported competencies related to interpretation. Mean scores showed a statistically significant increase for each competency survey item (p< .01; see Table 2). An examination of the means revealed the most significant improvements were in the participant’s “ability to list and explain key principles used in effective interpretation,” and “knowledge of specific interpretive techniques to make a talk more enjoyable and relevant” (see Table 2).

The most frequent responses to the open-ended question “what was the most important thing that you learned during the course?” were: how to develop a theme and subthemes, the core principles of interpretation, how to organize a talk, and time management. When asked how the course could be improved, participants in the first two courses most frequently mentioned the need to add more examples of talks in the online modules. To address this issue, additional video talks and short examples of interpretive practices were added to each subsequent course. Additionally, participants from the first class requested more in-person meetings or opportunities for the class to meet. Webinars were scheduled in the following two classes to address this, although a few participants in each subsequent course still wanted more web-based or in-person meetings.

Discussion and Implications

WVU’s low-cost course achieved its objectives of increasing the participants’ competencies related to planning and delivering interpretive talks. This collaborative effort involving the WVU Extension Service and RPTR Program at WVU was developed specifically to offer a low-cost and novel (online) interpretive guide training course to West Virginia guides. Similar findings from Master Naturalist training outcomes associated with extension programs reveals that this type of partnership may be useful to replicate elsewhere (Broun et al., 2009; Larese-Casanova, 2011).

This course was modeled after the National Association for Interpretation’s Certified Interpretive Guide training, but was designed to be more of an introduction to personal interpretation and developing interpretive talks. It provides local guides with a low-cost training opportunity to earn a certification from a respected institution and be recognized as an interpretive guide, but the hope is that those who continue in the profession of interpretation will pursue additional specialized training through a larger national association like NAI.

Limitations of this exploratory study include the small sample size, issues associated with self-reported data, and self-selection bias (all guides chose to take the training—it was not required by their jobs), and therefore caution should be used in generalizing these results beyond this sample. Interestingly, at least a few participants in each course suggested adding more “meetings,” either virtually or in-person, in order to get more interactive feedback from instructors and classmates. However, if the goal is to reduce travel costs by offering the majority of content online, this issue should be addressed in the planning stages (i.e., offer synchronous online opportunities like webinars and chats, be clear with prospective participants about course format and implications, etc.), but may still remain.

Additional evaluations as this program continues at WVU will serve to expand on these findings and further improve the course. Future research could ask participants to not only rate themselves, but also provide answers to the competency items, or
assess similar interpretive outcomes across different types of guiding certification opportunities. This model provides evidence that collaborative partnerships at the local level could be used to offer low-cost interpretive certification opportunities that will increase the competence of participants in delivering effective interpretive talks.

References


Communication Strategies to Promote Health

Sun Safety in Outdoor Recreation Settings

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Abstract
The field of interpretation is increasingly acknowledging the potential for strategic health promotion. The purpose of this paper is to introduce Go Sun Smart (GSS) Resorts, a sun safety program directed to guests recreating outdoors at destination resorts and parks in the United States and Canada. This paper aims to present a sun safety intervention that
was designed to promote advanced sun safety practices to the field of interpretation. With a foundation in Diffusion of Innovations Theory and Transportation Theory this paper will present the intervention materials and strategies developed by GSS to showcase the potential to promote health behaviors. Intervention materials that were developed include posters, tip cards, a Public Service Announcement (PSA) video, additional electronic and print materials, employee trainings, GSS certification, and an interpretive script for use prior to various outdoor activities.

**Keywords**

interpretation, Go Sun Smart, advanced sun safety, sun safety intervention, outdoor recreation, diffusion of innovations theory, transportation theory, communication strategies

**Introduction**

The field of interpretation has traditionally focused on nature guiding (Mills, 1920) and field interpretation of cultural and natural resources (Tilden, 1957). As the interpretive field expanded in scope, it incorporated interpretation as a management tool (Sharpe & Gensler, 1978; Knudson, Cable, & Beck, 2003). For example, one study examined reducing theft of petrified wood at Petrified Forest National Park and understanding park visitors’ responses to interventions to reduce petrified wood theft (Widner & Roggenbuck, 2000, 2003). Another study assessed interpretive communication focused on human-black bear conflict at Yosemite National Park (Lackey & Ham, 2003). Knapp (2007) explored how visitors to various interpretive sites can embrace responsible environmental actions. Studies by Sam Ham and associates (Ham, et. al., 2008), have shown the efficacy of interpretation in assisting park administrators with various management issues and guiding strategic communication for protected area management. Interpretation has also been applied in various venues for fundraising to support park and other interpretive sites (Beck & Cable, 2011) and to target the behavioral impact of giving through Lindblad Expeditions’ travelers’ philanthropy programs (Ham, 2013).

Increasingly, interpretation is being considered as a tool to assist visitors to outdoor recreation settings to be safe and employ actions to promote their health (Nelson, 2005). In a keynote speech, Jon Jarvis, National Park Service director, stated that a current focus [of the NPS] is “the role we play in public health” that includes addressing national health priorities such as heart disease, cancer, and depression (Jarvis, 2014). The evolution of the field suggests the primary emphasis of interpretation is that it is designed to make a difference on purpose (Ham, 2013).

In the United States more than 3.5 million new diagnoses of skin cancer will be detected this year, with more than 76,000 new cases of melanoma, the deadliest skin cancer (American Cancer Society, 2015). Dealing with the increasing epidemic of skin cancer is considered an urgent public health concern (Stern, 2010). Exposure to excessive ultraviolet solar radiation accounts for the vast majority of cases of skin cancer, the most common type of cancer in the United States (American Cancer Society, 2015). Recent research indicates that 37% of adults have experienced at least one sunburn and nearly 21%, four or more sunburns within the past 12 months (Buller et al, 2011). Recreational UV exposure is associated with all forms of skin cancer, so individuals must be convinced to take precautions during such activity. Those who engage in outdoor physical activity, a beneficial health activity that often occurs in interpretive settings, may receive high-risk sun exposure.
Overview of the Project

Go Sun Smart (GSS) Resorts is a sun safety program directed to guests who are recreating outdoors at destination resorts and parks in the U.S. and Canada. The program promotes advanced sun safety strategies. A $3 million, five-year research project funded by the National Cancer Institute is in progress. The first phase encompassed the creation and application of intervention strategies that may be employed at any outdoor setting in which recreationists are exposed to the sun. The purpose of this paper is to present the intervention strategies that have been developed for the GSS Resorts project to the field of interpretation.

A sample of 41 resorts (which included five state parks with lodging, but will be referred to generically as “resorts” throughout the paper), were recruited to the study providing wide representation of geography, elevation, cost, and recreational activities. Inclusion criteria for the resorts mandated guests who stayed overnight, on-site lodging controlled by a parent company, at least three on-site outdoor recreation venues, and at least one outdoor waterside recreation venue. Outdoor recreation at the resorts included aquatic activities at pools and beaches, court and lawn games, hiking and walking trails, horse riding, bird watching, and mountain biking, among others.

Initially, a list of resorts was obtained from the American Hotel and Lodging Association and Hospitality Sales and Marketing Association International for recruiting purposes. The recruitment rate was lower than expected so several ski areas were added from the National Ski Areas Association (that met the inclusion criteria for summer outdoor activities).
The participating resorts are located across the U.S. and Canada and comprise diverse latitudes, climates, and terrains including, beaches, deserts, lakes, and mountains. Ranging from five state parks to luxury resorts, the sample also was diverse, socioeconomically. Many resorts are in the business of “selling sunshine” and there was, therefore, reluctance by some of the resorts to participate. Ultimately, 41 resorts agreed to participate (11% of those contacted).

(See Table 1 for a map and complete listing of resorts.)

**Advanced Sun Safety**

The intent of the research team in working with resorts was to increase sun safety awareness and behavior of guests as a result of their exposure, to the intervention materials. In addition to the recommendation to pre-apply SPF 15 or higher sunscreen a half hour before going outside and to reapply after two hours, GSS encouraged guests at outdoor recreation venues to consider a fuller spectrum of sun safety behavior including: wearing a broad brim hat, wearing sunglasses, wearing longer sleeves and pants or other protective cover, staying out of the sun during the most intense hours of the day, and seeking shade.

At the intervention resorts, managers were encouraged to make full use of intervention materials that were supplied by a member of the GSS research team who met with key managers in formal meetings and/or during a tour of the resort to discuss implementation. The research team “intervention implementers” provided an overview of the program, introduced the intervention materials, reviewed implementation recommendations, discussed how to integrate the program within the resort, and addressed any potential barriers.

**Intervention Materials**

An overall theoretical frame to target comprehensive, advanced sun safety behavior was provided by Diffusion of Innovations Theory (DIT). DIT suggested that messages be created with the aim of elevating sun safety on the guests’ agenda, convincing them that advanced sun safety practices are compatible, easy to implement, and advantageous during outdoor recreation, developing attitudes and a norm supportive of sun safety, and reminding adults to practice precautions. Specific materials were also developed based on principles of Transportation Theory (TT), using narrative persuasive messages. TT proposes that peoples’ attitudes and beliefs are impacted by the ways in which they interpret stories they are exposed to (Green & Brock, 2000). Thus, the TT-based messages were designed with the intention to alter vacation narratives to include sun safety. The theory-driven intervention materials included posters, tip cards, videos, electronic and print materials, and employee trainings.

**Posters**

The GSS project team designed 10 different posters for display indoors or outdoors. The indoor posters were made to be hung from walls or windows, such as in the lobby, gift shop, or recreation venues, whereas the outdoor, heavier-duty signs were made to weather the elements and could be hung by pools and water features, ski/bike lifts, trails, or other outdoor recreation facilities. The posters were tailored to recommend sun safety behaviors specific to outdoor recreation activities that guests might engage in at the various resorts including beach and pool recreation, hiking, horseback riding, and mountain biking. In addition, more general signage that highlighted the various aspects of advanced sun safety as described above, and could be used throughout the resort, was made available. (See Figure 1.)
Figure 1: Sample of Sign/Poster, Designed for the Study

Figure 2: Tip Card for Guests, Designed for the Study
Tip Cards
In an effort to reach every guest, tip cards were designed that provided a checklist format of the various advanced sun safety behaviors promoted by GSS. Some resorts offered tip cards to guests at a central location, such as on a brochure rack or concierge table; others provided them in the guest books found in each room; and others passed these out with room keys and maps as guests checked into the resort. (See Figure 2.)

Video
A PSA video was created that could be linked to a resort’s website, delivered as a link in a registration or pre-arrival email, or shown on closed-circuit television at the resort. “Meet the Sun Smarts” presented a story (i.e., narrative) about a family that practices sun safe behavior for a successful vacation. This video was also available on the Go Sun Smart website that provided more in-depth information on sun safety and skin cancer prevention.

Electronic and Print Materials
In addition, the GSS team provided a plethora of electronic and print materials. These included a pre-arrival message and packing list for email communication with resort guests, newsletter articles, social media content, messages for the resort tip line, a downloadable guest book insert, the GSS logo that can be used on resort websites as a link for guests to access additional sun safety information, and a press release touting the resort’s involvement with the GSS advanced sun safety program.

Employee Trainings
Finally, resorts were offered an employee training by the research team to further educate employees as to the importance of advanced sun safety for both themselves and their resort guests. The training was available to resorts in-person from a trained GSS employee or as an online tutorial. Both programs can be tailored to fit a desired training timeframe. Supplemental to this employee training the GSS team developed a sun safety talk, for resort and park staff to advocate sun protection while interacting with guests at specific recreation sites. (See Appendix 1.)

GSS Certification
Participating resorts were certified as sun safe resorts. Each resort was presented with a framed certificate to acknowledge and showcase their commitment to sun safety. These resorts also have the ability to order additional sun safety intervention materials as needed and available.

Conclusion
The materials and strategies developed to promote advanced sun safety could be used in any interpretive site in which visitors to the site are also involved with outdoor activities such as hiking, mountain biking, beach combing, bird watching, or camping. Furthermore, the comprehensive, theory-based intervention strategies created in this study can be replicated and/or adapted to promote sun safety behavior in other diverse outdoor settings.

For more information about GSS Resorts go to www.gosunsmart.org.
Appendix 1: Sun Safety Talk

Conduct the talk similarly to talks people are accustomed to in visits to our parks and other interpretive settings. Keep this short while trying to make it fun. Conduct in a place free of distraction and ideally in the shade. The approach here will be to guide the guests through a story of what it is like to be sunburned and sun smart strategies to avoid that and create better circumstances. Note that the actual message and level of participation with guests will vary according to the audience and the person delivering the message. Ideally, there will be room for humor.

Good Morning. My name is _____________. Welcome to _____________ Park or Resort. This short talk today is about how to have a better outdoor recreation experience by practicing sun safety and avoiding sunburn.


How do you know? (Ask this playfully; of course because it has happened to them.) Would you want it to happen again? (Of course not!)

One of the primary reasons for a bad experience during vacation is getting sunburned. Therefore, ____________ Park or Resort is concerned about your experience and your health. I’ll be talking today, just briefly over the next few minutes, about how you can protect yourselves from the sun. It’s easy, it can be useful in terms of your long-term health and appearance, and we don’t want to see your outdoor recreation activity compromised!

You have been told for years to do what “one thing” to protect yourselves from the sun? (The answer is to apply sunscreen. Direct discussion to this sun safety behavior if other things come up.)

That’s right. For best protection you should be using a sunscreen with an SPF of 15 or higher. Not only that, but it is important, so that the sunscreen is most effective, that it is applied in sufficient quantity and 30 minutes before you go out into the sun. Many people don’t apply enough sunscreen and many don’t apply the sunscreen until they are already outside. So it is important to apply sufficient sunscreen and to do so 30 minutes before going out.

In addition, it is important to reapply sunscreen every couple hours and after going into the water.

But there are other strategies that are also effective, and work especially well in combination to protect your skin from the sun.

For this portion of the “talk” have a “grab bag” with the various props to demonstrate. It might be fun to have a volunteer model these. People could guess what is in the bag. The speaker could put a few “funny” items in the bag as well for a little humor.
What do you suppose would help you to avoid a sunburn in addition to sunscreen?

*Items could be pulled out of the bag as the demonstration continues.*

That’s right. A hat. To the extent the hat provides shade for your face and neck it can be very important. Note that a broad brimmed hat will offer more shade than a visor or ball cap.

What else? That’s right. A cover-up. The more you cover the more effective in protecting from the sun! So a T-shirt is better than nothing. But now, many people are using covers with long sleeves. And many are using fabrics with high sun protection.

What else? Think about protecting your eyes. That’s right. Sunglasses. Sunglasses help to protect our eyes from the harmful rays of the sun.

There is something else you can do that is very obvious and yet many people don’t seem to think about it. It isn’t something you can put on or wear. Any guesses? That’s right, you can seek shade (as we have done right here)!

There is one last strategy for avoiding too much sun. The intensity of sun varies throughout the day. Just as a nice benchmark to remember, the sun is less intense before 9 a.m. and less intense after 5 p.m. Mid-day is when the sun is most intense and when you should be most careful or strive to stay out of the sun.

So engaging in your favorite outdoor recreation activities will be safer from the sun earlier and later in the day. One of the great things about this is that often those times of the day are cooler and more pleasant times of the day to be out anyway! A great way to monitor this is to use an app that gives you a UV index.

Going back to where we began, how would it feel to use these strategies and NOT get sunburned. Can you describe it by what is absent? (Not hot. Not painful. Not red. Not prickly. Etc.) So clearly it makes sense to go sun smart!

In conclusion, we hope you have learned something to help protect you from sunburn during your outdoor recreation pursuits. We bring these things to your attention out of respect for your health, your appearance, and having the best time possible in your outdoor activities.
Literature Cited


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 8.5” 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.

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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.

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On the title page include full names of authors, academic, and/or other professional affiliations, and the complete mailing address of the author to whom 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.

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Contact
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