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Abstract
Nature centers, museums, zoos, and other exhibit-based institutions need to sustain or increase visitation for economic viability. To generate visitor interest, exhibits have become more interactive, with immersion exhibits becoming increasingly popular.

Visitor research has traditionally focused on learning or social aspects of the visitor experience rather than psychological dimensions related to attitudes, values, and behaviors. Yet nature-focused institutions increasingly support broad-based issues, such as encouraging connection to nature and environmentally responsible behavior. This paper explores how an immersion exhibit without personal interpretation, impacts connectedness to nature, intentions for environmentally responsible behaviors, and other aspects of visitor experiences. Short visits to a free-flying butterfly exhibit were found to augment visitors' connectedness to nature and environmentally responsible behavioral intentions. Visitors also described how they appreciated the intensely beautiful surroundings, were awe-struck, felt a great deal of peace and relaxation, and felt oneness with nature.

Keywords
immersion exhibits, connection to nature, environmentally responsible behaviors, direct experience, non-personal interpretation

Literature Review

Interpretive centers are traditionally interested in learning outcomes. Visitor centers such as museums, botanical gardens, zoos, aquariums and nature centers are prime examples of such interpretive centers (Berry & Jönsson, 2015; Bitgood, 2002). In the last decade, it is increasingly recognized that visitor centers need to concentrate on visitor experiences by incorporating interpretive elements; focusing attention on "how are [the visitors] inspired to change, think and act differently as a result of their visit?" (Kelly, 2004, p. 48). Inspiring visitors to seek out experiences in nature and carry out more environmentally responsible behaviors is an outcome of particular importance to zoos, natural history museums and nature centers (AZA, 2004; Berry & Jönsson, 2015; Stoinski, Allen, Bloomsmith, Forthman, & Maple, 2002). However, the effectiveness of these institutions in encouraging conservation behavior is not well documented (Dierking, Burtnyk, Buchner, & Falk, 2002; Stoinski et al., 2002). Although there is abundant research on attention and learning outcomes, there are few studies looking at encouraging environmentally responsible behavior in interpretive centers, museums, and zoos (Dierking et al., 2002; Stoinski et al., 2002), although there are related studies using outdoor wildlife tours (Ballantyne, Packer, Hughes, & Dierking, 2007; Ballantyne, Packer, & Sutherland, 2011; Chiu, Lee, & Chen, 2014; Christensen, Needham, & Rowe, 2008; Lee, 2011; Lee, Jan, & Huang, 2015).

Immersion exhibits, a relatively recent type of exhibit, often rely on the experience itself

rather than an interpreter to interact with visitors. Gilbert (2002) defines immersion exhibits as:

a multisensory experience that allows visitors to walk into the "scene" (unlike a glass-fronted diorama). Such exhibits pull visitors out of the passive, one-dimensional museum viewing ritual and transport them to a different time, place or situation where they become active participants in what they encounter. (Gilbert, 2002, p. 10).

Examples of immersion exhibits include simulated rainforests, swamps, savannahs, and caves as well as simulations of the past with living history and simulations of experiences such as traveling through space or the human body (Bitgood, Ellingsen, & Patterson, 1990). These exhibits may have personal interpretation by a guide; non-personal interpretation through signage, exhibits, or brochures; or a combination of these methods, and some exhibits may not have any interpretation at all.

Even without personal interpretation, immersion exhibits may be ideal interpretive venues for promoting connectedness to nature. Connectedness to nature is defined as the degree to which a person considers themselves a part of nature and includes nature in their self-concept (Schultz, 2000, 2002). Connectedness to nature has a positive relationship with environmental concern (Perkins, 2010; Schultz, Shriver, Tabanico, & Khazian, 2004; Schultz & Tabanico, 2007), environmentally responsible behavior (Capaldi, Dopko, & Zelenski, 2014; Dutcher, Finley, Luloff, & Johnson, 2007; Gosling & Williams, 2010; Heintzman, 2010; Mayer & Frantz, 2004; Nisbet, Zelenski, & Murphy, 2009), as well as positive emotions and mindfulness (Heintzman, 2002, 2009; Mayer, Frantz, Bruehlman-Senecal, & Dolliver, 2009; Nisbet, Zelenski, & Murphy, 2011; Zhang, Howell, & Iyer, 2014).

For instance, in a study of visitors' emotional responses to zoo animals, Myers, Saunders, and Birjulin (2004) found four patterns of emotions expressed toward three focus animal species: gorillas, snakes, and okapis. Feelings of love and a sense of connection were significantly different across all three species and were felt the most for the gorillas and least for the snakes. The emotions of love and connection related powerfully to concern and a desire to help that species. The emotions of love and connection could be, as Myers and colleagues concluded, highly selective and related to the species with the most charisma or similarity to humans (i.e., gorillas) or they could be related to exhibit type and experience provided. The gorilla exhibit was the most naturalistic, while the snake exhibits consisted of glass enclosures in the reptile house and was therefore the

least like an immersion experience. This begs the question: Is it is the immersion characteristic of the exhibits that increases emotional responses, including connection to nature, rather than the type of animal?

In other research experiments, simulated sights and sounds of nature using videos or potted plants were shown to increase connectedness with nature and positive emotions (Mayer et al., 2009; Weinstein, Przybylski, & Ryan, 2009). Mayer and colleagues (2009) documented that exposure to real or simulated nature (watching nature videos) increases attention, positive emotions, reflection, and connectedness to nature. Exposure to real nature (15 minutes in the natural area depicted in the simulated nature video) had greater psychological benefits than virtual nature. Similarly, Weinstein, and colleagues (2009) found that immersion in simulated environments increased connectedness to nature, intrinsic aspirations, and generosity. They, as well as Capaldi and colleagues (2014), speculate that these effects are correlated with pro-environmental behaviors.

In addition, interpretation research suggests that providing enjoyable, satisfying, and engaging experiences lays a firm foundation for promoting environmental attitudes and improving the likelihood that visitors will adopt pro-environmental behaviors (Farmer, Knapp, & Benton, 2007; Powell & Ham, 2008). If interpretation has these characteristics, visitors will be less likely to tune out (Ham, 1992; Powell & Ham, 2008), enhancing the probability that visitors will embrace conservation messages and values (Farmer et al., 2007; Powell & Ham, 2008). Farmer and colleagues (2007) suggest that interpretation venues that succeed in promoting pro-environmental attitudes and behaviors typically provide, among other things, direct aesthetic experiences with nature, sensitive and emotional content, and a multisensory environment—all characteristics of immersion exhibits.

Research supports the idea that attention and satisfaction are positively related to immersion design features in exhibits. Both visitor stay-time and enjoyment were increased through immersion exhibits (Shettel-Neuber, 1988; Wineman, Piper, & Maple, 1996). Immersion exhibits seem to enhance learning and pleasure (Bitgood et al., 1990; Harvey, Loomis, Bell, & Marino, 1998; Ogden, Linburg, & Maple, 1993). Flow—a sense of being completely absorbed and losing a sense of time and self (Csikszentmihalyi, 1997)—is thought to be promoted by immersion exhibits. In fact, Harvey and colleagues (1998) did find a positive relationship between a sense of immersion and flow.

Furthermore, immersion exhibits that simulate nature can provide much-needed nature opportunities for those, especially in urban environments, experiencing a nature deficit (Arnold, 2011; Kahn & Kellert, 2002; Louv, 2005, 2011). Studies show that exposure to nature is correlated to an individual's psychological and physical well-being (Capaldi, Dopko, & Zelenski, 2014; Kamitis & Francis, 2013; Pedretti & Soren, 2006; Weinstein et al., 2009; Zhang et al., 2014). Kamitis & Francis (2013) found that experiences with nature that were not part of an individual's everyday experiences were most strongly correlated with such benefits. A visit to a nature-based immersion exhibit would typically constitute a non-ordinary experience with nature. In addition, Weinstein et al. (2009) found that the degree to which individuals experience such benefits may hinge upon the degree of immersion, suggesting that experiences where visitors become fully immersed in the natural environment were the most beneficial.

The potential benefits of immersion exhibits have been tested during a qualitative study, based on observations, interviews, and exit surveys by Pedretti & Soren (2006) at the Niagara Parks Butterfly Conservatory. Their results showed that conservatory visitors highly valued feelings of nature connectedness with many visitors stating that visits to the conservatory rekindled this connection. These findings suggest that nature-based immersion exhibits can increase connectedness to nature. However, this study did not definitively show that visits to the conservatory increased connectedness to nature; it is possible that these visitors already had a high connection to nature prior to their visit. Likewise, this study did not provide firm conclusions on whether visitors experienced an increase in intentions to participate in environmentally responsible behaviors. Therefore, the current study was conducted in a natural history museum with free flying butterflies in an enclosed natural habitat with the purpose of qualitatively and quantitatively testing whether or not such immersion exhibits can increase connectedness to nature and intentions for pro-environmental behavior, as well as explore other aspects of the experience visitors find noteworthy.

Methods

Site Description

The Butterfly Rainforest is an immersion exhibit adjacent to the Florida Museum of Natural History in Gainesville, Florida. Admission to the museum is free, however, there is a charge to enter the Butterfly Rainforest. Similar to immersion exhibits located in zoos, the exhibit contains a created, self-contained habitat with live plants and roaming animals. Visitors enter the exhibit from the inside of the museum but the exhibit itself is

outdoors, encased by screens and glass. Visitors walk a meandering path through the exhibit while butterflies fly around them and various plants surround them. The butterflies are so numerous that they seem to surround visitors, and many people have butterflies land on them. Lush landscaping includes a variety of flowers and trees, a pond, stream, and several waterfalls. Other species present include finches, lizards, turtles, and moths. Benches are located throughout the exhibit so visitors can relax and enjoy the surroundings.

Study Design

A post-test-only experimental design was used. In this design, a pre-test is not utilized since the treatment group and comparison group are randomly assigned (by systematic sampling in this case) and thus are considered equivalent groups (Trochim, 2006). This design, while simple, is considered a strong design. This design is particularly good when threats to internal validity exist (Gribbons & Herman, 1997). Visitors to the butterfly rainforest exhibit typically stay in the exhibit roughly 30 minutes, with stay times ranging from 15 minutes to over an hour. Using the same survey instrument as both the pre-test and post-test within such as short duration would likely impact responses, artificially increasing scores on the post-test and threatening internal validity with a testing effect (Campbell & Stanley, 1963). When given a pre-test, participants can be sensitized to specific measured variables impacting their responses on the post-test. This means post-test results can be due to pre-test sensitization rather than the treatment. Using two equivalent groups helps control this threat to internal validity by ensuring that the difference in results is not due to testing (Cook & Campbell, 1979; Christensen, Johnson, & Turner, 2011). Additionally, since the exhibit requires a fee, sampling visitors who do not pay to see the immersion exhibit but see a static museum butterfly exhibit as a comparison group would result in nonequivalent groups and a selection threat to internal validity, thereby also creating a threat to external validity due to a potential interaction of selection and treatment (Cook & Campbell, 1979). Since both sampling days and visitors were randomly selected, there is no reason to believe these groups are not probabilistic equivalents, and therefore any difference in post-tests is due to the treatment (Trochim, 2006). This design has also been called a “simulated pre–post-test design” (Lukas & Ross, 2005). A similar quasi experimental design (without random assignment or selection) is labeled a static group comparison design (Morgan, 2009, Campbell & Stanley, 1963).

The Sample

A purposive sample targeting visitors who paid to walk through the exhibit was used

(Babbie, 2001). Sampling consisted of randomly choosing three weekdays and one weekend day for each group (pre-visit comparison group and post-visit treatment group) and then randomly choosing two-hour blocks to sample visitors on those days. All visitors were systematically sampled by asking every fourth adult in the entrance or exit area (no one was selected to do both) to participate during the data collection period. Surveys were printed on paper and color coded to distinguish between treatment and comparison groups. Multiple trained data collectors surveyed visitors.

Since the two samples were systematically selected from the same target population, with no apparent distinctive differences, they are considered comparable or equivalent (Cook & Campbell, 1979). As an added measure of insurance, a two-sample Kolmogorov-Smirnov Test was used to detect possible differences among the two groups in terms of the distributions' shapes and locations. This test of group differences did not reveal any significant differences for the two samples on gender, education, ethnicity, income, age, and group make-up. Therefore, the two samples were deemed equivalent.

However, since there is an additional fee to see the exhibit and a purposive sample targeting those who paid was conducted, we cannot generalize the results to the general population, but only to those who choose to pay to see the immersion exhibit.

The Questionnaire

Respondents were given a self-administered questionnaire with scales measuring connectedness to nature and environmentally responsible behaviors. Connectedness to nature was measured using the 14-item Connectedness to Nature Scale (CNS) (Mayer & Frantz, 2004). This scale was reported to have strong reliability (Cronbach's alpha = .84, .84, .82, .79 and .79, Mayer & Frantz, 2004). Environmentally responsible behavioral intentions were measured with 11 items that were divided into two behavior indices. Four items measured behaviors related to attracting backyard wildlife such as butterflies and birds and seven items asked about general environmental actions. Behaviors related to backyard wildlife included "feed birds at my home," "grow nectar plants for butterflies," and "provide water or shelter for wildlife at home." General items included "stay informed about environmental issues," "discuss environmental issues with others," and "properly dispose of toxins like oil, paint & chemicals." In addition, the survey had one open-ended question that asked, "Is there anything else you would like to tell us about your experience at the Butterfly Rainforest?"

Index	*Treatment/Control*	*n*	*Mean*	*Std. Dev.*	*t*	*df*	*Sig.*
CNS	Control	168	3.64	0.629	-2.121	416	0.035
	Treatment	250	3.78	0.659			
Wildlife	Control	163	3.40	1.696	-2.883	406	0.004
	Treatment	249	3.72	1.055			
ERB	Control	159	3.74	0.779	-2.771	390	0.006
	Treatment	233	3.95	0.742			

Table 1: Independent samples t-test for differences in connectedness to nature between the control and treatment groups.

Results

The total sample size was 426; 257 visitors were surveyed after exiting the exhibit and served as the treatment group, and 169 visitors who qualified as not having previously toured the Butterfly Rainforest were surveyed before entering the exhibit thereby serving as the comparison group. The sample consisted of 157 males (37%) and 269 (63%) females. Visitors surveyed were 18 to 84 years old, with 18- to 30-year-olds making up 25% of the sample; 12% were in their thirties, 17% in their forties, 23% in their fifties, 16% in their sixties, and 7% were aged 70 years or older. Respondents were highly educated with 55% of the visitors having at least a college degree and 23% having a graduate or professional degree. The sample was not very diverse in terms of ethnicity, as 86% of those sampled were Caucasian with Latino/Hispanic visitors comprising about 5% of the sample.

Almost all of the respondents (97%) came to the exhibit with someone else. Half of these visitors (50%) reported attending with a spouse or companion, about 28% with children and/or other family members, 14% with friends, and 7% with a school, church, or other organized group. Most were first time visitors (90%) and came specifically just to visit the Butterfly Rainforest (71%) as opposed to also visiting the museum. Very few were museum members (3%). Reliability for the 14 item Connectedness to Nature (CNS) scale in this study was high (Cronbach's alpha =.854). The behavioral items were divided into two indices: four items for backyard wildlife related behavior including two related

to butterflies and two related to birds; and seven items measuring general environmental behaviors including donating used items, staying informed about issues, discussing issues, and disposing toxins properly. Cronbach's alpha for testing reliability of the measures was .842 for the backyard wildlife items and .833 for the seven general items.

Did the Butterfly Rainforest immersion exhibit experience affect connection to nature and behavioral intentions?

Only first-time visitors to the exhibit were surveyed. This qualifying question was asked during the consent phase. Those surveyed before entering the exhibit served as a comparison group. A separate sample of visitors who had just exited the rainforest served as the treatment group. Independent samples t-tests were computed on the two behavioral intention indices and the 14-item CNS scale index for differences between control and post scores. Significant differences ($p < 0.05$) were found for all three indices indicating that the experience provided by the butterfly immersion exhibit positively impacted CNS and behavioral intentions for responsible wildlife related behavior and general environmentally responsible behavior (ERB) (see Table 1).

Is there a relationship between connection to nature and responsible environmental behavioral intentions?

A regression analysis was performed on both behavioral intention indices and the connectedness to nature scale (CNS). A check for outliers, multicollinearity, normality, homoscedasticity, and independence of residuals was done and no issues were found. For the backyard wildlife-related behavioral intentions $\beta = .387$, $t(240) = 3.76$, $p < .001$. Connection to nature (CTN) explained a significant proportion of variance in depression scores, $R2 = .15$, $F(1, 240) = 42.19$, $p < .001$. For general environmental behaviors $\beta = .549$, $t(230) = 9.95$, $p < .001$. CTN explained a significant proportion of variance in general environmentally responsible behavioral intentions, $R2 = .302$, $F(1, 230) = 99.03$, $p < .001$.

What impact did the experience have on visitors?

The survey for the treatment group had an open-ended question, "Is there anything else you would like to tell us about your experience at the Butterfly Rainforest?" resulted in a surprising number of written responses (n = 118, 46% from the 257 in the treatment group responses). The responses were tabulated and coded into themes using qualitative thematic analysis (Aronson, 1994; Attride-Stirling, 2001; Braun & Clarke, 2006).

Four themes were revealed including appreciation for the beauty of nature, feelings of awe, restorative feelings, and feelings of oneness. Many participants wrote that the experience was awe inspiring and amazing. It was also described as wondrous, thrilling, magical, and fascinating. For example, one participant wrote, "I got tears in my eyes & a lump in my throat. It's an overwhelming experience to see & have so much delicate beauty swarming around you!" Another said, "Nature is awesome. I take it when I can. I love to get lost in nature—it is much bigger than me."

Another common theme was how restorative, peaceful relaxing and soothing visitors found the exhibit. For example, one visitor wrote, "I absolutely loved it! Very peaceful and refreshing—will definitely come again!" Another visitor commented, "I can't imagine coming here and leaving unhappy. I couldn't stop smiling." Commenting on how beautiful visitors found it to be was also very common as noted here, "Great, species are varied and brilliant, plants are incredible." And "I have never seen such a fine example of living art in my life!" A much less common theme was profound experiences of oneness that was expressed by a few visitors. For example, responses included, "Words really can't express the experience, just the being in the natural and understanding the oneness is the best to experience." And, "The experience cannot be put into words. What has been provided is akin to being invited into another world and being treated like a long-lost relative."

Discussion

People who visited the butterfly rainforest exhibit had a significantly higher connectedness to nature than those who had not visited. Visitors to the butterfly rainforest also reported more intentions to engage in environmentally responsible behaviors. Some of these behaviors were related to the immersion exhibit that people had just experienced, including butterfly gardening and bird feeding. The more general intentions for environmentally responsible behaviors showed a greater association with connection to nature, explaining more of the variance ($R^2 = .302$) than the backyard wildlife related behavioral intentions ($R^2 = .15$). This finding was not expected, as an evaluation of a swamp exhibit found visits led to an increase in behaviors related to visiting wetlands in the future (Saunders & Stuart-Perry, 1997). It was thought that the experience of the free-flying butterflies would make respondents more likely to want butterflies in their backyards. Although planting and landscaping is much more involved and time-consuming behavior than visiting a similar habit. Also, we did not ask about homeownership. This sample may have consisted of a number of people who did not

own homes. Indeed, 25% of this sample was fairly young, between the ages of 18 to 30, with many of those being college students.

These results also show that CTN is malleable (Schultz, 2002; Schultz et al., 2004). Connectedness to nature has previously been shown to increase by virtual and direct experience in nature before, including simulated immersion (Mayer et al., 2009; Schultz & Tabanico, 2007; Weinstein et al., 2009). In fact, Schultz and Tabanico (2007) found that visitors exiting the San Diego Wild Animal Park, had higher implicit nature connectedness and a corresponding increase in environmental concern than did guests entering the park (Schultz & Tabanico, 2007). Schultz and Tabanico (2007) hypothesized that the change occurred because participants spent several hours in the park. However, in this study, most visitors did not spend an extended period of time in the butterfly exhibit, yet results showed that connectedness to nature and nature protective behavioral intentions were higher for those who had experienced the exhibit than those who had not. The qualitative responses and visitor comments upon exit show a positive impact on attitudes and emotions as expressed with themes of awe, oneness, restoration, and appreciation for nature's beauty. These responses also reveal that for many visitors it was a brief yet personally intense, extraordinary experience. Maslow (1971) described "high plateaus" that were similar to peak experiences, although not as intense. Peak experiences in nature and with animals are described as eliciting a sense of wonder, awe, timelessness, union, absorption, excitement, fascination, and mysticism (Csikszentmihalyi, 1990; Dowdall, 1998; Maslow, 1970; Vining, 2003; Williams & Harvey, 2001). Visits to popular interpretation venues, such as zoos and wildlife tourism operations, have been shown to elicit strong emotional reactions, especially via close-encounters, with charismatic megafauna such as whales, penguins, gorillas, okapis, and big-horned sheep (Muloin, 1998; Schanzel & McIntosh, 2000; Vining, 2003). This study is unique in that connectedness and other positive emotions were elicited by close contact with insects.

It may well be that as people increase their positive feelings toward nature, their connectedness to nature increases. Connectedness seems to be increased by experiential learning where a person is in direct contact with nature. Therefore, immersion exhibits, animal programs, and positive real-world experiences such as walks and hikes, could all foster connectedness to nature. According to the biophilia hypothesis (Kellert & Wilson, 1993; Wilson, 1984), people have a predisposition to affiliate with life and perhaps this translates to connectedness to nature. Positive emotions such as mindfulness, social, psychological, and emotional well-being (Howell,

Dopko, Passmore, & Buro, 2011), vitality (Ryan, Weinstein, Bernstein, Brown, Misretta, & Gagne, 2010), life satisfaction (Mayer & Frantz, 2004), positive affect (Mayer et al., 2009; Perkins, 2010), and autonomy, personal growth, and purpose in life (Nisbett et al., 2011) were all shown to correspond with connectedness to nature.

Intentions to perform environmentally responsible behaviors were previously associated with connectedness to nature. The results reported here associated with an immersion experience among Lepidoptera and lush plantings suggests that stimulating connectedness to nature as a means of increasing environmentally responsible behavior could be promising. In addition, this was done without an educator or interpreter. Therefore, connectedness to nature appears to provide an intrinsic source of motivation for helping the environment. Increasing one's intrinsic desire to help the environment would be a much better motivator of environmentally responsible behaviors (ERB's) than incentives, fear, or guilt—all tactics commonly used (De Young, 2000; McKenzie-Mohr, 2000; McKenzie-Mohr & Smith, 1999; Ryan & Deci, 2000).

Conclusion

Interpretation venues, including zoos, environmental education, nature centers, and nature-based tourism operations, can use immersion exhibits and other direct, positive experiences to foster connectedness to nature, psychological well-being, and intentions for environmentally responsible behavioral change. This manner of encouraging behavioral change would fit well into settings where people are often not motivated to read educational signs or listen to an interpreter but prefer experiential learning (Bashaw & Maple, 2001; Bitgood, Patterson, & Benefield, 1988). Furthermore, since encouraging conservation behavior is the mission of environmental education centers, zoological parks, and aquariums, then encouraging connection to nature seems to provide a way to meet these goals.

The results of this study are limited. The researchers only examined one setting and other possible outcomes—such as learning, attitudes, and emotions—were not systematically measured. However, if the direct experience offered by this immersion exhibit led to an increase in connectedness to nature, it follows that immersion exhibits and experiences may also lead to an increase in positive attitudes and positive emotions. Lukas and Ross (2014) did find that naturalistic zoo exhibits were more likely to lead to attitude change than traditional zoo exhibits. Likewise, the study also used a purposive sample of visitors that self-selected to see the exhibit. To some extent, these individuals are likely a nature interested population to begin with; thus, we do not know

if they were primed to have the observed impacts or if this impact would be the same in a random sample of the general population. Additionally, the study did not measure exhibit exposure duration and its impact on connectedness to nature. Future studies should strive to compare their treatment findings to a sample from the general public. Randomly assigning visitors to exhibit type such as immersion, naturalistic, traditional, and static would also differentiate impacts due to exhibit type. Finally, although intentions for environmentally responsible behavior increased, actual behavior changes were not measured. All treatment measures were taken immediately after exiting the exhibit, resulting only in short term measures of behavioral intentions and connectedness to nature. Therefore, enduring impact of these exhibits is not clear.

Implications for future research

The results of this study show that connectedness to nature and environmentally responsible behavioral intentions can be stimulated in the absence of specific messages or efforts to increase knowledge such as educational signs and programs. Further research is needed on the effects of such experiences on connectedness, attitudes, and behaviors. For example, do only certain types of experiences increase connectedness? What exhibit types and duration of contact is needed to increase connectedness? Would personal interpretation detract or enhance this effect? Finally, since direct experiences are more predictive of learning than indirect experiences (Fazio & Zanna, 1978; Ford, 1992; Millar & Millar, 1996), further research should be conducted to determine the effect of immersion exhibits on learning. How does learning from immersion exhibits compare to learning from exhibits with signs, videos, or interpreters? It is possible that the more positive visitor experiences created by such exhibits stimulate more interest and positive feelings, both found conducive to learning (Iozzi, 1989a, 1989b; Pooley & O'Connor, 2000).

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