

Factors Influencing Zoo Visitors' Conservation Attitudes and Behavior

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ABSTRACT: The author predicted that Zoo Atlanta visitors who had interactive experience with the zoo's elephant demonstration and bio-fact program would be more likely to actively support elephant conservation than those who simply viewed the animals in their exhibit and read graphics. The survey instruments used in this research consisted of 25 closed-ended questions, petitions, and conservation-action solicitation cards. A random sample of 471 zoo visitors was selected, and 350 individuals completed the survey, signed petitions, and took solicitation cards. The overall return rate of the solicitation cards was 18.3%; the return rate was higher for visitors who had higher levels of interaction with the elephant exhibit. The return rates by experience were highest—29.7%, high—20.3%, undetermined—14.8%, low—14.3%, and lowest—11.6%. For the five categories of experience, the distribution of return rates was not random, $\chi^2(4, N = 64) = 9.88, p < .04$.

All 173 zoos and aquariums accredited by the American Zoo and Aquarium Association (AZA), which attract over 120 million combined visitors annually, must meet high overall standards, including providing areas for "conservation, education, research and recreation" (AZA, 1997). Every zoo "realizes that its mission is to conserve wildlife and natural habitats through changing the attitudes of its visitors" (Norton, Hutchins, Stevens, & Maple, 1995). Opponents of zoos have claimed that "there is little evidence that zoos are very successful in educating people

about animals" (Jamieson, 1985). Kellert (1979) reported that zoogoers were much less knowledgeable about animals than any other group claiming an interest in animals. However, Kellert did not investigate the impact on visitors' learning of prolonged, interactive experiences, such as participation in an animal demonstration.

In a study after Kellert's, Dunlap and Kellert (1989) looked at the impact of informal education on shifts in factual knowledge, basic attitudes, ethical concerns, and conservation awareness. They "failed to observe [in visitors] any appreciable increase in either factual or conceptual knowledge of animals. Learning, when observed, was largely restricted to basic issues of animal appearance or behavior, with little in the way of enhanced knowledge or interest in . . . wildlife conservation" (Dunlap & Kellert, 1989). Bitgood, Patterson, and Benefield (1988) readily explained those disappointing results:

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The exposure to information is very brief, sometimes lasting only a few seconds. The zoo environment is rich with stimuli including animal behaviors which attract the attention of visitors over the ecological and conservation messages of the exhibit. Social interactions with family and friends can, and often do, detract from the learning experience. Learning in the informal setting is more attitudinal than cognitive. The zoo provides concrete experiences that compared hour-for-hour may be more valuable for long term retention.

Given the Bitgood et al. (1988) description of informal education, it seems unrealistic to apply the Dunlap and Kellert (1989) method, which emphasizes knowledge-based information. A more reasonable application of the Dunlap and Kellert method would be in quasi-formal zoo education programs, such as day camps, overnight programs, and school programs. With respect to the general zoo visitor, the closest approximation to a formal educational setting would require a longer and more controlled learning period, such as at elephant, sea lion, cetacean, and other wildlife shows.

Zoos yearly spend millions of dollars to build naturalistic exhibits that educate visitors through creative, interactive technology and graphics. Often, exhibits provide knowledge-based information, but, more recently, they have focused on conservation issues that the public is encouraged to support by such means as donations, wise consumerism, signing petitions, writing support letters, or making phone calls to legislators. Visitors report increased interest in conservation after visiting such exhibits (Derwin & Piper, 1988; Ogden & Lindburg, 1991), and zoos frequently cite the value of their exhibits in terms of influence on visitor behavior (Zucker, 1995). In 1992, Doering compared the general public's familiarity with the issues of tropical rain forest conservation before and after experiencing the Smithsonian Institution's traveling Tropical Rain Forest exhibit and explored whether prior knowledge about rain-forest issues differed measurably between those groups. The results of that study suggested that the exhibit was valuable both in reinforcing awareness in individuals with prior exposure to a topic and in introducing the same issues to visitors who had no such prior exposure.

In general, zoo professionals believe that naturalistic exhibits increase the affective impact on visitors by offering a view of the animal in the context of its natural environment (Coe, 1985; Finlay, Patterson, & Maple, 1988). With regard to elephants, zoo professionals believe that the experiences and messages that visitors receive at elephant exhibits discourage them from buying ivory products. Because it is virtually impossible to measure actual visitor consumer behavior, one must identify other, more readily observed citizenship behaviors that can demonstrate a visitor's commitment to conservation.

Two behaviors that indicate a strong commitment to conservation are visitors' willingness to (a) make financial contributions and (b) write letters to legislators. Financial contributions were not solicited as part of this study because donations are dependent on an individual's economic status. It is also impossible to evaluate the writing of letters to leg-

islators without contaminating the behavior. Therefore, I selected surveys, petitions, and solicitation cards as the instruments of this study.

Method

Instruments

Survey. The first instrument used was an exit survey. Surveys are commonly used to assess visitor knowledge and attitudes (Screven, 1975). Exit surveys also provide visitors with exposure to an issue and allow them to contemplate their opinions by simply asking the question in the survey and then asking the respondents to sign a petition expressing their views. That process is important because research shows that before one takes action, one must have the intention to act (Fazio, 1990; Hungerford & Volk, 1989).

I used the exit survey to identify the visitors' attitudes and knowledge about elephant conservation, as well as to describe their experience with the elephant exhibit and the bio-fact cart. Of the 25 survey questions, only Questions 11 and 12 are discussed, which were central in assessing the visitor's experience. Question 11 asked if the visitor had ever seen an elephant show or demonstration. Question 12 asked if the visitor had ever touched an elephant artifact, such as a tusk, skin, teeth, hair, or ivory jewelry. The multiple-choice answers for both questions were (a) no, (b) yes at Zoo Atlanta: when? (c) yes, at another place: when and where? and (d) both (b) and (c). The answers enabled a comparison of two groups of visitors: those with no experience with the elephant show or bio-fact program and those who saw the elephant show and bio-fact cart. Answer (c) elicited data about those visitors who had additional experiences at other places.

Petition. The second instrument used in this study was the petition. Most persons have at one time or another been asked to sign a petition; signing a petition requires very little commitment. I used the petitions in this study primarily to verify the number of surveys completed and to code the level of experience the visitor had with the elephant exhibit. The latter was crucial for calculating the return rates by level of experience. Most important, the petitions provided a mechanism by which the visitors could contemplate and declare their opinions. That process is important because, as I discussed previously, the intention to act must precede the taking of action (Fazio, 1990; Hungerford & Volk, 1989).

Solicitation cards. With solicitation cards, I was able to record the visitors' experience. Also, the preaddressed and stamped cards provided space for the visitors to write their views. The card served as a mechanism that, although not as strong as an unsolicited letter, was still a good indicator of a visitor's intention to act.

Procedures

The study began on October 18 and ran daily through October 31, 1992. On each day, exit surveys were adminis-

tered during three shifts: 11:30 a.m.–1:15 p.m., 1:16–2:45 p.m., and 3:00–4:30 p.m. I selected those shifts to ensure that interviewers would be available to catch visitors who might be exiting the zoo immediately following one of the three elephant shows at 11:00 a.m., 1:00 p.m., and 3:00 p.m.

School groups, staff, zoo volunteers, and persons under 10 years of age were excluded from the study. I excluded school groups because the survey took several minutes to complete without peer pressure, a factor difficult to avoid with school groups. Staff and volunteers could not participate because they were already too familiar with the exhibit and the study. I excluded children under 10 years of age because many of the questions were complex and hypothetical.

I achieved a random sample of visitors by selecting every *n*th visitor exiting the zoo. The interval ranged from 7 to 60, depending on the volume of visitors. During each shift, at least three trained research staff or volunteers administered surveys at the zoo exit gate. One volunteer served as the counter; others conducted the closed-ended surveys. The visitors who participated received zoo stickers, which entertained youngsters while their parents or older siblings were engaged in the survey.

The survey consisted of 25 closed-ended questions. For some of the questions, the interviewers were asked to probe for more information, for example, Questions 11 and 12.

After completing the survey, the visitors were asked to sign a petition and indicate their vote for or against continuation of the moratorium on trade in elephant ivory. Depending on how the visitor answered Questions 11 and 12, the interviewer discreetly placed an experience code next to the visitor's signature. Finally, the same code was written on the stamped and preaddressed solicitation card and given to the visitors to write their views about the moratorium. The visitors were given the option of either filling out the card at a writing station located at the zoo gate or mailing the card from home. The address on the solicitation card was the zoo address, which enabled us to review and compile the cards before they were forwarded to the White House, as indicated on the card. Figure 1 illustrates one noteworthy response by a participant.

Results and Discussion

During the 2-week study period, overall zoo attendance was 21,406 persons. The total number of surveys attempted was 471. This number included refusals and situations in which the interviewer was unavailable because they were interviewing someone else. The number of persons who completed the survey and signed the petition was 355. Five individuals completed the survey and signed the petition but refused to take cards. Therefore, the number of cards given

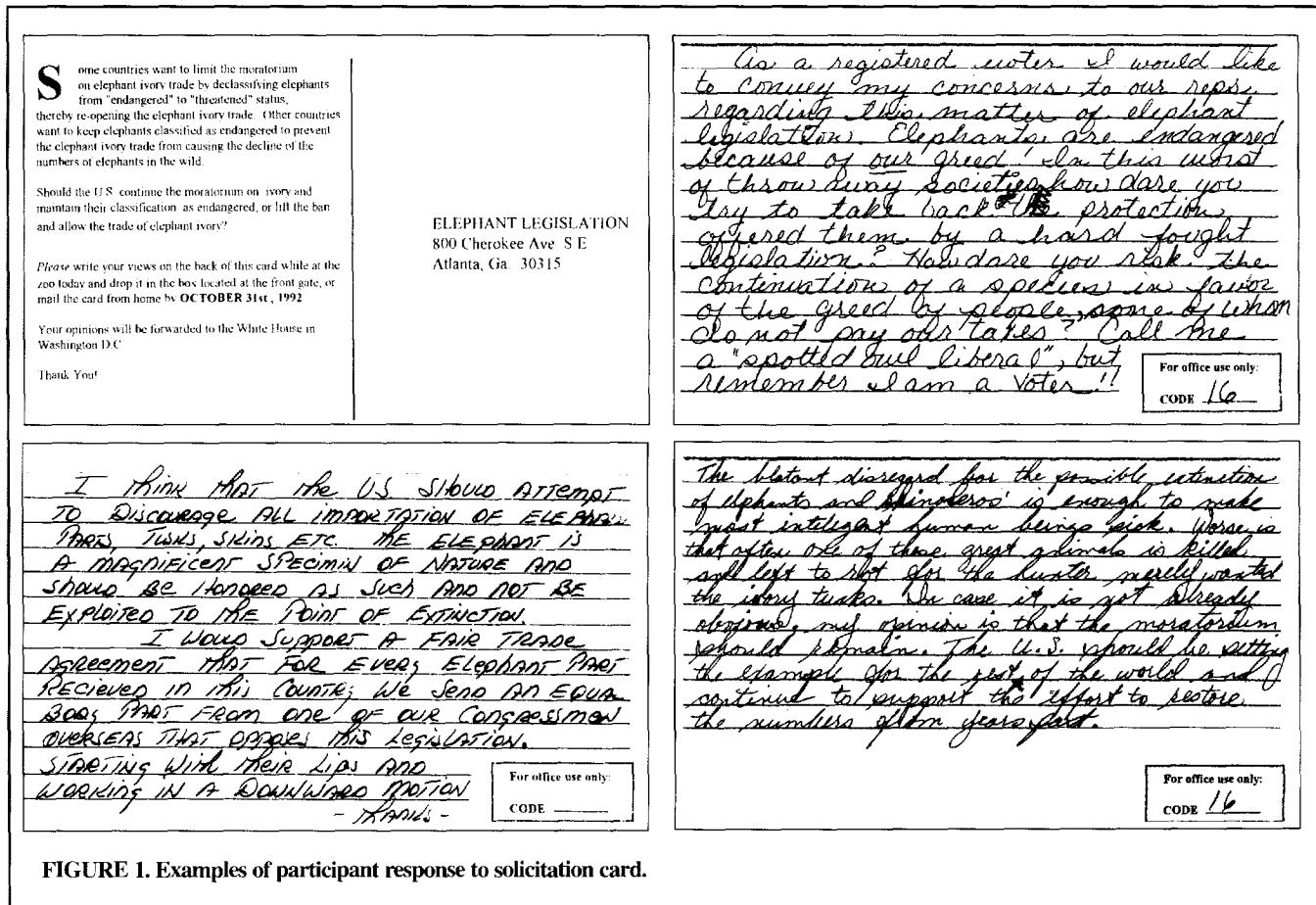


FIGURE 1. Examples of participant response to solicitation card.

TABLE 1. Elephant Survey: Experience With Elephant Show or Bio-Fact Cart

Question	Response	%	Frequency
Q11. Have you ever seen an elephant show or demonstration?	Yes at Zoo Atlanta	17	61
	No	19	69
	At another place	43	155
	At both Zoo Atlanta and another place	21	78
Total		100	363
Q12. Have you ever touched something made from an elephant?	Yes at Zoo Atlanta	12	42
	No	21	76
	At another place	54	198
	At both Zoo Atlanta and another place	13	49
Total		100	362

out was 350; 64 were returned, for a response rate of 18.3%. Although the cards were the most important measure of visitor behavior and the survey and petition were secondary measures, the data for all three tools are described in the order they were used: survey, petition, and then the cards.

Survey

Table 1 contains the data collected from Questions 11 and 12, which asked the visitors to assess their experiences with the elephant show and the bio-fact cart at Zoo Atlanta or at another place. Questions 11 and 12 were important because they indicated whether the visitors observed the show or experienced the bio-fact cart. Eighty-one percent of visitors stated that they had seen an elephant show or demonstration (17% at Zoo Atlanta, 43% at another place, and 22% at both Zoo Atlanta and another place). Similarly, 79% of the participants stated that they had touched an elephant artifact, such as a tusk, skin, teeth, hair, or ivory jewelry. Within that group, 12% had that experience at Zoo Atlanta, 54% at another place, and 14% at both Zoo Atlanta and another place. The high percentage of response (c) for Questions 11 and 12, 43% and 54%, respectively, is at least partly attributable to the fact that for Question 11, many participants selected "(c), at another place" because they had observed an elephant show at a circus. Also, for Question 12, a large number of participants responded with "(c), at another place" because they had handled ivory jewelry. Presumably, observing elephants at a circus and touching ivory jewelry at a store are of considerably less value in conservation education than a zoo experience.

Petition

Among the 355 participants who signed the petition, only 1.9% checked "no," indicating that the United States should lift the ban on the importation of ivory. Some of the participants may have been confused by the question when they were asked to sign the petition and indicate their support for or against the moratorium. Some may have thought that a "no" meant that they were against the ivory trade.

TABLE 2. Frequency of Responses to Questions 11 and 12

Response to			Experience category	No. of cards	
Q11	Q12	Code		Out	Returned
a	a	1	5	26	1
a	b	2	5	4	1
a	c	3	5	35	5
a	d	4	5	4	1
b	a	5	2	13	2
b	b	6	2	17	1
b	c	7	2	25	7
b	d	8	2	4	1
c	a	9	4	25	3
c	d	10	4	11	0
c	c	11	3	101	15
c	d	12	4	11	5
d	a	13	1	9	2
d	b	14	1	8	4
d	c	15	1	31	10
d	d	16	1	26	6
Total				350	64

Note. Experience category 1 = highest, 2 = high, 3 = undetermined, 4 = low, and 5 = lowest.

Solicitation Cards

The solicitation cards were the primary mechanism for measuring the visitors' willingness to support elephant conservation. The cards provided space for visitors to express their opinions. All the cards that were returned contained statements supporting the continuation of the moratorium on the ivory trade. The number of persons completing the survey, signing a petition, and taking a card was 350. The number of solicitation cards returned was 64. Eighteen of the cards were submitted through the writing station located at the zoo exit gate; the remainder were sent through the mail. The last card was received 2 weeks after the study ended.

TABLE 3. Percentage of Cards Returned^a by Experienced Ranking

Experienced rank given	Returned/ out rate (%)	Return
Highest	22/74	29.7
High	12/59	20.3
Undetermined	15/101	14.8
Low	7/47	14.3
Lowest	8/69	11.6

^aWeighted by number of cards given out per rank.

Conclusion

Table 2 contains the possible answers to Questions 11 and 12 of the survey, as well as the corresponding code, followed by the number of cards given out and received. Codes 2, 4, and 8 each had only 4 cards given out, each with 1 card returned. I identified those codes as outliers and dealt with them by arranging the 16 codes into five experience categories: (1) highest, (2) high, (3) undetermined, (4) low, and (5) lowest. In Table 3, each of those categories is listed, along with their respective return rates. For the five categories of experience, the distribution of return rates had a significant chi-square value, $\chi^2(4, N = 64) = 9.88, p = .04$, and a gamma value of 0.3 based on their return rates. The positive association between the number of cards returned and the visitor's level of experience gives modest support to the hypothesis that individuals who have an active experience with the zoo's elephant show and bio-fact program are more likely to support elephant conservation than visitors who have only a passive experience of viewing the animals in their exhibit and reading the accompanying graphics.

Certainly, zoo visitors experience the elephant exhibit with a variety of previous experiences, such as visits to other zoos, reading books, and watching nature shows on TV. Several of the questions from the survey sought information about those other experiences. The categories of the codes mentioned previously ranks the information according to how the visitor experienced the content. The data seem to support research by Doering (1992), which suggested that experience with the zoo elephant exhibit enhanced visitors' prior knowledge.

Comment

The results of this study offer several suggestions to zoo professionals designing exhibits and programs. Most elephant exhibits and shows offer abundant zoological information, yet the animal routines resemble a circus show. The animal routines should be presented so as not to convey a message contrary to factual information. Zoos, however, should not limit themselves to only zoological information.

Conservation issues, even if controversial, must be presented. Visitors need to be able to form a personal connec-

tion to the issues surrounding conservation. One could accomplish that by offering information about the current situation in real locations in Africa, featuring real villages, villagers, poachers, conservationists, and, of course, elephant families. That information should be offered to the visitor in a multiexperiential and personal format. Dramatic and entertaining presentations could provide a means to mix an affective personal message with factual information. Also, because one must update information frequently to ensure that it is fresh and relevant, electronic graphics could be valuable educational tools.

High-technology tools, such as interactive computers, could also provide a means for the visitor to obtain experience with learning how to take citizenship action to resolve issues. Hungerford and Volk (1989) described such learning as *empowerment variables*. For example, visitors could express their views via e-mail from on-grounds stations or they could make phone calls directly to their legislators.

Finally, when visitors act in some citizenship capacity, they should be rewarded for their efforts. Newsletters containing current information about conservation efforts should be sent to individuals who have acted in a citizenship capacity. Other forms of reward could be discount coupons, passes to the zoo, and photographs of elephants, t-shirts, and other memorabilia. A reward would encourage visitors to repeat that citizenship behavior.

A decision made at the June 1997 Conference of the Parties to the Convention on International Trade in Endangered Species (CITES) relaxed some trade controls to allow non-commercial use of ivory when registered by the U.S. Customs upon exportation (Satchell, 1997). Effective September 18, 1997, elephant populations in Botswana, Namibia, and Zimbabwe were downlisted to Appendix II from their previously highest level of protection in Appendix I (Ghazi, 1997). In 1999, additional efforts by South African nations were being considered by CITES to relax the trade rules even further, effectively opening up the trade of ivory. For now, however, consumers should beware because ivory imports into the United States remain illegal.

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