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The Role of Zoos in Fostering Environmental Identity

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Abstract

As locations where social interactions center on animals, zoos may enable the development of an environmental identity that encourages concern for animals. Two field studies of zoo visitors assessed the level of concern for animals and predictors of that concern and looked for behaviors that might foster identity and concern. In one study, 1514 adult visitors were surveyed and 265 different visitors were observed. Environmental identity, sense of connection to the animal, and perceived similarity to the animal were all correlated with interest in conservation and general environmental concern. Although there were no significant differences in survey responses before entering an exhibit compared with those obtained as visitors were exiting, responses differed according to exhibit. Exhibits where more comparisons to humans were made tended to evoke higher ratings of support for helping animals. A second study recorded interactions among 805 visitor groups. The data suggested that viewing the animals was primarily a social activity, which served to promote social interaction and, in some cases, enabled discussion about a shared conception of the human relationship with animals. We conclude that zoos provide an opportunity to create and nurture a social identity that emphasizes connection to animals.

Portions of the results of this study have been previously presented at the meetings of the Society for Human Ecology in 2008 and 2009.

The earth is losing species at a rate so high that it has been termed the sixth great extinction. It is widely accepted that this loss of biodiversity reflects human impacts on the biosphere. Less well examined is the corresponding impact these extinctions will have on people. Animals have been shown to have psychological significance (Melson, 2001; Myers, 2006), but the importance of wild animals to humans has to be yet fully explored.

The choices people make, both personally and in groups, will determine the extent to which species are protected or lost. Thus, we need to understand the basis of human support for species conservation (e.g., Bekoff & Bexell, 2010). Among humans, people are more likely to help those considered similar to themselves or part of the family. Similarly, protection of animal species in particular has been found to be greater among those who feel a sense of similarity with the subject species (Martens et al., 2007; Opatow, 1994; Sevillano et al., 2007).

Perceived similarity makes it more likely that an animal will be classified as an in-group member, and consequently, that the animal's circumstances will attract attention, and the standards for how it is treated will be similar to how one is treated oneself. It also facilitates an empathic response. Schultz (2000) found that, compared with people who remained objective, people who were asked to take the perspective of an animal harmed by pollution showed greater environmental concern. Similarly, people asked to focus on the feeling of a bird, or even a tree, were willing to allocate greater environmental resources to the protection of that tree or bird compared with participants who were asked to take an objective perspective (Berenguer, 2007). This finding has been so widely accepted that most global conservation organizations are now working to promote increased empathy among groups whose actions have impact on conservation action (e.g., Jenks et al., 2010; Myers et al., 2009).

The Role of Identity

Perceptions of similarity, and empathic reactions, are not just responses to an animal. They implicate the perceiver's self-concept. To

empathize with an animal requires a belief that the animal's emotions and cognitions parallel one's own. Thus, support for animal conservation may be enhanced by the development of an identity that acknowledges some connection between the human and the animal world. Crompton and Kasser (2009) specifically argued that conservation organizations should focus on considerations of human identity, claiming that "there is a continuum between indifference to the suffering of individual animals and indifference to the loss of entire species or destruction of ecosystems" (p. 14) and that such attitudes can be reduced by the use of strategies that "lead people to recategorize in-groups [humans] and out-groups [animals and nature] into a 'we' identity, that is, to form a super-ordinate group" (p. 44).

Clayton and Opatow (2003), Clayton et al. (2009), and Schultz et al. (2004) have worked to develop the idea of an "environmental identity" as a self-concept that is based on recognition of connection and interdependence with the natural world. A stronger sense of environmental identity has been found to predict more pro-environmental attitudes and behavior and is also associated with support for animal rights (Clayton, 2008; Schultz & Tabanico, 2007), providing support for the theory promoted by Crompton and Kasser (2009).

Although the theoretical links between empathy and behavior are now established, the process through which environmental identity is developed has not been well described. A wide body of research has examined the experiences that may nurture an environmental identity in children: time outdoors, particularly with significant others, seems to be particularly important (Chawla, 1998, 1999; Kals et al., 1999; Wells & Lekies, 2006). There is less research on the ways to nurture an environmental identity among adults (Jenks et al., 2010; Zavestoski, 2003).

The Role of Zoos

Zoos and aquariums (hereafter referred to by the umbrella term "zoos") are particularly interested in this question, because their living displays represent one of the only places in which most people encounter "wild" animals (Beardsworth & Bryman, 2001), and they have largely become organizations that are dedicated to the conservation and preservation of species (World Association of Zoos and Aquariums, 2005). The possible impact of experiencing animals makes zoos important sites to examine to advance understanding about environmental attitudes and how environmental identity may be formed.

Research on motivations for zoo visits suggests that zoos are primarily valued as a recreational opportunity for visitors: a place to relax and also to promote social interaction and family togetherness

(Clayton et al., 2009; Fraser & Sickler, 2008; 2009; Holzer et al., 1998; Morgan & Hodgkinson, 1999; Tomas et al., 2003; Turley, 2001). Parents also value zoos for the opportunity to promote moral development in their children by emphasizing values, empathy, and responsibility (Fraser, 2009; Fraser & Sickler, 2008; 2009). Zoo visitors are frequently driven by the idea that children will benefit from the experience (DeVault, 2000; Fraser, 2009; Shaw & Dawson, 2001). The zoo allows parents, teachers, and others to stress the responsibilities of citizens to care for others. By strengthening interpersonal bonds and shared group understandings, zoos contribute to the social capital in a society.

Zoos provide a unique opportunity for visitors to consider their relationship to nature. Fraser et al. (2008) demonstrated that zoo visitors value encounters with wild animals as tools to stimulate thinking about "their own environmental identities" and contemplation of human responsibility to the biological world. Bruni et al. (2008) found that a zoo visit increases the implicit associations between self and nature. These studies demonstrate that zoo visitors do consider the connection between humans and other animals during their visit. In other words, observing nonhuman animals may allow people to consider what they have in common with other animals as well as what they perceive as the actual and the ideal relationship between humans and the rest of nature.

Previous research has illustrated that a significant proportion of zoo visitors make some attempt to connect to the animal, through verbal comparisons, physical imitation, or attempt to interact with the animal (Clayton et al., 2009). In addition, visitors may discuss the ways in which humans affect animals or the responsibilities people have to care for animals. Discussing these relationships within a social group provides an opportunity to forge or strengthen social bonds surrounding a shared sense of identity in relation to animals, as has been found in studies of parents' experiences with zoo animals (Fraser et al., 2009). By increasing empathy, it may also promote a sense of concern for the animals. Clayton et al. found that people who said they felt a sense of connection to an animal they had seen during their zoo visit were more likely to support efforts to protect that animal and its species.

In sum, research suggests that zoos afford a location for people to engage in social interactions that may nurture an environmental identity that promotes a sense of similarity with animals and thus leads to care and concern for those animals. It remains unclear, however, exactly what aspects of the zoo visit encourage this response. Two studies were undertaken to explore this question. Study 1 was designed to explore whether a shared identity with animals was associated with environmental concern, and how activities at specific

zoo exhibits may influence attitudes toward animals or environmental concerns in general. In a between-subjects design, participants were surveyed about their responses to animals and to environmental issues in general either before entering or after exiting a variety of different zoo exhibits. We coupled these surveys with observations of participant behavior at the exhibit to better understand the context for their responses. We expected that perceptions of the animals that fostered a sense of connection, similarity, or shared identity would be associated with support for conservation. We had no specific hypotheses concerning responses to different exhibits.

Based on the results of Study 1, Study 2 examined interpersonal interactions during these animal-observing experiences to describe the social activity that may help to construct an environmental identity.

Study 1

Method

Participants and procedure. Visitors to eight exhibits at four different zoos (Cleveland, Bronx, Prospect Park, and Central Park) were surveyed. Only visitors over 18, and groups where children outnumbered adults, were considered for solicitation. A total of 514 adults provided full responses to the survey (a response rate of 59%); 265 surveys were completed by visitors immediately before entering an exhibit, and 249 different visitors completed surveys after they exited an exhibit.

Researchers approached potential participants, described the survey, explained that it was for research purposes, and asked for their participation. Participants were given as much time as needed to fill out the survey. Upon completing the survey, participants were offered the opportunity to sign up for a free drawing for either a zoo t-shirt (Cleveland) or a plane ticket (Bronx, Central Park, and Prospect Park). These prizes were awarded by a random drawing after data collection was complete.

Observations of 265 people in visiting groups were also recorded.* All groups except large school or camp groups were considered; these groups were excluded, because they were less likely to comprise people who knew each other well, thus providing a different type of social context. The most interactive person from a group was selected for observation. This person's oral comments and some nonverbal

behaviors were unobtrusively observed and recorded on a written data sheet according to the predetermined schema.

Measures. The questionnaire asked for background information about whether or not the participant was a zoo member, had visited this zoo before, and had visited this exhibit before. A 10-item scale assessed the importance of environmental actions to the participant. General environmental concern was assessed with two questions: "How concerned are you personally about environmental problems?" and "In your daily routine, how often do you consider the environmental impact of your actions?" (Bruni & Schulz, 2010). A 12-item version of the environmental identity scale (EID) (Clayton, 2003) was also included.[†] Reliability as assessed by Cronbach's alpha was 0.90 for both the behavior scale and the EID.

The questionnaire then asked for emotional responses to the animal on bipolar scales (tense/relaxed, happy/sad, and interested/bored) and perceptions of the animal as similar/dissimilar to humans, dangerous/harmless, and vulnerable/powerful. These items were all rated on a 5-point scale. Other items specific to the zoo visit assessed sense of connection to the animal, learning at the zoo, and interest in conservation. These were adapted from the work of Clayton et al. (2009).

Observations were coded according to whether a person made positive comments, comments indicating fear or disgust, or comparisons to humans; whether they imitated the animal; and whether they sought more information about the animal, for example, by asking a question or looking for informational signs. This is an abbreviated form of the coding scheme used by Clayton et al. (2009).

Results

Descriptives

Participants, on average, were relaxed, happy, and interested in their visit. They rated the animals close to the midpoint on similarity to humans, dangerousness, and powerfulness. They felt a moderately strong sense of connection to the animal, believed that they learned about animals and conservation, and were moderately concerned about environmental problems and supportive of conservation. Descriptive results are shown in Table 1.

Observations indicated that seeking more information was extremely common, demonstrated by more than half of all people observed. Positive comments were the second most common response, followed by comparisons to humans, expressions of fear or disgust,

*Observations and surveys were collected at the same exhibits, with the goal of examining responses to specific zoo contexts. However, for practical reasons, the observation and survey groups included different samples.

[†]Available from the first author.

Table 1. Descriptive Results from Survey (Study 1)

ITEM	RANGE	N	MEAN	STANDARD DEVIATION
Tense (1)–Relaxed (5)	1–5	454	4.5	0.82
Happy (1)–Sad (5)	1–5	477	1.97	1.29
Interested (1)–Bored (5)	1–5	479	1.74	1.29
Similar (1)–Different (5)	1–5	490	2.95	1.34
Dangerous (1)–Harmless (5)	1–5	457	3.13	1.01
Vulnerable (1)–Powerful (5)	1–5	471	2.93	1.26
Sense of connection	1–7	512	5.15	1.61
Learn about animals at zoo	1–7	512	6.13	1.07
Learn about conservation at zoo	1–7	512	5.51	1.43
Would like to help animals in wild	1–7	503	5.76	1.41
Would like to help animals in zoo	1–7	502	5.43	1.53
Concern about environmental problems	1–7	503	5.68	1.36
Consider environmental impact of actions	1–7	504	5.03	1.51
Importance of environmental behavior scale	10–50	491	39.95	7.38
Environmental identity scale	12–84	494	64.6	14.01

and imitating the animal. The proportion of people displaying each response is shown in Table 2.

Group differences

There were no significant differences between survey responses obtained as participants entered the exhibit, compared with those obtained after they exited, and there were no significant interactions between entering/exiting and the exhibit that was visited.

There were significant differences because of the exhibit being visited in the rated importance of pro-environmental behavior [$F(7,483) = 3.63, p = 0.001$]. Participants' self-rating of "relaxed" and the rating of the animal as powerful were also significantly different among different exhibits [$F(7,446) = 2.07, p < 0.05$, and $F(7,463) = 2.41, p < 0.05$, respectively]. All of the measures of environmental concern and learning at the zoo also differed among exhibits, as seen in Table 3.

The exhibit differences in observations are shown in Table 2. Comparisons to humans were most likely at the primate exhibits.

Zoo members ($n = 105$) were significantly higher than nonmembers ($n = 401$) in EID [$F(1,486) = 5.5, p = 0.01$], environmental concern [$F(1,495) = 3.5, p < 0.05$], and behavioral importance [$F(1,483) = 4.5, p < 0.05$]. Emotional responses to the animals and perceptions of the animals did not differ.

Correlations

Background variables. EID, importance of pro-environmental behaviors, and environmental concern were all intercorrelated. They were also related to the variables that reflected the zoo visit: a sense of connection to the animals at the zoo, learning about animals at the zoo, and learning about conservation at the zoo. Finally, they were

Table 2. Proportion of Participants Exhibiting Specific Behaviors (Study 1)

	MED. CENTER (N= 55)	WILD DOGS (N= 34)	WOLVES (N= 51)	GORILLA (N= 56)	CONGO GORILLA EXHIBIT (N= 21)	BABOON (BRONX) (N= 25)	PROSPECT PARK BABOONS (N= 10)	CENTRAL PARK RAINFOREST (N= 13)	MEAN
Sought info	0.67	0.82	0.60	0.52	0.29	0.64	0.30	0.62	0.56
Imitate	0.04	0.06	0.02	0.30	0.05	0	0.20	0	0.11
Compare to humans	0.04	0.12	0.02	0.30	0.33	0.12	0.33	0	0.17
Positive comment	0.20	0.29	0.19	0.23	0.43	0.20	0.41	0.23	0.26
Negative comment	0.05	0.09	0.02	0.29	0.19	0.16	0.30	0.54	0.15

Table 3. Differences in Survey Responses by Exhibit (Study 1)

ITEM	DF	F	HIGHEST	LOWEST
Sense of connection to animals	7504	2.3 ^a	Congo	Wolves
Learn about animals at zoo	7504	2.4 ^a	Congo	Rainforest
Learn about conservation at zoo	7504	5.8 ^a	Congo	Rainforest
Help protect animal species in wild	7495	3.6 ^b	Congo	Wolves
Help care for animals in zoo	7494	2.4 ^a	Congo	Rainforest
Concern about environmental problems	7495	3.2 ^b	Congo	Wolves
Consider environmental impact of actions	7496	3.5 ^b	Congo	Med. center

The Congo gorilla exhibit at the Bronx zoo is an extensive and fairly new exhibit that displays gorillas in a naturalistic habitat and has a pronounced conservation emphasis.

^a $p < 0.05$; ^b $p < 0.01$.

positively related to a desire to help animals in the wild and at the zoo. Correlations are shown in Table 4.

Perceptions of the animals. Among the ratings of the animals, perceived similarity had the greatest impact. It was significantly related to EID (0.15, $p < 0.01$), behavioral importance (0.11, $p < 0.05$), learning about animals (0.15, $p < 0.01$), learning about conservation

(0.10, $p < 0.05$), the desire to help animals in the wild (0.13, $p < 0.01$), interest in caring for animals in the zoo (0.17, $p < 0.01$), and environmental concern (0.10, $p < 0.05$). Both similarity (0.26, $p < 0.01$) and harmlessness (0.12, $p < 0.01$) were related to feeling a sense of connection to the animal. Otherwise, ratings of the animals' harmlessness and powerfulness were generally unrelated to the background variables (EID, the importance of pro-environmental behavior, compassion, and environmental concern) and to variables reflecting the zoo visit and interest in conservation.

The zoo visit. Variables reflecting the zoo visit were experiencing a sense of connection to the animals, learning about animals, and learning about conservation. These were all positively correlated with a desire to help animals in the wild and at the zoo and with general environmental concern. To reduce the likelihood that the correlations between zoo visit variables and the concern variables were solely due to a third, personality variable predicting both, partial correlations that controlled for EID were calculated. Correlations were substantially reduced, but remained significant (Table 5).

In an attempt to discern how particular exhibits might have an effect, means were calculated for observed responses at each exhibit and for the survey ratings that were completed as people were on their way out of each exhibit. With an N of 8 for the different exhibits, correlations were calculated to compare the zoo experience variables to the observed comments. Exhibits with greater comparisons to humans and those eliciting more positive comments got higher survey ratings for "protect animals in the wild" (0.85 and 0.89, $p < 0.01$) and for "help animals at the zoo" (0.84, $p < 0.01$, and 0.78,

Table 4. Correlations Among Background and Zoo Visit Variables (Study 1)

	ENVIRONMENTAL IDENTITY SCALE	ENVIRONMENTAL CONCERN	IMPORTANCE OF ENVIRONMENTAL BEHAVIOR
Environmental concern	0.58	1.0	–
Behavioral importance	0.59	0.64	1.0
Sense of connection to animals in zoo	0.43	0.38	0.37
Learn about animals at zoo	0.36	0.36	0.37
Learn about conservation at zoo	0.37	0.43	0.44
Help protect species in wild	0.54	0.59	0.60
Help care for animals at zoo	0.47	0.49	0.50

All correlations are significant at $p < 0.001$.

Table 5. Correlations Among Zoo Visit Variables and Conservation Variables (Study 1)

	HELP SPECIES IN THE WILD	HELP ANIMALS IN THE ZOO	ENVIRONMENTAL CONCERN
Sense of connection to animals in zoo	0.47/0.30	0.42/0.27	0.38/0.15
Learn about animals at zoo	0.42/0.28	0.34/0.21	0.36/0.19
Learn about conservation at zoo	0.47/0.32	0.38/0.24	0.43/0.26

Zero-order correlation/partial correlation controlling for environmental identity scale. All correlations are significant at $p < 0.001$.

$p < 0.05$). There was a tendency for exhibits at which comments of fear or disgust were made to get lower ratings on “I learn about conservation” (-0.70 , $p < 0.06$).

Discussion

The zoo visit was described as positive. Participants demonstrated awareness of, and concern about, conservation and environmental issues that were above the scale midpoint. Although these responses varied among exhibits, there were no significant differences between entering and exiting an exhibit. Several explanations are possible. One is that different types of visitors attend different exhibits. However, this could not account for all of the differences found in the results. Possibly, approaching a particular exhibit makes it more salient in visitors' minds, which itself evokes related attitudes and opinions. This suggests that what visitors bring to each zoo experience is as important as what they gain from being at each exhibit.

One of the things visitors bring to the visit is a self-concept that is more or less strongly tied to the natural environment. Thus, zoo members are a self-selected sample that is likely to be higher in environmental concern than the general population. EID was unaffected by exhibit, but it was related to zoo membership. This suggests that, although environmental identity is a relatively stable characteristic that does not fluctuate in response to a single situation, zoo experiences may contribute to the development of an environmental identity over time among zoo members. It is impossible to determine from this study whether zoo membership contributes to an environmental identity through the difference in frequency for these members' visits, or whether people high in environmental identity are simply more likely to become zoo members. It is interesting that perceptions of the animals, in contrast to EID, did not differ between zoo members and nonmembers.

Both EID and rating the animal as similar to humans were correlated with variables reflecting interest in conservation, showing the importance of perceived similarity in predicting concern for animals.

Importantly, variables that were presumed to reflect the immediate experience of the zoo visit, including both sense of connection and learning, were also important in predicting conservation interest, even when EID was held constant. Although these are correlational findings, the data suggest that a zoo visit can have an impact on support for conservation.

Based on these results, we developed our second study to explore the activities that people engage in while viewing animals. We wanted to evaluate the social components of the visit more thoroughly to begin to understand how these experiences within a visitor group may contribute to the construction of an environmental identity. In particular, we examined behaviors in which the animals stimulated, or were included in, a verbal or nonverbal interaction among the visitors.

Study 2

Method

Participants and procedure. Researchers observed 805 visitor groups at 15 different exhibits in two different zoos (Cleveland or Bronx). Nonverbal behavior was observed for 409 groups and verbal behavior was observed for 396 different groups. Groups were identified as they entered the predefined exhibit space; groups were eligible if they had at least two and no more than five noninfant members and at least paused and stood still to look at the exhibit. A new group was selected as soon as a previous group exited. Demographic information is given in Table 6.

Measures. The following behaviors were recorded: pointing toward the animal, social interactions around taking a photograph (e.g., encouraging someone over to look through the viewfinder, taking someone's photo in front of the exhibit), social interactions around informational signs (looking at the sign together, encouraging someone to look at the sign), leaning heads together, lifting a member

Table 6. Characteristics of Sample (Study 2)		
	BEHAVIORAL OBSERVATIONS (409 GROUPS)	VERBAL OBSERVATIONS (396 GROUPS)
	PERCENT OF TOTAL	PERCENT OF TOTAL
Family	70	70
Couple	13	10
Peer group	10	10
School group	4	4
Other	3	2
Caucasian	70	73
African-American	7	7
Hispanic	8	6
Other/missing	15	14
Women only	73	71
Men only	27	16
	MEAN	MEAN
3-7	0.86	0.89
8-12	0.36	0.36
Teen	0.28	0.23
Young adult	0.66	0.81
Middle aged	0.76	0.57
Seniors	0.17	0.17
Group size	3.23	3.15

of the group, physically imitating an animal for the benefit of another group member, pulling someone toward the exhibit, pulling someone away from the exhibit, and physical affection (hand on shoulder, taking someone's hand) while facing the exhibit. Physical affection while people were walking between exhibits, or not oriented toward the exhibit, was not recorded.

The following verbalizations were recorded: calling attention to the animal, giving information, giving misinformation, discussing the animal (comments with no informational content), positive comments, negative comments, encouraging interactions between a person and an animal, disagreeing with another group member's

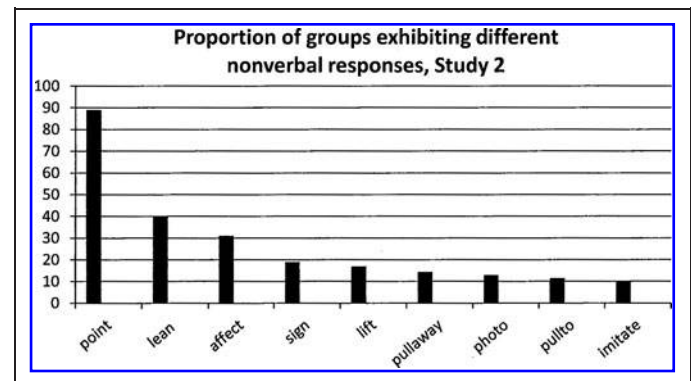


Fig. 1. Nonverbal responses (study 2).

comments about the animal, pronoun use when referring to the animal, anthropomorphizing the animal, and discussing the human relationship toward animals (e.g., in terms of how humans treat or interact with the animal, the species, or animals in general).

Behavioral data were coded dichotomously to indicate whether or not a verbal or nonverbal behavior was demonstrated within a group, regardless of the frequency of occurrence.

Results

Descriptives

Figures 1 and 2 illustrate that calling attention to and discussing the animal were normative behaviors, demonstrated by 84% and 76% of groups, respectively. Other typical verbal behaviors included positive comments (47%), giving information (43%), and using "he"

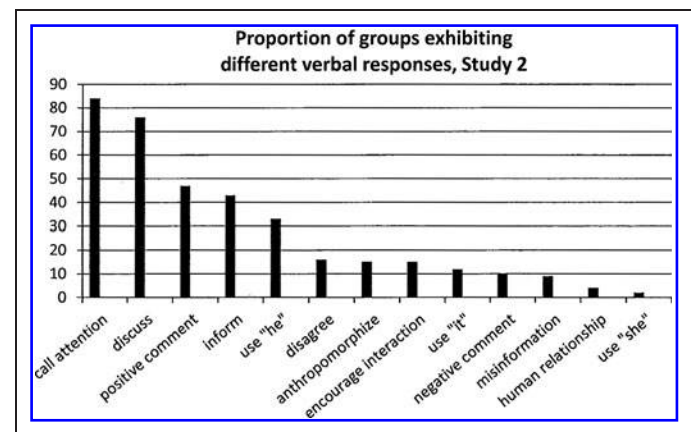


Fig. 2. Verbal responses (study 2).

Table 7. Selected Comments (Study 2)

COMPARISON TO HUMANS
"He looks just like a person" (boy, <8, about tiger)
"It's sitting just like a real person" (boy, <8, about orangutan)
HUMAN RELATIONSHIP TO ANIMALS
"I don't like it...take a wild animal, put it in a cage. Animals should be free." (woman, 20s, about bald eagle)
"Let's kill it" (girl, 8-12, about wolf)
"You could have a cat like that" (tiger)
"He could eat you" (lion)
PERSONAL RELATIONSHIP
"She loves him!" (Woman, 20s, commenting on young daughter's response to squirrel monkey)
"We've gotta see our elephants" (woman, 20s)
"Don't you want to see your little cousin?" (woman, 30s, about capuchin)

to refer to the animal (33%). Typical nonverbal behaviors included pointing to the animal (89%), leaning heads together to look at the animal (40%), and showing physical affection to another group member while observing the animal (31%). Although the proportion of groups commenting on the human relationship to animals was

relatively small, the comments are striking. Some examples are shown in Table 7.

Associations among responses

To gain a better sense of how the exhibits might be affecting the social experiences, each exhibit was scored according to the proportion of groups that demonstrated each type of response at that exhibit, and these scores were correlated. Thus, $n = 15$ for these analyses. Three relationship clusters emerged. First, exhibits that elicited more imitation also tended to evoke more pulling toward, encouragement of interaction, anthropomorphism, use of the pronoun "he," and use of the pronoun "she." Correlations among behavioral responses are shown in Table 8. Imitation was most likely to occur at the Bronx Zoo's gorilla exhibit, followed closely by the results from all the other primate exhibits.

Second, exhibits that prompted more giving of information also prompted more misinformation ($r = 0.52, p < 0.05$) and more negative comments ($r = 0.66, p < 0.01$). Finally, exhibits that prompted more lifting also received more discussion ($r = 0.52, p < 0.05$) and more comments on the human relationship with animals ($r = 0.54, p < 0.05$).

Discussion

We draw four conclusions from the ways in which these groups constructed a social experience around viewing animals in zoo exhibits. First, the huge proportion of groups that tried to call attention of others toward the animal—either by pointing or with verbal comments—confirms that viewing animals is primarily a social ex-

Table 8. Significant Relationships in Responses to Exhibits (Study 2)

	ANTHROPOMORPHISM	ENCOURAGE INTERACTION	PULL TOWARD	IMITATE	USE "SHE"
Use of "he"	n.s.	0.54 ^a	n.s.	0.67 ^b	n.s.
Anthropomorphism	1.0	0.79 ^c	0.52 ^a	0.61 ^a	0.70 ^b
Encourage interaction		1.0	0.62 ^a	0.72 ^b	0.51 ^a
Pull toward			1.0	0.55 ^a	n.s.
Imitate				1.0	n.s.
Use of "she"					1.0

$n = 15$. Pearson's r values are given.
^a $p < 0.05$; ^b $p < 0.01$; ^c $p < 0.001$.
 n.s., not significant.

perience, something that people want to share with others rather than enjoying alone. Second, the fact that so many of the comments were purely descriptive indicates that the animal was being used to encourage conversation rather than to instruct or educate another group member. Third, the exhibits seemed to foster positive in-group social interactions, as shown by the physical interactions with one another in sign readings and photos, the leaning of heads that literally brings the family closer together, and the overt demonstrations of affection during animal observation.

Finally, the social experiences observed in this study often included a component that expressed, defined, or created a relationship between the humans and the animals. This was demonstrated through anthropomorphizing comments, physical imitation, the desire to solicit interaction with the animals, and the tendency to use personal rather than impersonal pronouns. The predominance of positive comments compared with the infrequent use of negative comments further suggests that most zoo visitors define their relationship to animals as an appreciative one.

General Discussion

Research has shown that a valuable function of museums can be the construction of social capital through conversations that demonstrate and construct shared values and emotions. Some studies suggest that animal exhibits might be particularly valuable, because living animals tend to evoke different types of conversations than other display types (Allen, 2002). Zoo visits represent an opportunity for in-group social interactions as well as a place where conversation allows groups to express their feelings, negotiate relationships to nonhuman animals, foster a sense of themselves in relationship to the natural world, and establish a descriptive norm of appreciation for animals within the group.

Although the present research does not allow causal conclusions, it is consistent with two important hypotheses. First, an identity that includes a sense of oneself as interdependent with the natural world is associated with increased care and concern for animals. Second, many of the activities that groups engage in at the zoo provide a basis for a socially shared identity that may include value and respect for animals and for the natural environment in general.

It is difficult to make generalizations from this research. Factors specific to the present sample, the specific zoos being studied, and even fluctuating weather conditions are likely to have contributed to the precise behaviors and attitudes observed. Nevertheless, the possibility that this sense of relation and appreciation, as part of an individual's identity-consistent behavior, may in turn enhance concern for animal wellbeing and support for conservation beyond

the zoo experience deserves further investigation. Zoos should continue to investigate ways to encourage an identity centered around environmental concern and connection to the animal, while carefully assessing the effectiveness of these efforts.

Acknowledgments

This research was supported in part by the Wildlife Conservation Society and by a research assistantship from the Howard Hughes Medical Institute granted to the College of Wooster.

Author Disclosure Statement

No competing financial interests exist.

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Received December 27, 2010

Accepted May 3, 2011