

**How Does the Presence of a Live Animal Affect the Millennial Generation's Attitudes  
towards Zoos and Species Conservation?**

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## **Abstract**

Zoos and aquariums have unique opportunities to educate the public utilizing human-animal interactions. Many zoos claim success in educating their audiences and inspiring pro-conservation outcomes, but little research exists to confirm this. Existing research focuses on family members and assesses knowledge gained and attitudes of participants depending on variables such as animal observability, animal behaviors, or presences of zoo educators. This study begins to fill these literature gaps, focusing on the millennial generation and measuring participants' support of conservation and zoos financially and via social media in addition to attitudes and knowledge. Participants were recruited randomly through posted flyers advertising the study. Given that the flyer included the name of the Columbus Zoo & Aquarium, participants more than likely had interest in the study due to previous animal or zoo interest. This potential bias should be avoided in future studies. Presence of live animals is this study's independent variable. Participants completed a pre-test survey, attended one of two live presentations (randomly assigned) about conservation by the Columbus Zoo and Aquarium, and completed a post-test survey. Controlled in both presentations were space, presenter, topics, and species. One presentation (treatment  $n=21$ ) included live animals, while the other (control  $n=13$ ) did not. Results show that treatment group participants answered with significantly more positive attitudes to the following statements about zoo animal care: animal welfare is a focus of the zoo ( $p=0.016$ ), zoo animals are able to adapt to human-created environments ( $p=0.002$ ) and zoos create spaces for their animals that allow expression of natural behaviors ( $p=0.015$ ). Treatment participants also had significantly more positive attitudes toward black footed penguins ( $p=0.046$ ) and cheetahs ( $p=0.046$ ). These results matched our hypothesis that human-live animal

interactions increase positive attitudes towards the species. Also, the results suggest the presence of live animals increases the positive impacts of zoo conservation education.

## **Introduction**

Zoos and Aquariums have the opportunity to reach the public in a unique way that utilizes human and animal interactions to promote conservation ideals. Their audience is a vast one according to Gusset and Gerald (2011), "...annually more than 700 million people visit zoos and aquariums worldwide and are thus potentially exposed to environmental education." and a diverse one according to Schwan et al. (2014), because of the heterogeneous mix of ages, prior knowledge, and visit goals. This is important due to the fact that free-choice learning, which has the potential to influence decision-making, often takes place in an informal education setting like zoos, as pointed out by Luebke et al. (2016).

The Association of Zoos and Aquariums (AZA) has specific goals related to what visitors will gain from a visit to an AZA accredited facility. Their *Strategic Plan* has four strategic priorities, one of which is "Educating and engaging internal and external audiences and stakeholders" which is explained as a goal to "Engage, inform and influence internal and external audiences to advance conservation outcomes and support for accredited zoos and aquariums." (AZA Strategic Plan). While zoo and aquarium personnel often claim that their institutions have a strong educational impact on their audience, there is inadequate research to back that claim up (Moss et al., 2015).

Ensuring that zoos have a high educational value is very important because it has been claimed by Carr and Cohen (2011) that societies' views of keeping wild animals in human care and of zoos in general are shifting. They summarized the reasons for this shift by explaining that

zoos historically focused more on the entertainment aspect of operation without much consideration for the animals or conservation, and while modern zoos themselves have changed dramatically, the public perception has not. In Carr and Cohen's study (2011), participants examined zoo websites to determine what that zoo's main focus appeared to be, and it was found that entertainment was perceived as the main priority of the zoos with conservation at equal or secondary standing. While a zoo's purpose and main goals focus on animal care, conservation, education, and research; entertainment plays an important role in the assurance of a continual flow of visitors and a reliable financial income. The way in which visitors perceive how zoos balance all of these goals will sway their opinions of zoos and therefore their choice in choosing to, or not to, support zoos

What little research does exist on the educational impact of zoos focuses primarily on some part of the family unit during their visit to the zoo (Esson & Moss, 2014; Jensen, 2014; Schwan et al., 2014). Visitors' attitudes toward animals or the environment, and their knowledge of conservation actions or environmental topics have been evaluated (Esson & Moss, 2014; Grajal et al., 2017; Jensen, 2014; Leubke et al., 2016; Rios, 2002; Schwan et al., 2014). The independent variable is often how well the animal can be viewed in an exhibit, what the animal is doing, or the presence or lack of zoo staff providing educational information (Jensen, 2014; Leubke et al., 2016; Rios, 2002; Schwan et al., 2014; Esson & Moss, 2014).

This study begins to fill in the gaps found in the literature by primarily focusing on the millennial generation including those born between 1980 and 2000 according to (Dueño, 2014). This generation is important to study because of their ability to strongly influence the decision making process of themselves and others in choosing what to, and not to, support with their time, money, and other resources. These resources are limited according to Dueño (2014) who states

that millennials are “financially insecure adults”, and while this limits financial support of nonprofit organizations, “Millennials are actually more socially conscious than any of the other generations and are extremely passionate about making the world a better place.” While there are other studies that agree that millennials are passionate about serving as leaders in active change (Sandfort & Haworth, 2002), other sources have gotten mixed results (Zloch, 2015), and some studies have found hypocritical behavior creating opposition to this claim (Bateman & Phippen, 2016). There is a lot of debate around whether or not the millennial generation is full of individuals ready to change the world, or a generation more about image than action. If this generation is more geared toward action, it will be beneficial for zoos and conservation organizations to know if they are supported and valued by these individuals.

Similar to other studies, this one will measure attitudes towards conservation and conservation of specific animals. Uniquely, this study will also measure participants active support of conservation financially and via social media, as well as measure participant’s willingness to support zoos financially and via social media. The independent variable will be the presence of an animal. It is hypothesized that the presence of a live animal during an educational presentation will: 1) increase positive attitudes toward and knowledge gained about that animal; 2) increase positive attitudes towards zoos and their role in conservation; and 3) increase the willingness to support conservation efforts financially and via social media postings.

## **Materials and Methods**

Participants for this study were recruited via flyers posted around Columbus, Ohio and the surrounding areas. Flyers were distributed to a variety of public locations like coffee shops, restaurants, stores, etc. Individuals interested in the study would follow a link provided on the

flyer to access the pre-test survey. This survey asked a variety of questions to collect demographic information, as well as gauge participants' initial attitudes towards and knowledge about zoos and the study species. Attitudes about the zoo and study species were evaluated with questions concerning participant perspectives on the zoo's priorities, participant perspectives on the way the zoo cares for their animals, and the extent to which participants liked or disliked the study species. Knowledge about the study species was evaluated with questions allowing participants to rank the level of knowledge they believed they had on the study species. At the end of the survey participants could select a presentation date to attend, which served as blind random selection into the control and test groups. No information was provided about the type of presentations expected on the dates available. A participant ID was selected by each participant to be used throughout the study to connect data without identifying the individual.

The treatment group consisted of 21 participants on October 4, 2017, and the control group consisted of 13 participants on October 10, 2017. Controlled in both presentations were space, presenter, topics, and species. Presentations took place at the Whetstone Park of Roses, were presented by the Columbus Zoo and Aquarium staff, and covered basic information about the species, their care, and their conservation status. Species discussed included the three-toed sloth, black-footed penguin, cheetah, and radiated tortois. The treatment group's presentation included live animals and the control group's presentation did not.

Immediately following each evenings presentation, participants completed an online post-test survey to gauge knowledge and attitude changes. Additionally, participants were given the opportunity to make a monetary donation to or create a social media post about conservation organizations discussed during the presentation. Data collected were analyzed with a two-tailed T test on SPSS statistical software.

## Results

Analysis revealed that survey questions regarding the way zoos care for their animals produced significant results. Participants were asked to evaluate statements about zoo animal care on a seven-point Likert-like scale where a score of one was equal to “Strongly agree” and a score of 7 was equal to “Strongly disagree”. The statement “Animal welfare is a focus of the zoo” received a treatment group mean of 1.26, control group mean of 2.00, and a p-value of 0.016. The statement “Zoo animals have the ability to adapt to their human-created environments” received a treatment group mean of 1.74, control group mean of 2.83, and a p-value of 0.002. The statement “Zoos create spaces for their animals that allow the expression of natural behaviors” had a treatment group mean of 1.68, control group mean of 2.75, and a p-value of 0.015. The results are shown in Table 1 and Figure 1.

Survey questions regarding attitudes towards specific species also produced significant results. Participants were asked to evaluate each species on a seven-point Likert-like scale where a score of one was equal to “Like a great deal” and a score of 7 was equal to “Dislike a great deal”. The black footed penguin received a treatment group mean of 1.06, control group mean of 1.58, and a p-value of 0.046. The cheetah received a treatment group mean of 1.06, control group mean of 1.58, and a p-value of 0.046. The results are shown in Table 1 and Figure 2.

While the option to make a donation to or create a social media post about one of the conservation organizations discussed during the presentation did not produce significant results, the outcome was still noteworthy. Table 2 displays the number of individuals that acted upon this opportunity. The following actions occurred in the treatment group: one individual made a social media post about the Columbus Zoo and Aquarium, one individual made a donation to the

Cheetah Conservation Fund, one individual made a social media post about the Cheetah Conservation Fund, one individual made a donation to the South African Foundation for The Conservation of Coastal Birds, one individual made a donation to the Turtle Survival Alliance, and one individual made a social media post about the Turtle Survival Alliance. In the control group, there were no individuals that made a donation or a post on social media.

Question	Post-Survey Group	Mean	P-Value
Animal welfare is a focus of zoos	Treatment	1.26	0.016
	Control	2.00	
Zoo animals have the ability to adapt to their human-created environments	Treatment	1.74	0.002
	Control	2.83	
Zoos create spaces for their animals that allow the expression of natural behaviors	Treatment	1.68	0.015
	Control	2.75	
Attitudes toward Black Footed Penguins	Treatment	1.06	0.046
	Control	1.58	
Attitudes towards Cheetahs	Treatment	1.06	0.046
	Control	1.58	

Table 1: Survey Questions with Statistically Significant Values

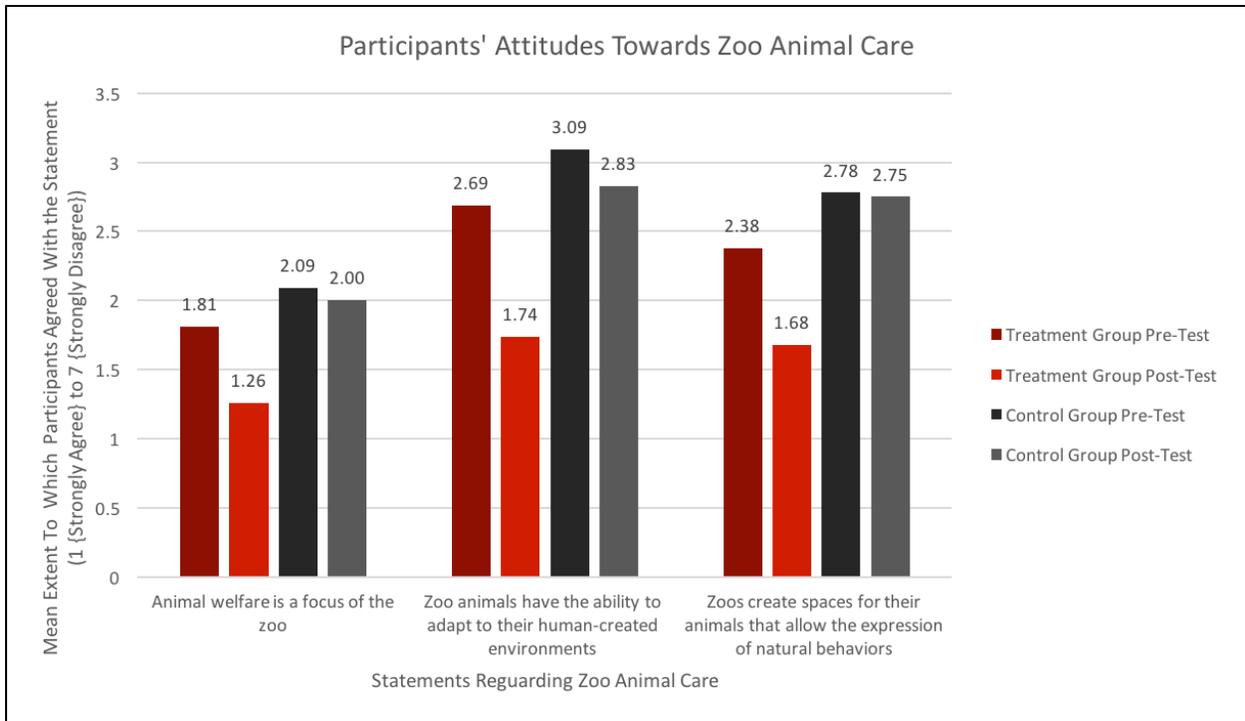


Figure 1: Participants' Attitudes Towards Zoo Animal Care

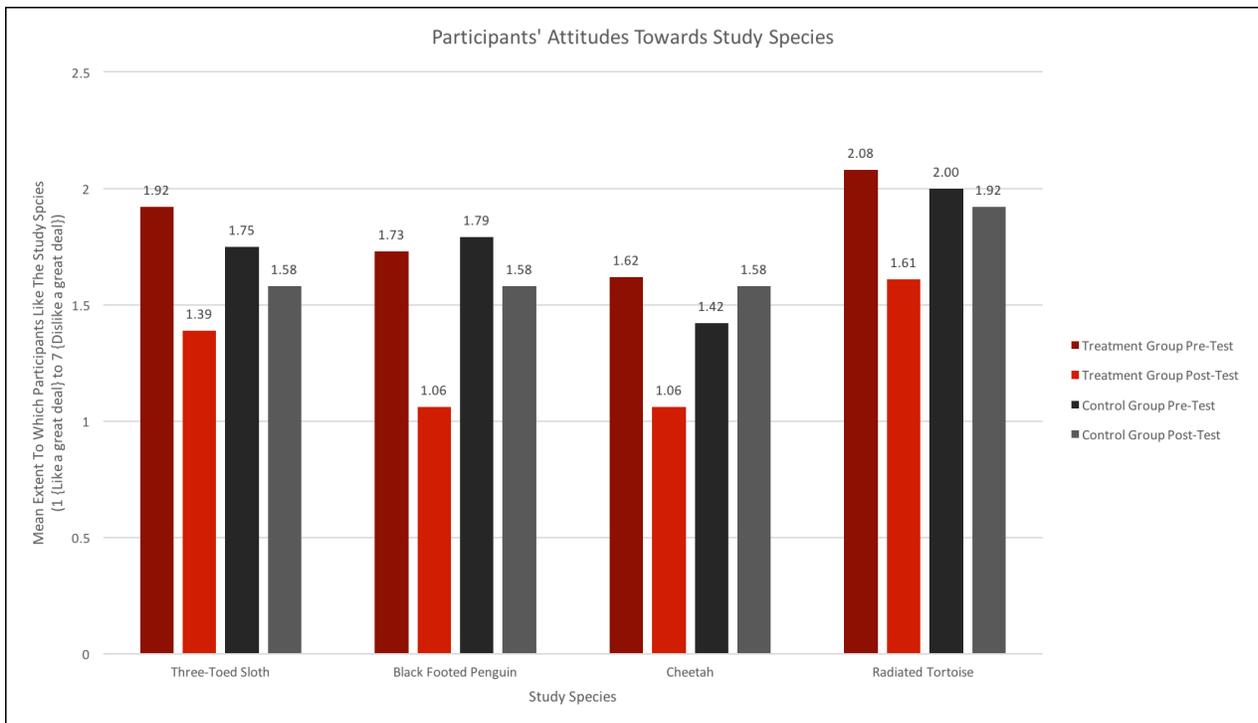


Figure 2: Participants' Attitudes Towards Study Species

	Columbus Zoo and Aquarium		Cheetah Conservation Fund		South African Foundation for The Conservation of Coastal Birds		Turtle Survival Alliance	
	\$	SM	\$	SM	\$	SM	\$	SM
<b>Treatment Group</b>	0	1	1	1	1	0	1	1
<b>Control Group</b>	0	0	0	0	0	0	0	0

Table 2: Number of Participants who made a monetary donation (\$) to, or a post on social media (SM) about discussed conservation organizations

## Discussion

Results from this experiment support the hypothesis that the presence of live animals during an educational presentation will increase positive attitudes toward the zoo in general. The treatment group answered with significantly more positive attitudes to the following statements regarding zoo animal care: animal welfare is a focus of the zoo, zoo animals are able to adapt to human-created environments, and zoos create spaces for their animals that allow expression of natural behaviors. This aligns with the AZA's strategic plan and their goal to increase internal and external audience support of accredited zoos and aquariums (AZA Strategic Plan).

Observing the positive interactions between zoo staff and the animal may have contributed to this outcome. Rios (2002) found that visitors to the zoo expressed more positive feelings about animals' care and quality of life when observing an interpretive presentation versus observing just the animal in its exhibit.

Results also support the hypothesis that the presence of live animals during an educational presentation will increase positive attitudes towards that animal. It was found that the treatment group had significantly more positive attitudes towards black footed penguins and cheetahs than the control group. This aligns with the AZA's strategic plan and their goal to "...influence internal and external audiences to advance conservation outcomes..." (AZA Strategic Plan). Of the four species that were presented, the black footed penguin and the cheetah were more active and vocal. These behaviors may have engaged participants more than the radiated tortoise and three toed sloth who remained relatively still throughout the presentation. According to Leubke's study (2016), observing active animal behavior predicted visitor's positive affective response to the animal being viewed.

The results did not support the hypothesis that the presence of live animals would increase willingness to support conservation efforts financially and through social media postings with significant findings. Three monetary donations were made and three social media posts were created about the conservation organizations discussed in the presentation by participants in the treatment group. No monetary donations or posts on social media were made by those in the control group. Even though the data did not produce significant results, it still suggests that the presence of a live animal may have had an influence.

Overall, this experiment emphasizes that the presence of live animals increases the positive impacts of conservation education when addressing those of the millennial generation. This study provides a good foundation for the development of other projects focused on this topic. Further research will aid zoos and aquariums in continually improving their educational programs to attain the outcomes they want in terms of promoting conservation of species and encouraging actions that benefit conservation.

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