

Empathy Outcomes for Zoo Boise's Summer Camp Programs

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Introduction	2
Draw-Yourself-with-an-Animal Tool	2
Methods.....	2
Results	4
Example Drawings.....	7
Conclusions	12
Recommendations.....	12
Youth Surveys	14
Results	15
Analyses	16
Conclusions.....	19
Recommendations.....	20
References	22
Appendices	23



Introduction

Educational programs are a cornerstone of the mission of modern zoos. Childhood may be a particularly important time for learning about one's place in the natural world and developing connections with other species through feelings of empathy and ecological stewardship (Melson 2001). Zoo camps are popular multi-day educational programs intended to deepen connections to animals and nature. However, these goals of connection and empathy are seldom used to measure programmatic success.

Evaluating learning outcomes in elementary-age children can be achieved through reading, writing, and drawing assessments. The suitability of a particular assessment may vary, particularly in the zoo environment that must consider the diverse linguistic, economic, and cultural backgrounds of the community being served by a zoo. For example, reading and writing activities may be suitable for older children who are more likely to possess the abilities to comprehend written instructions and reliably report their thoughts and experiences. Conversely, drawings provide younger campers with a complete and expressive representation of their thoughts and experiences than might otherwise be obtained through more traditional written methods (Klepsch and Logie 1982; Di Leo 1983; Coles 1992).

To measure outcomes of Summer 2022 Summer Camps at Zoo Boise, we asked campers ages 10–12 to rate their attitudes towards animals via a written survey and younger campers (ages 5–7 and 7–9) to complete a Draw-Yourself-with-an-Animal activity.

Draw-Yourself-with-an-Animal Tool

This instrument was developed by Smith and colleagues (2005) to measure children's perceptions of their relationship to animals and is scored for Interactivity, Affect, and Realism. As such, it is not a direct measure of empathy but rather a construct called Self-Animal Perception.

This is an important distinction as empathy implies that the child can see themselves as another, while Self-Animal Perception depicts the self with another. Further, empathy requires the self to “de-center” (Pagani 2001) to perceive another's feelings as one's own, whereas the Self is at the center of Self-Animal Perception and feelings do not need to be transitive. Finally, empathy allows deep emotions to be expressed, making it possible to share the experiences of others, while Self-Animal Perception describes the types and qualities of relationships between self and an animal but does not depict deep emotions. As empathy is a complex and challenging construct to evaluate, particularly over short periods of time in young children, we chose to use the Draw Yourself with an Animal tool to assess Self-Animal Perception as a related construct. This tool has been used to evaluate humane education and nature education programs with success (Smith et al., 2005).

Methods

The Draw-Yourself-with-an-Animal tool was administered on the first and last day of each camp for ages 5–7 and 7–9, beginning on 18 Jul 2022 and concluding on 12 Aug 2022. Campers were given a piece of paper and pens, colored pencils, and/or crayons. They were instructed to write their first name and last initial at the top of the page and then “draw themselves with an animal.” The tool was administered by camp leaders who were instructed not to provide additional instruction beyond this simple directive. Campers were given 12 minutes to complete their drawings, notified when they had five minutes

remaining, and asked to finish up their drawings when one minute remained. The drawings were collected and bundled by camp session for analysis.

Drawings were scored using a three-point stepwise rubric developed by Smith *et al.* (2005). This system was developed by first identifying qualities necessary for “top” performance, then qualities associated with the “bottom” or lowest score. Further distinctions were made between levels and then assigned a score from “0” to “4”. Examples from each level of student drawing are included below. Scoring each drawing for Self-Animal Perception involved three steps (Smith *et al.*, 2005).

Step 1

- The student depicts self in their drawing
- The animals are real
- The situation is realistic

If yes to all of these, continue to Step 2; if no to any of these, **Final Score = 0.**

Step 2

- The student drawing depicts a *negative* relationship between self and one or more animals. Negative relationships are inferred from facial expressions of the children and/or the animals (e.g., frowning, fear, anger) or by depicted acts of physical violence towards animals (e.g., hitting, shooting, or fighting).

Subtotal score = 0. Do not proceed to Step 3. Final score = 0.

- The student drawing depicts a *neutral* relationship between self and one or more animals. Neutral relationships were inferred from neutral facial expressions of the children and/or the animals.

Subtotal score = 1. Proceed to Step 3.

- The student drawing depicts a *positive* relationship between self and one or more animals. Positive relationships were inferred from facial expressions on the children and/or the animals (e.g., smiling, laughing) and by other indicators of affection such as drawn hearts, etc.

Subtotal score = 2. Proceed to Step 3.

Step 3

- There is *no interaction* with the animal(s) depicted in the drawing.

Subtotal score = 0. Proceed to Final Score.

- The interaction with the animal(s) depicted in the drawing is *indirect*. Indirect interactions included eye contact between animal and child, reaching for animal (without contact) and kneeling or bending towards animal.

Subtotal score = 1. Proceed to Final Score.

- The interaction with the animal(s) depicted in the drawing is *direct*. Direct interactions included physical contact with the animal (e.g., petting, riding, hugging) or caring for the animal (e.g., feeding, walking on a leash, playing with, grooming).

Subtotal score = 2. Proceed to Final Score.

Final Score = Sum of Subtotal scores from Steps 2 and 3 (0–4).

All drawings were scored and then filtered such that only paired pre/post drawings from the same camper and camp session were included in analyses. A set of test pilot drawings were evaluated by two raters until they achieved an interrater reliability of 80%, then all remaining drawings were scored by a single rater.

We tested for improvement in Self-Animal Scores using the Wilcoxon Signed-Rank Test. This test requires at least twenty non-zero difference scores to determine statistical significance. Because camp class sizes were small, drawing data were pooled for testing by age group rather than zoo camp course.

Results

Pre/post analyses included drawings from three camps for ages 5–7 (*paired n=40*) and two camps for ages 7–9 (*paired n=26*).

Summary of Draw-Yourself-with-an-Animal responses

Date	Ages	Course	Time	<i>n</i>	<i>Pairs</i>
7/18/22	5–7	Primate Party	Pre	15	-
7/22/22	5–7	Primate Party	Post	15	15
7/25/22	5–7	Art Safari	Pre	13	-
7/28/22	5–7	Art Safari	Post	14	12
8/6/22	5–7	Animal Movements	Pre	14	-
8/12/22	5–7	Animal Movements	Post	13	13
7/18/22	7–9	Junior Zookeeping	Pre	23	-
7/22/22	7–9	Junior Zookeeping	Post	22	17
7/25/22	7–9	Herpetology 101	Pre	21	-
7/29/22	7–9	Herpetology 101	Post	12	9

Self-Animal Perception scores for ages 5–7.

Camp	Pre	Post	Change
Animal Movements	2	3	1
Animal Movements	3	4	1
Animal Movements	2	3	1
Animal Movements	2	2	0
Animal Movements	2	2	0
Animal Movements	3	3	0
Animal Movements	2	2	0
Animal Movements	2	2	0
Animal Movements	2	1	-1
Animal Movements	3	2	-1
Animal Movements	3	2	-1
Animal Movements	3	2	-1
Animal Movements	3	1	-2
Art Safari	2	4	2
Art Safari	2	3	1
Art Safari	2	2	0
Art Safari	2	2	0
Art Safari	4	4	0
Art Safari	3	3	0
Art Safari	0	0	0
Art Safari	4	3	-1
Art Safari	4	3	-1
Art Safari	3	2	-1
Art Safari	4	3	-1
Art Safari	4	3	-1
Primate Party	0	1	1
Primate Party	3	3	0
Primate Party	2	2	0
Primate Party	1	1	0
Primate Party	3	3	0
Primate Party	3	3	0
Primate Party	4	4	0
Primate Party	3	3	0
Primate Party	2	2	0
Primate Party	2	2	0
Primate Party	3	2	-1
Primate Party	2	1	-1
Primate Party	3	2	-1
Primate Party	4	3	-1
Primate Party	4	0	-4

Self-Animal Perception scores for ages 7–9.

Camp	Pre	Post	Change
Herpetology 101	2	4	2
Herpetology 101	1	2	1
Herpetology 101	0	0	0
Herpetology 101	3	3	0
Herpetology 101	3	3	0
Herpetology 101	0	0	0
Herpetology 101	2	2	0
Herpetology 101	3	3	0
Herpetology 101	3	2	-1
Junior Zookeeping	0	3	3
Junior Zookeeping	2	3	1
Junior Zookeeping	2	3	1
Junior Zookeeping	3	3	0
Junior Zookeeping	4	4	0
Junior Zookeeping	2	2	0
Junior Zookeeping	1	1	0
Junior Zookeeping	3	3	0
Junior Zookeeping	3	3	0
Junior Zookeeping	3	3	0
Junior Zookeeping	3	3	0
Junior Zookeeping	4	3	-1
Junior Zookeeping	3	2	-1
Junior Zookeeping	3	2	-1
Junior Zookeeping	4	3	-1
Junior Zookeeping	3	1	-2
Junior Zookeeping	4	0	-4

A Wilcoxon Ranked-Sign Test indicated that Self-Animal Perception scores did not decrease across campers ages 5–9 ($z=-1.5098$, $p=0.06552$). Further analyses showed no change in scores for campers ages 7–9 (-0.3922 , $p=0.35$); however, scores for campers ages 5–7 decreased significantly ($z=-1.6857$, $p<0.05$).

Example Drawings

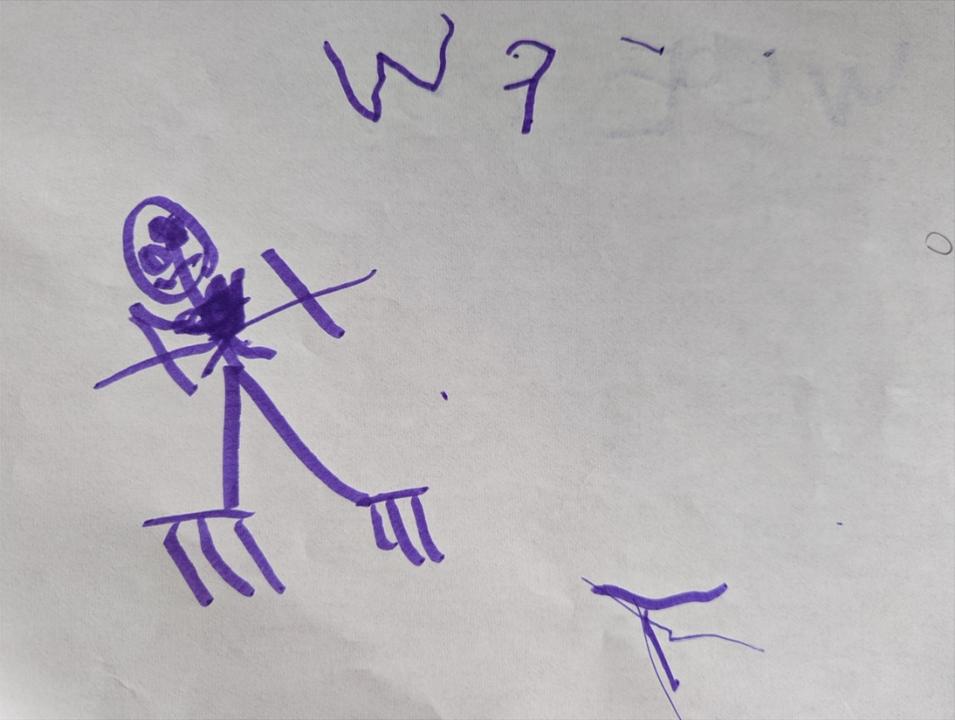


Figure 1. Ages 5-7. Score=0.



Figure 2. Ages 5-7. Score=1.



Figure 3. Ages 5–7. Score=2.



Figure 4. Ages 5–7. Score=3.



Figure 5. Ages 5–7. Score=4.



Figure 6. Ages 7–9. Score=0.

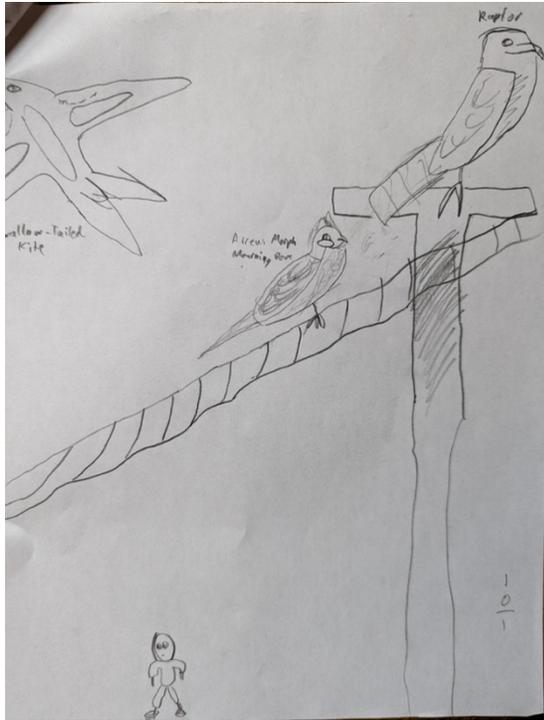


Figure 7. Ages 7-9. Score=1.



Figure 8. Ages 7-9. Score=2.



Figure 9. Ages 7-9. Score=3.



Figure 10. Ages 7-9. Score=4.

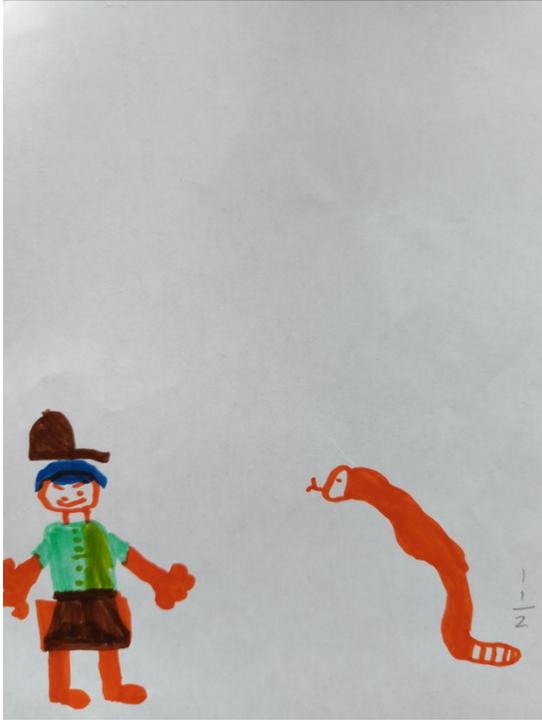


Figure 11. Paired drawings from the same camper. Pre Score=2 (left). Post Score=4 (right).

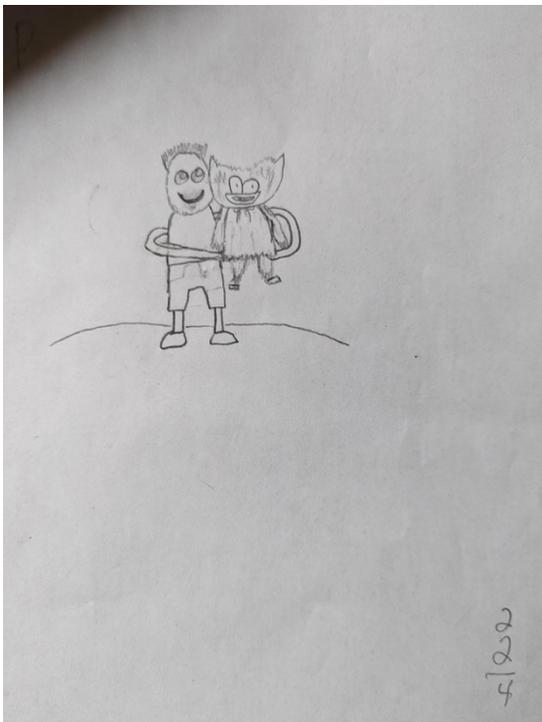


Figure 12. Paired drawing from the same camper. Pre Score=4 (left). Post Score=0 (right).

Conclusions

Overall, the Self-Animal Perception scores did not change significantly in the expected direction between the pre-camp and post-camp assessments for all campers. We cannot say that the lack of change in the intended direction is related to the content of the camp. There may be evaluation challenges that contributed to the lack of desired outcomes as well.

Drawings showed remarkable diversity across all age groups, suggesting that some campers were more artistically inclined and/or enthusiastic about the idea than others. We saw this disparity firsthand during pilot testing when a camper became frustrated with the drawing task to the point of tears. It's worth noting that some kids may be attending zoo camp because they are interested in STEM subjects more than art, making this tool less suitable for assessing their thoughts and experiences.

To achieve the top score of "4", drawings had to include a person showing positive affect and providing direct care and/or making contact with an animal. Across camps, many of the decreases in scores resulted from high initial scores of 3 or 4 dropping to 2 or 3. This dip may be because Zoo Boise's summer campers experience the zoo at a safe distance from most animals. While they do not practice taking direct caring action at the zoo camps, campers may instead be demonstrating that they care about animals by keeping a safe and respectful distance from the animals.

Some scores for campers increased drastically, as in Figure 11 where a Herpetology 101 camper was initially smiling while standing next to a snake, and this evolved into showing positive affect while making contact with a snake at the end of camp.

Conversely, some scores dropped spectacularly, as in Figure 12. This camper initially scored "4" for depicting a positive affect and direct care to an animal. At the end of camp, they scored "0" for depicting a negative Self-Animal relationship as inferred from their facial expression and a depicted act of (imminent) physical violence (i.e., being eaten by a shark).

Recommendations

Evaluation of non-formal educational intervention with children who are early literacy learners is particularly challenging. In formal settings, practitioners use individual interviews to collect information on knowledge and attitudes, and 1 on 1 hands-on assessments for evaluation of skills. In non-formal settings, there is often a lack of time and trained staff available for such individualized assessment. Drawing-based assessments may be appropriate for this age range and have been successfully applied in some cases, but with the youngest learners, artistic and fine motor skill development may not be advanced enough to reliably use this approach.

In addition to accommodating academic skill and fine motor development in evaluation with younger participants, it is also important that we take a developmentally appropriate approach to assessing social-emotional domains such as empathy. Empathy development is a longitudinal

process through childhood and adolescence that takes a different path based on a wide range of social experiences and cognitive factors. Given the complexity and individual differences inherent to empathy development, it is difficult to pinpoint a specific experience as a catalyst in this process. For this reason, we opted to evaluate the Self-Animal Perception domain as it is “empathy adjacent” insofar as it reflects how youth describe the types and qualities of relationships between themselves and animals. While this drawing assessment is likely appropriate for youth ages 7-12, it may be that the youngest youth would be better assessed using different tools.

Future evaluation efforts for the youngest camp participants (5-7) may be most successful using a more traditional (1 on 1 verbal interview or hands-on skills assessments) with a sub-set of participants. Camp leaders may choose to select a representative sample of campers (balanced on age & gender) to target with these assessments. While the sample sizes will be small with this approach, and it is unlikely that the outcomes will be appropriate for extrapolation to the general population of 5–7-year-old youth, the data collected will be useful for internal programmatic evaluation purposes, and when replicated over multiple sessions of the camp programs will provide important data on program efficacy.

For the next age group (7-9) we recommend continuing to use the Draw Yourself with an Animal Tool with adapted implementation methods. Although pre/post testing is generally accepted as the “gold standard” in program evaluation, the efficacy of this approach can be diminished when assessment is conducted with interventions of short duration. Our sense is that this may have been the case in this study and that testing fatigue was a factor in the five-day camp context. One work-around for this would be to sub-sample youth participants from which to collect assessment data. The pre-test sub-sample could be a different set of children from the post-test sub-sample if the groups are matched for factors such as age, gender, and prior zoo camp experience. Grouping the sub-samples across camps over the course of the summer would allow you to compare the pre-test meta group to the post-test meta group and assess changes without asking individuals to complete the assessment twice in a short period of time.

Youth Surveys

Empathy toward animals among the campers in the 10-12 age group was measured using a pre/post survey instrument. The survey tool we utilized was a slightly modified version of the Empathy toward Animals instrument published by the Measuring Empathy: A Collaborative Assessment Project (MECAP Measurement Tools, 2019). This survey is recommended for youth ages 10-14 who have participated in an educational program for a minimum of one week. The pre-survey is administered on the first day of the program and the post-survey is administered on the last day of the program. The survey was designed to determine if participation in the program impacts the youths' self-reported empathy toward animals. The 10 questions in the survey address three main outcomes as outlined below:

Attitudes Toward Animals

- Participant shows compassionate concern for animals
- Participant shows appreciation/respect for other animals

Perspective Taking

- Participant feels that they can take the perspective of an animal

Self-efficacy

- Participant demonstrates confidence in their abilities to demonstrate caring behavior toward animals

The MECAP survey includes 10 questions presented in statement form with a prompt for participants to indicate how much they agree or disagree with each statement. The response choices are presented as a 5-point Likert scale including: Strongly Disagree – Disagree – Neither Agree or Disagree – Agree and Agree Strongly. Of the 10 questions, eight are scaled left to right with the most desirable answer being Strongly Agree and two (#s 1 and 6) are reverse scaled with the most desirable answer being Strongly Disagree. The MECAP survey also includes two open response questions: *What is one kind of animal that you would like to help?* and *What is one thing you could do to help that kind of animal?* Participants are given 1-2 lines of space to record their responses.

For this project we made three types of changes to the MECAP survey instrument. First, we changed the wording of two questions slightly as shown below.

MECAP Tool	Current Project
I do not think animals have feelings like people.	I do not think animals have feelings.
I think every animal, even things like snakes & spiders, deserves respect	I think every animal deserves respect

The rationale for making these two changes was to simplify the question and make them species agnostic. In our assessment, it is not important that participants assign human-like feelings to non-human animals, only that they acknowledge that non-human animals have the capacity for feelings. Further, we think that calling out snakes and spiders as potentially not deserving of respect distracts from the point of the question, which is to assess perceptions of all animals equally.

The second change we made to the survey was to condense the open response questions from two to one. Our survey included the open response question: *What kinds of things can you do to help animals?* We made this change to elicit more broad and diverse responses from participants.

Finally, we adjusted the answer scale from a 5-point Likert Scale to a 3-point Likert scale with the response categories of “A lot like me”; “A little like me”; and “Not like me”. The first-person approach to assessing empathy measures in youth was adapted from an index of empathy for children and adolescents (Bryant, 1982). This instrument uses a two-point scale of “Me” and “Not Me” as the response options for a set of statements designed to measure empathy – primarily toward humans, but some non-human animal related questions are included. We opted to use a three-point scale in this study because we assumed that many of the youth who signed up for a zoo camp would already self-identify with many of the statements in the survey (would select “Me”). We added the third category so there was an opportunity for them to describe any increases in their identity with the statements in the post-camp assessment.

Results

We received 69 complete survey sets (including both a pre- and a post-survey for an individual camper). Incomplete survey sets were not included in the analyses. The surveys were collected from five camp groups.

Summary of Total Survey Responses Collected

Date	Ages	Course	Time	<i>n</i>	<i>Pairs</i>
6/27/22	10-12	Senior Zookeeping	Pre	25	
7/1/22	10-12	Senior Zookeeping	Post	25	25
7/5/22	10–12	Art Safari	Pre	8	
7/8/22	10–12	Art Safari	Post	9	8
7/18/22	10–12	Herpetology 101	Pre	24	

7/22/22	10–12	Herpetology 101	Post	16	11
7/25/22	10–12	Mammal Mania	Pre	24	
7/29/22	10–12	Mammal Mania	Post	20	17
8/6/22	10–12	Conservation Crew	Pre	12	
8/12/22	10–12	Conservation Crew	Post	14	8

Analyses

Data were analyzed by creating contingency tables of the categorical data for each question. The contingency tables included the count for each category for the pre- and post-test surveys. These data are shown below.

Count Data Table: Count of each response for each survey question.

Count Data	Q1		Q2		Q3	
	Pre	Post	Pre	Post	Pre	Post
Not like me	68	64	4	0	2	1
A little like me	0	1	25	21	22	13
A lot like me	1	4	40	48	45	55
	Q4		Q5		Q6	
	Pre	Post	Pre	Post	Pre	Post
Not like me	2	2	5	4	52	51
A little like me	5	5	22	22	16	14
A lot like me	63	63	42	43	1	4
	Q7		Q8		Q9	
	Pre	Post	Pre	Post	Pre	Post
Not like me	1	2	12	9	5	8
A little like me	17	16	42	39	21	26
A lot like me	50	51	15	21	43	35
	Q10		Q11			
	Pre	Post	Pre	Post		
Not like me	0	1	12	8		
A little like me	5	5	38	45		
A lot like me	64	63	19	15		

We then constructed a change table to show differences in counts between pre- and post-camp surveys for each category for each question. Expected direction of change for questions 2-5 and 7-11 was an increase in “A lot like me”. Expected direction of change for questions 1 and 6 was an increase in “Not like me”.

Difference between post and pre count data for each response for each survey question. (Post-Pre). Shaded data indicates change > 3 in an expected (green) or unexpected direction (grey).

Change Data	Q1	Q2	Q3	Q4	Q5	Q6
Not like me	-4	-4	-1	0	-1	-1
A little like me	1	-4	-9	0	0	-2
A lot like me	3	8	10	0	1	3
	Q7	Q8	Q9	Q10	Q11	
Not like me	1	-3	3	1	-4	
A little like me	-1	-3	5	0	8	
A lot like me	1	6	-8	-1	-4	

Chi-Square Analyses

To determine if any of the observed changes in survey data were statistically significant, we conducted a series of chi-square analyses. The chi-square test of independence is used to determine if categorical count data are different across groups or conditions. In this case, we tested the data for each survey question to determine if there were statistical differences in the count data between the pre- and post-camp assessments. The difference in count data was not statistically significant for any of the survey questions. Details are provided below.

Results of Chi-Square Analyses by Question

1. The chi-square statistic is 1.8687. The p -value is .392841. The result is *not* significant at $p < .05$.
2. The chi-square statistic is 2.5593. The p -value is .278139. The result is *not* significant at $p < .05$.
3. The chi-square statistic is 3.0123. The p -value is .221762. The result is *not* significant at $p < .05$.
4. The chi-square statistic is 0. The p -value is 1. The result is *not* significant at $p < .05$.
5. The chi-square statistic is 0.1229. The p -value is .940411. The result is *not* significant at $p < .05$.
6. The chi-square statistic is 1.943. The p -value is .378507. The result is *not* significant at $p < .05$.
7. The chi-square statistic is 0.3663. The p -value is .832661. The result is *not* significant at $p < .05$.
8. The chi-square statistic is 1.5397. The p -value is .463087. The result is *not* significant at $p < .05$.
9. The chi-square statistic is 2.0447. The p -value is .359742. The result is *not* significant at $p < .05$.
10. The chi-square statistic is 0. The p -value is 1. The result is *not* significant at $p < .05$.
11. The chi-square statistic is 1.8537. The p -value is .395789. The result is *not* significant at $p < .05$.

Free Response Data

To better understand trends in free responses, these data were reviewed and sorted into nine exclusive categories. A categorical summary of free response data is presented in the following table.

Count Data for Youth Survey Free Response Question

	Senior Zookeeping 6/27-7/1		Art Safari 7/5-7/8		Herpetology 101 7/18-7/22		Mammal Mania 7/25-7/29		Conservation Crew 8/8-8/12		All Camps	
Pre/Post <i>n</i>	Pre <i>24</i>	Post	Pre	Post <i>8</i>	Pre	Post <i>14</i>	Pre	Post <i>18</i>	Pre	Post <i>12</i>	Pre	Post <i>76</i>
Responsible Resource Use	25	19	7	5	5	6	7	10	4	6	48	46
Make Donations	10	8	3	2	3	6	5	5	0	3	21	24
Support Zoo Boise	2	1	0	0	0	1	1	2	2	0	5	4
I Provide Care	17	10	1	3	5	6	4	2	7	8	34	29
Another Provides Cares	7	0	1	0	1	2	2	2	2	2	13	6
Animal Feelings	10	4	0	0	0	0	4	1	10	4	24	9
Awareness, Knowledge, Respect	16	12	1	1	1	1	6	9	3	3	27	26
Don't Poach, Hurt, Consume Animals	6	4	1	3	1	3	4	0	3	2	15	12
Habitat Preservation & Stewardship	20	10	5	4	4	3	8	5	2	3	39	25
Pets vs. Wildlife	3	1	1	2	1	1	2	1	0	3	7	8
Total Number of Ideas	116	69	20	20	21	29	43	37	33	34	233	189

Conclusions

Overall, the responses to the survey questions did not change significantly in the expected direction between the pre-camp and post-camp assessments. However, four of the survey questions did have changes of > 3 responses in the expected direction. These are:

Question 1: *I do not think animals have feelings.* Three more campers reported “Not like me” in the post-test than did in the pre-test. One more camper reported “A little like me” and three fewer campers reported “A lot like me”.

Question 2: *I can imagine how I would feel if I were an animal having a problem in the wild, like not having enough food to eat or a place to sleep.* Eight more campers reported “A lot like me” in the post-test than did in the pre-test. Four fewer reported “A little like me” and four fewer reported “Not like me”.

Question 3: *I try to understand how animals feel by imagining things from their perspective.* Ten more campers selected “A lot like me” in the post-test than did in the pre-test. Nine fewer reported “A little like me” and one fewer reported “Not like me”.

Question 8: *I talk to other people about how we should treat animals with respect.* Six more campers reported “A lot like me” in the post-test than did in the pre-test. Three fewer reported “A little like me” and three fewer reported “Not like me”.

For question one, the shift in reporting about beliefs relating to animal feelings is small, but important. Understanding that animals have feelings is a key component of empathy development. Recognizing that animals have both positive and negative internal states sets youth up to be able to perceive, understand and care about the animals’ perspectives. Most campers started out their experience identifying as someone who thinks animals have feelings, but those who did not had shifted their thinking by the end of the week.

Questions 2 and 3 reflect a similar shift in perspective for a small number of campers. Both of these questions address forms of perspective taking, which are critical in supporting caring action. For example, research has shown that taking the perspective of an animal in distress is associated with increased environmental concern (Schultz, 2000; Sevillano, 2007).

Question 8 reflects an increase in campers taking caring action by communicating with others about treating animals with respect. This action may relate to conservation behaviors directed toward animals in the wild, or to caring behaviors directed toward pets or zoo animals. In either case, the increase in the number of campers who reported using this strategy is meaningful because it demonstrates improvements in knowledge and/or confidence. Youth are powerful agents of change in their families and peer groups and when they are confident in communicating messages about respect for animals, both wild and in managed care, they can contribute to shifts in knowledge and behavior in their communities.

In addition, there were two questions with changes of >3 in an unexpected direction. There are:

Question 9: *I wish I knew what I could do to help animals in the wild that are having problems.* Eight fewer campers reported “Not like me” in the post-test than did in the pre-test. Three more campers reported “A little like me” and five more campers reported “A lot like me”.

Question 11: *I do a lot of things to help animals in the wild that are having problems.* Eight more campers reported “A little like me” in the in the post-test than did in the pre-test. Four fewer reported “A lot like me” and four fewer reported “Not like me”.

Questions nine and 11 both relate to taking caring action on behalf of wild animals. Question nine reflects the campers’ interest in learning more about how to help. Fewer campers reported “A lot like me” in the post-assessment than in the pre-assessment. This shift may be because over the week of camp they learned about things that they can do to help animals in the wild. This is important because the ultimate goal of empathy development is to connect people to caring actions toward saving species. If the campers learned how to take these actions during camp, then the expectation is that they might be more empowered to do so going forward.

Question 11 also addresses taking action to help animals in the wild. The shift in responses for this question is interesting. In this instance, eight more campers responded “A little like me” in the post-camp assessment, with four fewer reporting “A lot like me” and four fewer reporting “Not like me”. This shift to the middle indicates that learning about conservation behaviors in zoo camp caused some campers to realize that they were doing things to help wild animals (shift from “Not like me” to “A little like me”) while others may have realized that there is a lot more they could do (shift from “A lot like me” to “A little like me”).

Free Response: Campers in Art Safari and Conservation Crew had a similar pre/post number of ideas for helping animals, while the number of ideas increased for Herpetology 101 campers and decreased for Mammal Mania Senior Zookeeping campers. Campers expressed the greatest number of ideas about responsible resource use, (e.g., don’t litter, do recycle, reduce pollution). At the end of camp, campers in Art Safari, Herpetology 101 and Conservation Crew voiced greater concern for providing care to animals, while Mammal Mania participants voiced greater concern for demonstrating awareness, knowledge, and respect for animals.

Recommendations

The youth who self-select to participate in a zoo camp (or are enrolled by their parents) are likely to be individuals who have interest in animals, their care, and their conservation. As such, pre-test scores for most questions showed that between 58% and 99% of campers identified with the most desirable response selection at the beginning of camp. The exceptions to this trend were questions 8 and 11. These two questions both had to do with actions (talking to people and helping wild animals). In both cases, pre-test data showed that 22% (Q8) and 27% (Q11) of the campers pre-identified with the “A lot like me” response.

Taken together, these data suggest that surveys of youth camp participants should a) focus on actions and changes in knowledge and confidence that support caring behavior and b) take a more sophisticated approach to assessing changes in attitudes and perceptions related to empathy development. One option for future evaluation efforts would be to develop a series of questions that asks campers to report their confidence, skills, daily behaviors, and longer-term goals associated with conservation actions and compare differences in these domains from pre-to post-assessment. This approach would be particularly powerful if paired intentionally with the learning objectives for each camp so that specific desired changes can be tracked. Another approach would be to use a first-person scenario to assessing attitudes and perceptions. Scenario-based assessments present youth with a story where they are asked

to put themselves in the position of the protagonist. Pairing the scenario with a series of multiple-choice questions where youth are asked to provide their interpretations and conclusions would allow evaluators to gain insight into how the youth make decisions and plan actions, while maintaining the ease of implementation of a multiple-choice instrument.

Another point to consider for future evaluative efforts is the effect of repeated assessment over a five-day period using the same instrument. Testing twice in a short period can result in testing fatigue and reduced the level of engagement youth have in the assessment process. A potential strategy for eliminating this issue is to use retrospective or “post-as-pre” assessment tools. In this model, one survey is administered at the end of the camp and youth are asked to provide to responses to each question. The first is their current response (post) and the second is their assessment of what their response would have been prior to camp (pre).

Example Survey Question using a Retrospective Approach

<i>I can imagine how I would feel if I were an animal having a problem in the wild, like not having enough food to eat or a place to sleep.</i>	<i>This is:</i>			<i>Before participating in this camp this was:</i>		
	A lot like me	A little like me	Not like me	A lot like me	A little like me	Not like me

Overall, despite the lack of statistically significant changes, this evaluation effort yielded some important insights into the youth audiences who participate in camp at Zoo Boise as well as the efficacy of the camp programs in shifting perceptions and behaviors in the direction of increased empathy and caring action. Future evaluation efforts may be more successful in capturing statistically significant changes if modified assessment instruments and procedures are applied.

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Appendices

Instructors only:

Camp Name:

Pre ___ Post ___

Multi ___

First name and last initial _____

For each statement, please circle the response that best describes you:

I like to have fruit for dessert.	A lot like me	A little like me	Not like me
I do not think animals have feelings.	A lot like me	A little like me	Not like me
I can imagine how I would feel if I were an animal having a problem in the wild, like not having enough food to eat or a place to sleep.	A lot like me	A little like me	Not like me
I try to understand how animals feel by imagining things from their perspective.	A lot like me	A little like me	Not like me
I try to treat any animal I meet the way I'd like to be treated.	A lot like me	A little like me	Not like me
I often worry about animals that are having problems in the wild.	A lot like me	A little like me	Not like me
I do not think I can do anything to help animals that are having problems.	A lot like me	A little like me	Not like me
I wish other people cared about animals as much as I do.	A lot like me	A little like me	Not like me
I talk to other people about how we should treat animals with respect.	A lot like me	A little like me	Not like me
I wish I knew what I could do to help animals in the wild that are having problems.	A lot like me	A little like me	Not like me
I think every animal deserves respect.	A lot like me	A little like me	Not like me
I do a lot of things to help animals in the wild that are having problems.	A lot like me	A little like me	Not like me

TURN OVER

What kinds of things can you do to help animals?

Draw Yourself with an Animal Protocol

This is a pre-post art-based assessment of children's self-animal perception.

Please administer the assessment at the following times:

1. Pre-assessment on Day 1 of camp prior to any hands-on animal activities.
2. Post-assessment on Day 5 following lunch.
 - a. For ½ day camps, following snack.

Instructions:

1. Tell the campers that they are going to do a drawing activity.
2. Hand out pieces of white paper (8.5 x 11) and drawing supplies (crayons, markers, colored pencils, etc.)
3. Ask the campers to write their first name and last initial on the top of the page.
 - a. For 5-7 year olds, instructors may help with the name writing.
4. Ask the campers to draw a picture of themselves with an animal. That is the only direct instruction you should give. It is important not to give any further instruction that could influence what they draw.
5. Set a timer for 12 minutes.
6. After 7 minutes have elapsed, let the campers know that they have 5 minutes left to work on their drawings.
7. After 11 minutes have elapsed, let the campers know that they should be finishing up their work.
8. Collect the drawings.
9. Indicate with a check-mark in the corner of the page if a camper has had previous weeks of zoo camp that summer.
10. Bundle all drawings with a cover sheet.
11. Give the bundle of drawings to Tierney.

How to handle questions:

1. What animal should I draw?
 - a. Any animal that you would like to draw is great!
2. Does it have to be realistic? (can it be a cartoon? Can it be an imaginary animal?)
 - a. You can use any style that you would like to draw.
3. Why are we doing this? Or why are we doing this again?
 - a. Because art is fun or because drawing animals is fun or because this is zoo camp and we do animal things or because its a brain break etc. (keep it as generic as possible)
4. Can we keep the drawings?
 - a. We're going to keep the drawings but we can make a copy for you if you want to keep that.
5. Can we use photos/phones to copy?
 - a. There's no need to copy photos - just draw the animal as you remember it to appear.

Protocol - Zoo Boise Summer Youth Camp Survey

- Conduct this survey for ages 10 - 13 on the first and last days of Zoo Boise's 2022 Summer Youth Camps beginning the week of July 18th.
 - Administer the survey during the morning of the first day before any hands-on animal encounters take place.
 - Administer the survey again on the last day after lunch.
- The top of the survey is for instructors to complete - this may be done either prior to, or following, the camper's completion of the survey.
 - "Multi" means that the camper has attended at least one other week of summer camp in 2022.
- When administering the survey, **do not** explain why we are giving the survey. Stick to "We have some questions for you" rather than "We want to know how you feel about animals", etc.
 - If they ask why they are doing the survey again during post-testing, simply say that you want to see how they answer these questions now that it is the last day of camp.
- If campers ask what is meant by a particular question, do not give them additional information. Simply ask them to answer to the best of their ability or skip the question.
- The survey contains one example question at the beginning. To familiarize the campers with the "This is a lot/a little/not like me" scoring system, you may give additional practice examples and have students respond silently to themselves.
- There is one open response question on the back of the survey. Remind campers to turn their papers over to answer that question.
- After the students complete the survey, collect them all and bundle them with a cover sheet.