OBSERVING EXPRESSIONS OF EMPATHY BY VISITORS AND PROGRAM AUDIENCES

Guide to Creating an Observation Protocol

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WOODLAND PARK ZOO

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INTRODUCTION

This empathy observation guide is intended to be used as a tool for zoos, aquariums, and related organizations interested in observing the variety of empathy-related behaviors their audiences engage in during exhibit visits or facilitated programs. It builds on work originally done to identify observable indicators of empathy for animals by the Measuring Empathy Collaborative Assessment Project (MECAP), a collaboration between Point Defiance Zoo and Aquarium, Seattle Aquarium, and Woodland Park Zoo. As more organizations have incorporated and expanded their use of effective empathy practices, the list of empathy-indicative behaviors zoo and aquarium professionals have identified and observed for when evaluating programs and exhibits has expanded as well. This tool provides a list of behaviors, categorized by their related overarching empathy-related attitudes, for practitioners to choose from when considering conducting observations of expressions of empathy in their own audiences. Through this tool, the Advancing Conservation through Empathy for Wildlife (ACE for Wildlife) Network hopes to promote cohesion in how empathy-related behaviors are measured and reported while also meeting the need for flexibility that comes with the wide variety of programs, exhibits, settings, audiences, and intended outcomes across the zoo and aquarium field.

WHEN TO USE THIS TOOL

This guide should be used to create an observation protocol for zoo and aquarium exhibits or programs with empathy-related intended outcomes. Observing visitor and audience expressions of empathy can provide valuable insights and inform decision-making at multiple stages of a project. Conducting observations before empathy-related practices have been implemented can provide a baseline measure to compare against before implementing changes. It can also be used to determine the extent to which a program or exhibit is achieving its empathy-related outcomes or whether additional adjustments are needed in order to do so. Building a protocol specific to an individual organization, exhibit, or program's unique context and goals allows observations to be a useful data source across a variety settings and audiences.

WHEN **NOT** TO USE THIS TOOL

There are many ways to evaluate empathy-related outcomes, and creating and using an observation protocol using this guide is not be the best option for every setting. Observations are not a good fit in cases where visitors or audience members cannot be easily seen and/or heard. Conducting observations can also be time intensive, so ensure you have sufficient staff or volunteer time and capacity to collect and analyze observation data before using this method. Finally, check your organization's policies and state or local legislation around data collection to ensure you are able to meet relevant consent requirements. This is especially relevant when considering conducting observations at offsite programs where rules around data collection are likely different than when conducting observations onsite at your own organization.

HOW TO USE THIS TOOL

To get the most out of this framework, we recommend following these steps to create an observation tool that meets your needs.

Step 1: Determine your evaluation questions and the capacity you or your staff have to conduct observations and analyze data. This will inform the number and type of attitudes and behaviors you include in your observation tool.

Step 2: Review the list of empathy-related attitudes in the following section (Table 1) and consider which are most relevant to your program or exhibit being observed and the specific evaluation questions at hand. Then, select the specific corresponding behaviors you will observe for from Table 2. Ensure that the list of behaviors is manageable for the individuals who will be conducting observations. For example, if observation data will be recorded by a staff member who is simultaneously delivering a program, consider keeping the number of behaviors low and prioritizing those that can be most easily observed and recorded such as hand raising or gently touching animals.

Step 3: Select what additional factors observers will record during each observation. Table 3 provides several examples of factors that may be relevant to record, however these examples are not exhaustive, and other factors may also be important depending on your evaluation question(s) or organizational needs. It is important to consider what is most relevant to your context and avoid collecting information that will not be useful for your analysis.

Step 4: Decide on an observation strategy that best fits your needs and capacity as well as the specific exhibit or program being evaluated. The following questions are useful to consider in planning to conduct observations:

- Who will be included in your observations? Will you observe an entire program audience or a subset of the audience? Will you include children or only adults? Will you focus on individual visitors or observe the behavior of a group of individuals?
- How will you decide who to observe? Will you select individuals randomly or systematically?
- Where are the physical boundaries of the area where you will observe? Will you follow people as they move through a space or focus only on a fixed area?
- How long will you observe for? Are you observing during an entire program or only a portion? When observing at an exhibit, how long will you spend conducting observations?
- How will you record data? Will you tally each instance of a behavior occurring or indicate whether or not the behavior occurred (i.e., presence/absence)? Will you record on paper or using a digital tool?
- How much data will you collect? What number of observations will give you meaningful information? What limitations, if any, are there on the time you have to collect, analyze, and report data?

Step 5: Assemble an observation tool. Section 5 includes a template you can fill in with the attitudes and behaviors you have selected as well as examples of tools that have been used at ACE for Wildlife Network Partner Organizations. For streamlined data entry, cleaning, and analysis, consider using a digital observation tool in a software like ZooMonitor. The ZooMonitor Community page features ready-to-use tools for observing exhibit visitors and program audiences. For additional guidance on accessing that tool, refer to: Getting Started in ZooMonitor in the ACE for Wildlife Network Resource Library.

EMPATHY-RELATED ATTITUDES AND OBSERVABLE BEHAVIORS

Table 1. Empathy-related attitudes

EMPATHY-RELATED ATTITUDE	CONNECTION TO EMPATHY
Has interest or curiosity towards animal	Interest and curiosity about animals is a precursor to empathy. Observing and wanting to learn more about an animal are the first steps to building an empathic connection.
Understands needs of an animal	In order to more accurately empathize with an animal, people must understand animals' needs, both as a species and as individuals.
Has appreciation/respect for animal	Appreciation and respect are not direct indicators that a person has empathy for an animal, but they demonstrate emotional affinity for animals and/or nature, a related construct.
Recognizes animal as an individual with agency	By recognizing that an animal is an individual with thoughts, emotions, and agency, people demonstrate an understanding of the fact that animals are not objects, opening the door for empathic connections.
Makes connection between animals and own life	The ability to compare and contrast the lives and experiences of animals to one's own is a sign of well-developed cognitive empathy.
Shows positive behavior toward animal	Those with an empathic understanding of animals are considered more likely to engage in direct positive behaviors like touching animals gently. Thus, engaging in positive, caring behavior may be a sign of empathy for animals.
Has compassionate concern for animals	Compassionate concern is closely related to empathic concern, a subcategory of empathy that is most closely linked to taking action to help or protect others.
Able to take perspective of animal	Perspective-taking helps develop people's capacity for cognitive empathy as it requires people to consider and imagine themselves in an animals' reality. This category also includes behaviors related to recognizing the emotional states of animals, an aspect of affective empathy.
Caregivers support positive behavior and attitudes	Empathy can be learned and nurtured through the influence of role models, especially caregivers. By observing how often caregivers model positive behaviors or attitudes, we gain valuable insight into the role they play in reinforcing empathic mindsets and behavior with children.
Negative empathy indicators	While negative behaviors toward animals may indicate a lack of empathy, including them in observations provides important context and contrast for the frequency with which empathy-related behaviors are observed.

Table 2. Empathy-related attitudes and related indicator behaviors

EMPATHY-RELATED ATTITUDE/TRAIT	INDICATOR BEHAVIORS	EXAMPLE(S)
Has interest or curiosity towards animal	Observes animal with focused attention	Directs gaze at animal for a minimum amount of time Stops walking or moving to observe
	Demonstrates nonverbal interest in animal	Approaches/gets closer to animal Reaches/points toward animal Has excited body language
	Asks/answers a question about animal or habitat	"Why is the lion sleeping?" "Why is there a big ball in there?"
	Raises hand to ask/answer question but not called on	
	Verbalizes observations of animal	"Her feathers look like wood." "It (a raccoon) uses its paws like little hands."
	Verbalizes observations of animal habitat/exhibit elements	"Look at the big tree in there." "They have a little cave to sleep in."
	Reads sign about animal	Stops to look at sign Reads sign aloud to group member(s)
	Prolongs observation or returns for repeated observation	Comes back for a second look Asks for animal to stay out longer
Understands needs of an animal	Talks about animal's needs in the wild (e.g., diet, habitat)	"Otters eat clams and sea urchins." "Baby walruses are very social. They need comfort and care from their moms to survive."
	Talks about animal's needs at the zoo (e.g., enrichment, medical care)	"They give the emu special laser treatments to help with his arthritis." "She has lots of toys so she doesn't get bored."
	Connects animal's needs to needs of themselves or others	"I eat apples too!" "They have to roll around in mud to stay cool? I'm glad I don't have to do that."

EMPATHY-RELATED ATTITUDE/TRAIT	INDICATOR BEHAVIORS	EXAMPLE(S)
Has appreciation/respect for animal	Verbalizes appreciation, gratitude, or love for animal	"Red pandas are my favorite animal." "Sea anemones are so cool."
	Verbalizes positive feelings about animal's characteristics	"I can't believe how smart octopuses are." "That frog is a really pretty color."
	Shows nonverbal appreciation or love for animal	Positive vocalizations like "aww" or "ooh" Expressive body language Smiling
	Shows direct physical affection for animal	Gently petting Hugging
Recognizes animal as an individual with agency	Comments on animal's independent movements or choices	"Woah, look at the sea urchin moving." "I think she decided to stay inside where it's warm."
	Uses pronouns/personal name of animal	Refers to animal as a "he" or "she" or by name
	Greets or says goodbye to animal (verbally or nonverbally)	Waves to animal "Hi Barney!"
	Speaks to animal (beyond greeting)	"Barney, you sure do love to eat fish, don't you?" "You're so big!"
	Solicits animal to come closer (verbally or nonverbally) in a safe and respectful manner	Patting their lap to encourage an animal to come closer Waving or calling name repeatedly
	Comments on or asks about how animals in a habitat are similar or different (appearance, personality, etc.)	"I wonder if the one at the front is the braver of the two?"
	Comments on or asks about animal's relationship with other animals or people	"Are those bears brothers?" "Aw, they're friends!" "Does she have a favorite keeper?"

EMPATHY-RELATED ATTITUDE/TRAIT	INDICATOR BEHAVIORS	EXAMPLE(S)
Makes connection between animals and own life	Mentions how they are similar to animal (needs, behavior, traits, etc.)	"Carson and I both love to eat grapes." "I can climb trees too!"
	Mentions how they are different from animal	"Woah they can hold their breath so much longer than me!"
	Mentions how others are similar to animal	"That walrus looks just like Dad." "Tuq is a great swimmer just like you."
	Mentions how others are different from animal	"His favorite food are mealworms, but yours is pizza."
	Connects animal to own pets	"Our cat loves to sleep in the sun too!"
	Describes or relates to animals in terms of family roles	"Look, there' the momma, there's the papa. Do you think that's the auntie?"
	Connects animal or animal's habitat to personal experiences	"Me and the monkey take the same medicine."
Shows positive behavior toward animal	Touches animal gently on their own	Uses two fingers or recommended technique
	Touches animal gently with help from caregiver or staff	
	Adjusts or corrects own behavior to support the comfort of the animal	
	Corrects behavior of others to support the comfort of an animal	Points out sign with rule(s) to others "Don't bang on the glass." "Shhhh, she's sleeping."
Has compassionate concern for animals	Expresses concern for the well-being of an individual animal or group of animals at the zoo/aquarium	"I think I'm scaring the snake." "Is it safe for the smaller fish to share a tank with the sharks?"
	Expresses desire to take action/behave in a way that helps an animal or group of animals at the zoo/aquarium	"If we're quiet the porcupine won't be as scared of us." "We should hang onto our trash so it doesn't fall into the exhibit."
	Expresses concern for animals in the wild	"There are only 400 of them left in the wild. That's so sad."
	Expresses desire to take action/behave in a way that helps animals in the wild	"I need to start putting my trash out in the morning so I don't encourage bears to come around."
	Instructs others on how they can help animals in the wild	"You can plant a teapot in your garden to give a home to bees."

EMPATHY-RELATED ATTITUDE/TRAIT	INDICATOR BEHAVIORS	EXAMPLE(S)
Able to take perspective of animal	Describes animals' emotional state or desires	"I think he's mad." "Maybe they're hungry."
	Provides reasonable explanation for prediction of emotion or desire	"It's so hot outside. I bet that tiger is happy to be swimming right now." "That octopus seems really relaxed. They're a paler color when they're relaxed."
	Physically mimics the behavior of an animal	
	Verbally mimics animal	Copies animals' actual or stereotypical vocalizations Howls at wolves Hisses at snake
	Speaks in voice of/on behalf of an animal	"She's like, 'Mom, look what I got!'"
Caregivers support positive behavior and attitudes	Caregiver uses animal's name/pronouns other than "it"	He/him/his, She/her/hers, They/them/theirs (when referring to an individual) "Look at him climbing." "I think Monty's hiding today."
	Caregiver models gentle touch	Demonstrates how to touch animal gently
	Caregiver reinforces positive behavior around animal	"Great job being gentle!"
	Caregiver talks about animal's emotional state	"He's happy to see you."
	Caregiver brings awareness of animals' agency	"They can go in the water if they want, but it's their choice."

EMPATHY-RELATED ATTITUDE/TRAIT	INDICATOR BEHAVIORS	EXAMPLE(S)
Negative empathy indicators	Refers to animal using "it"	"What is it doing?" "It's a giraffe!"
	Caregiver refers to animal using "it"	"Do you see it?" "It likes you"
	Shows facial expressions or body language indicating fear or disgust	Physically withdraws or moves away Scrunches face Mimes vomiting
	Verbalizes fear, dislike, or disgust for animal	"Ewwww!" "Snakes give me the creeps."
	Expresses desire to harm animal	References hunting, eating, or exterminating animal (as pest) "I'm gonna smush it."
	Avoids looking at animal	
	Demonstrates boredom or disinterest	
	Engages in action that distresses or harms animal	Touches roughly or pokes Bangs on enclosure Yells at/harasses animal

ADDITIONAL RELEVANT FACTORS TO TRACK

Table 3. Additional factors

ADDITIONAL FACTOR	SUBCATEGORIES (IF RELEVANT)	RELEVANCE
Type of animal(s) present	Species, Taxa (Mammal, Fish, Reptile, etc.) Single species, Mixed species	The type of animal(s) featured in a presentation or exhibit may influence people's empathy-related behaviors as some animals are considered easier to empathize with than others. The connection between empathy and animal type in zoo and aquariums specifically is underexplored in research, so gathering more information is also important for the field as a whole.
Animal visibility	Visible, Not visible	When animals are not present or visible, certain empathy-related behaviors may become much less likely or even impossible to observe.
Animal activity	Active, Resting, Not Visible/NA Open-ended description of behavior	Many of the empathy-related behaviors included in this tool involve verbalizing observations of animals. When animals are more active, there is more for visitors to observe and verbalize, so noting animal activity can provide useful context when interpreting results.
Number of animals		When more than one animal is present, there are more opportunities to observe relationships and social interactions between animals. The number of animals present also influences how some behaviors should be interpreted. For instance, visitors may use "they" instead of "it" when referring to an animal, but if multiple animals are present it may be uncertain whether they are referencing an individual or a group.
Touch/interaction opportunities	Touch/No touch, Touched animal/Did not touch	Opportunities to touch or otherwise directly interact with animals allow for a unique subset of empathy-related behaviors to occur that are otherwise not possible or appropriate in a zoo or aquarium setting.

ADDITIONAL FACTOR	SUBCATEGORIES (IF RELEVANT)	RELEVANCE
Instructor prompting	Prompted, Unprompted	In settings where a staff member or volunteer are present, they may intentionally attempt to facilitate empathic connections and other positive behaviors. This is important to note when interpreting the frequency with which behaviors are observed in different settings. Additionally, tracking this information can provide valuable feedback for instructors on their use of empathy effective practices.
Approximate age of those being observed		People's capacity for empathy is developed over time, especially during childhood, so people of different age groups may engage in empathy-related behaviors with differing frequencies. The types of behaviors people engage in may also differ with age. For instance, mimicking animal behavior or vocalizations may be more common among children than adults and adolescents.
Group composition	Adult group, Solo visitor, Mixed-aged group	Behavior may differ across group types, especially as adult caregivers often take on roles as facilitators for others during zoo and aquarium visits. Additionally, a solo visitor may be less likely to engage in any behaviors involving verbalization if there is no one else present for them to speak to.
Audience size/Number of students/teachers		The approximate size of a program audience and the presence and number of teachers or caregivers can provide context for how audience members behave. In larger audiences, there may be fewer opportunities to interact with animals, ask questions, or make comments. Additionally, the size of the audience can impact an observers' ability to see and hear the behaviors that are occurring.

ADDITIONAL FACTOR	SUBCATEGORIES (IF RELEVANT)	RELEVANCE
Location of group/subgroup being observed		If observing a program audience, it may not be possible to observe the behavior of the entire audience. Over the course of multiple observations, it is important to observe groups in different locations as factors like distance from a presenter may impact behavior.
Length of program/exhibit visit		Longer exhibit stays may indicate deeper interest in or appreciation for animals. In addition, this information can be used to calculate how frequently visitors or audiences engaged in empathy-related behaviors with respect to the total time they spent observing or learning about an animal.
Date and time		The date and time an observation occurred can be used to provide context for visitor behavior. Outside factors like weather, special events, and significant local or national news can be referenced as needed. Additionally, these pieces of information are useful for managing large datasets of observations.

OBSERVATION SHEET TEMPLATE

The following pages include a template observation data sheet you can populate with attitudes and behaviors appropriate for your intended outcomes and evaluation capacity. You are encouraged to add or remove attitudes and behaviors as needed to fit your evaluation purposes. This template is only one way to construct an observation data sheet. See the list of sample observation tools on page 16 for more examples of how to set up a data sheet. If you'd like collect data digitally, you can access a version of an empathy observation tool on ZooMonitor by visiting the ZooMonitor Community page or following the instructions at: aceforwildlife.org/resource/zoomonitor-instructions/.

Observed Program/Exhibit:								Number and Type of Animal(s) Present:	Special Circumstances/Notes: (e.g., keeper feeding)
Observer:	Sampling Method:	Date: Start Time: End Time:							

Interpretive Staff or Volunteer Present: Y/ N

Observation Number	1	2	3	4	Who is being observed code:
EX: Group composition					M: Mixed-Aged Group (groups that contains adults and children est. under aged 18) A: Adult Group S: Visiting Solo
EX: Est. kids ages, if applicable					
EX: Time Spent					
EX: Animal(s) visible **Y/N**:					

Empathy Related Attitude #1					Prompted by staff (Y/N)	Notes
Behavior 1a						
Behavior 1b						
Behavior 1c						
Empathy Related Attitude #2						
Behavior 2a						
Behavior 2b						
Behavior 2c						
Empathy Related Attitude #2						
Behavior 3a						
Behavior 3b						
Behavior 3c						

*Add sections and rows as needed

Empathy Related Attitude #4					Prompted by staff (Y/N)	Notes
Behavior 4a						
Behavior 4b						
Behavior 4c						
Empathy Related Attitude #5						
Behavior 5a						
Behavior 5b						
Behavior 5c						
Empathy Related Attitude #6						
Behavior 6a						
Behavior 6b						
Behavior 6c						
Empathy Related Attitude #7						
Behavior 7a						
Behavior 7b						
Behavior 7c						
Empathy Related Attitude #8						
Behavior 8a						
Behavior 8b						
Behavior 8c						

*Add sections and rows as needed

SAMPLE OBSERVATION TOOLS

Several organizations across the ACE for Wildlife Network have adapted or expanded on the original observation framework developed by MECAP to evaluate a variety of empathy-related programs and exhibits. The tools listed below as well as additional information about the projects being evaluated are all **available in the ACE for Wildlife Network Resource Library**.

Alaska SeaLife Center: Camp Empathy Observation Form

Lake Superior Zoo: Observation Sheet - Red Panda Wheel of Feelings

Minnesota Zoo: Nonverbal Observation Tool

Woodland Park Zoo: Expressions of Empathy and Empathy Practices Observational Framework

Zoological Society of Milwaukee: Biofact Interpretation Observational Protocol and Rubric

REPORTING OBSERVATION DATA

How observation data is reported depends on the specific evaluation questions being answered as well as the audience of the report. Below are a few examples of how this data can be analyzed and visualized for reporting.
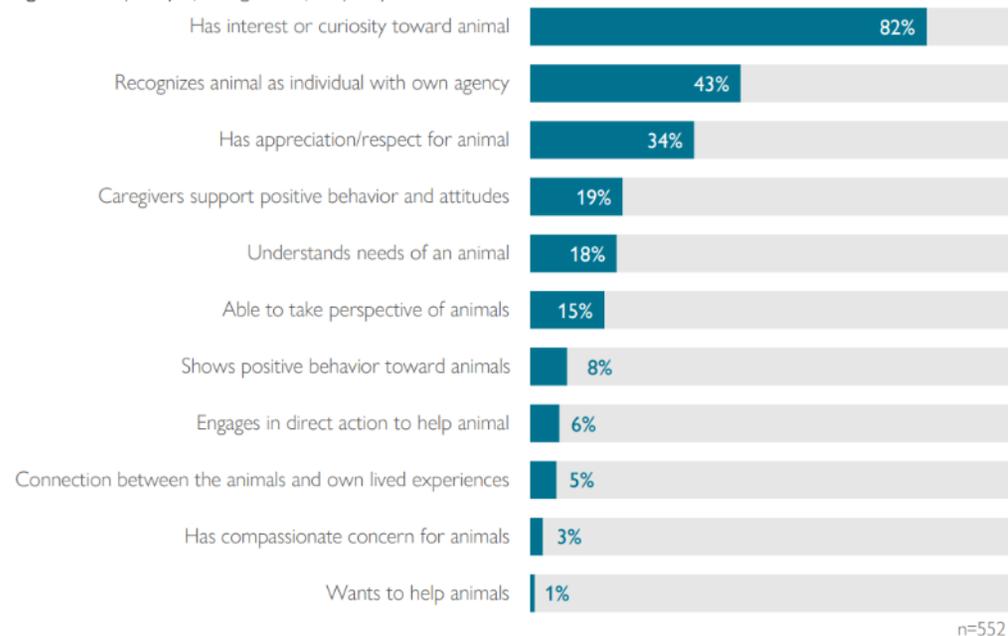
FREQUENCY OF INDIVIDUAL BEHAVIORS

Reporting the frequency with which each individual behavior is a useful way to communicate which behaviors are being elicited most or least effectively by an exhibit or program. This type of information is especially relevant if a program or exhibit is targeting certain behaviors. When reporting this information, be sure to consider and note any differences in opportunities to engage in each behavior. For example, if not every program participant had an opportunity to interact with an animal or ask a question, the frequencies reported for those behaviors may appear low even in cases where they occurred as often as the program allowed.

AGGREGATED FREQUENCY OF EACH EMPATHY-RELATED ATTITUDE

In some cases, the frequency with which visitors or audiences demonstrate each empathy-related attitude is more salient than the individual behaviors. This is especially true when programs or exhibits target a specific attitude like the ability to take an animal's perspective. To report data this way, look at whether each visitor or audience being observed demonstrated any of the behaviors within each attitude category. Use the sum of visitors or audiences who did engage in at least one behavior from a given category divided by the number of observations to calculate frequency. To take into account differences in how many behaviors fall into each attitude category, divide the total number for each category by the number of behaviors included within it in your observation tool.

Figure 1. *Example of data visualization for frequency of attitudes*

Figure 8. *Frequency of categories of empathy-related behaviors observed in exhibit visitors*

Behavior	Frequency
Has interest or curiosity toward animal	82%
Recognizes animal as individual with own agency	43%
Has appreciation/respect for animal	34%
Caregivers support positive behavior and attitudes	19%
Understands needs of an animal	18%
Able to take perspective of animals	15%
Shows positive behavior toward animals	8%
Engages in direct action to help animal	6%
Connection between the animals and own lived experiences	5%
Has compassionate concern for animals	3%
Wants to help animals	1%

n=552

$$\text{Frequency} = \frac{\frac{\text{\# of times any indicator behavior for an attitude was observed}}{\text{\# of indicator behaviors for that attitude}}}{\text{\# of observations}}$$

NUMBER OF UNIQUE BEHAVIORS DEMONSTRATED IN EACH OBSERVATION

While not an exact indicator of greater empathy for animals, reporting the number of different behaviors or attitudes demonstrated by each visitor or audience can provide insight into how visitors are responding to a program or exhibit, or if your program is providing opportunities for its audience to practice engaging in empathy behaviors. This information is best reported as a distribution of the total number of behaviors or attitudes for each observation using a histogram, box-and-whisker plot, bee swarm/violin plot, or other similar visualization, along with relevant summary statistics like maximum, minimum, and average number of behaviors (See this resource for more information about visualizing distributions).

FREQUENCY OF BEHAVIORS OR ATTITUDES ACROSS DIFFERENT VARIABLES

When evaluation questions involve the comparison of empathy behaviors in different exhibits, programs, or other conditions, it is useful to show how the frequency of each behavior or attitude differs. This is especially valuable for providing insight into if and how visitors' or audiences' expressions of empathy change before and after updating an exhibit to include empathy effective practices in signage or training staff to use empathy-effective in programs.
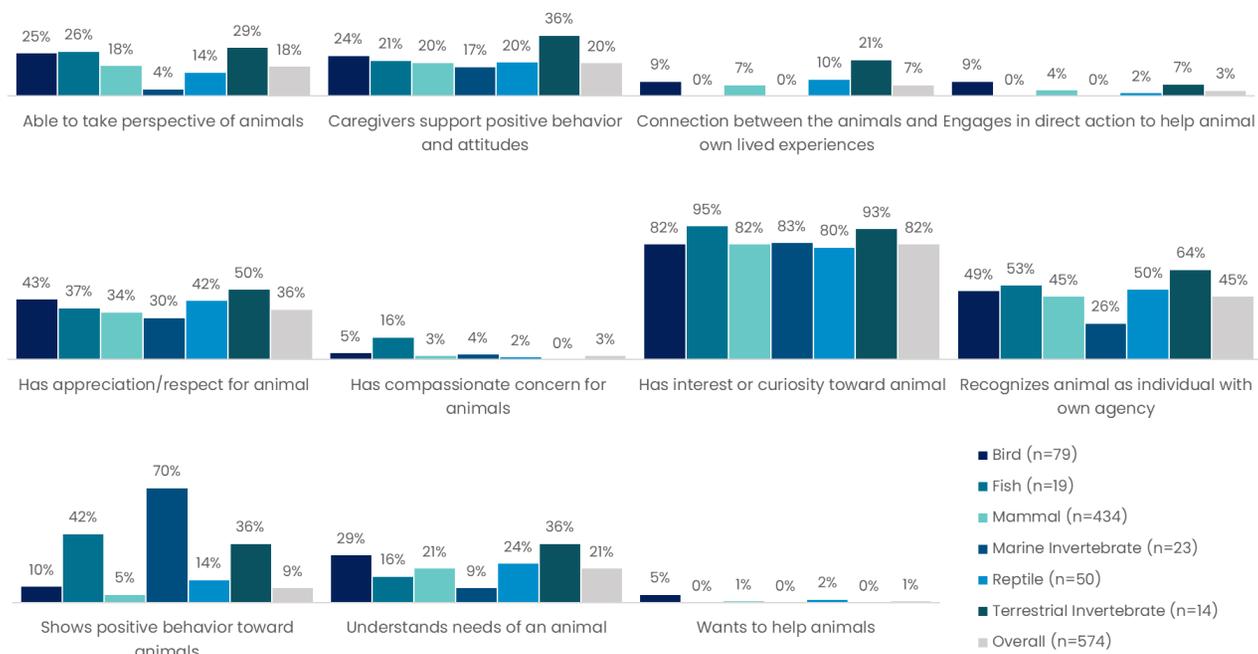

Figure 2. *Example of data visualization for frequency of behaviors across multiple variables*

ADDITIONAL EMPATHY EVALUATION RESOURCES

MEASURING EMPATHY COLLABORATIVE ASSESSMENT PROJECT

This tool is based on work done by MECAP. For more information on MECAP and to access other resources produced by the project, visit: informalscience.org/project/measuring-empathy-collaborative-assessment-project/

DIGITAL OBSERVATION TOOLS

Digital versions of observation protocols for exhibit visitors and program audiences are available in ZooMonitor, a data collection tool that is freely available to all zoos and aquariums accredited by the Association of Zoos and Aquariums (AZA). To access those tools, visit the Community tab in the ZooMonitor website or app. For further instructions on setting up ZooMonitor and accessing these tools, refer to Getting Started in ZooMonitor.

ACE FOR WILDLIFE NETWORK RESOURCES

The ACE for Wildlife Network provides several additional resources related to empathy evaluation in zoos and aquariums including:
- Additional examples of evaluation tools and reports available in the Network Resource Library
- Learning Groups and informal discussions focused empathy evaluation (See Learning Group: Intro to Empathy Evaluation for a recorded past Network Learning Group)
- An evaluation special interest group (SIG) for interested Network Members and Affiliates to discuss empathy evaluation resources, ideas, and questions

For further assistance using this tool or questions surrounding evaluating empathy for wildlife among zoo and aquarium audiences, contact empathy@zoo.org. You can also find more information about the ACE for Wildlife Network, the case for empathy, and what tools you can use to effectively infuse this work into your organization in the primer at introduction.aceforwildlife.org.