Best Practices in Developing Empathy toward Wildlife

SEATTLE AQUARIUM

INTRODUCTION

AZA-accredited zoos and aquariums use education to connect the public with critical conservation issues. These institutions engage communities through diverse programming that uses research-based strategies to inspire conservation action. Successfully inciting conservation action depends on addressing barriers, incentives, and internal motivators.[1] Internal motivators, such as connectedness to nature, environmental identity, emotional affinity with nature, environmental self-efficacy, nature relatedness and empathy, are all associated with conservation action.[2] Of these, empathy toward wildlife is an important factor in predicting an individual's willingness to take conservation action.[3] To continue improving the quality of our programming, it is valuable to understand how empathy is developed toward wildlife.

Empathy as a construct

To explore empathy development toward wildlife in our visitors, we need a common definition. Empathy is an elusive construct that has been defined and applied in myriad ways. To best understand what it is, we must first define what it is not. Research discusses many similar constructs that also motivate conservation action but each construct has different goals. Some different constructs include:

- ***Connectedness to nature****:* One's affective and experiential relationship with nature and how one includes nature in their cognitive sense of self,[4] e.g., "I feel connected to the natural world."
- ***Environmental identity:*** A high level of connectedness to nature, wherein a person's sense of self is connected to the natural world, affecting their perception and behavior toward it,[5] e.g., "I am an animal person."
- ***Emotional affinity toward nature:*** Feeling emotions of oneness, love, freedom, safety and other positive emotions in relation to nature,[6] e.g., "I love nature and how I feel when I am in it."
- ***Environmental self-efficacy*:** The belief that you have the ability to take meaningful action on behalf of nature,[7] e.g., "I can protect animals."
- ***Nature relatedness*:** Connectedness with the natural world through understanding that everything is interconnected and ecologically important,[8] e.g., "I play a role in this ecosystem."

Each of these constructs addresses our personal experience with nature. Empathy goes beyond our experience to try to understand the perspectives of others. For example, empathy can be used to answer the question, "Why do you think the crab did that?" or "What do you think this elephant needs to feel safe?" Historically, research on empathy focused on empathy toward people, but studies have shown that empathy toward animals is developed in a similar way;[9] they are not different processes and one does not need to come before the other.[10] Therefore, to construct a definition of *empathy for wildlife* we pulled from research on empathy toward animals and empathy toward people:

> **Empathy** is a stimulated emotional state that relies on the ability to perceive, understand, and care about the experiences or perspectives of another person or animal.

What does this empathy look like? Empathy acts as a larger umbrella that incorporates three empathic abilities—affective, cognitive, and empathic concern.[11] Each of these processes occurs in separate parts of the brain but can all be used to take the perspective of an animal.[12]

Affective empathy

Affective empathy is the ability to sense or sometimes "experience" the perceived emotions of another.[13] When we observe someone experiencing an emotion, our brain responds similarly—almost as if we are experiencing the same thing.[14] This process is made possible by mirror neurons. **Mirror neurons** are hardwired into our brain to automatically respond to emotions in other people.[15] For instance, when you see someone cry, your brain will respond comparably to if you were crying yourself. There is potential for affective empathy in most brains but mirror neurons' strength and effectiveness must still be learned. Helping the learner become more aware of their own emotions and their emotional responses to animals can support mirror neuron development. It is important to note that certain biological conditions affect how well mirror neurons function and grow.[16] In relation to wildlife, there is limited research discussing whether or not mirror neurons respond to animals in the same way. Even so, initial evidence is promising.[17]

Cognitive empathy

The ability to understand the experiences of others by imagining yourself in their reality is cognitive empathy.[18] This is a learned mental skill developed over time as a person develops their theory of mind or their ability to interpret and predict their own feelings and actions as well as those of others.[19] Well-developed cognitive empathy relies on an understanding and ability to communicate, through language, how your experience compares and contrasts to others'.[20] Cognitive empathy is developed through perspective taking and increasing our knowledge about another's experience.

Empathic concern

Sometimes referred to as compassion, this is the subcategory of empathy that is most closely linked to taking action to relieve another's suffering.[21] Suffering is not a situation guests will find with our animal collections. On the other hand, when we begin to address issues with wild animals, empathic concern is very important.

Empathy and behavior have a disputed relationship. Behavior change research has established that there are many factors that influence our likelihood to take pro-environmental action.[22] Empathy's relationship with behavior varies depending on the desired behavior.[23] For instance, touching an animal gently and placing it carefully on the ground is more likely a result of empathic understanding than contributing to a beach cleanup. Participating in the beach cleanup may be motivated by empathy but we also have to consider other barriers and benefits that impact our willingness to take action. However, in a controlled setting, researchers found that if they asked students to take time to consider the perspective of an animal, the students were more likely to express environmental concern and suggest providing more resources to protect that animal or its environment.[24]

Development of empathy

Empathy, like other emotional and mental capacities, is developed over time and reinforced through our interactions with the world. There are three developmental frameworks that give insight into empathy development in children: cognitive learning, social learning, and moral-stage development. Myers, Sounders & Bexell describe empathy development as a cognitive-socioemotional-moral development process.

Cognitive learning theory

Our brains are constantly rearranging to accommodate our understanding of the world. The capacity for a brain to change is called brain plasticity. During the first few years of life, we see twice as many connections in the brain than we do in adulthood.[26] As we learn, certain connections are reinforced and others are pruned away.[27] Throughout our lives, these connections grow and shift as we interact with and learn from our world. As our beliefs are reinforced, however, they become stronger and more challenging to change. A good visualization of this is imagining the individual connections in your brain as a trickle of water; each time you experience something that supports an idea you add another trickle, and another, until over time it becomes a river. As educators aim to change a person's understanding, it is easier to redirect the flow of a trickle of water than a rushing river—the younger the brain, the easier it is to change or build new patterns of thinking. Though zoos and aquariums are only a short experience in the larger lifetime learning of an individual, these experiences are powerful tools for developing strong cognitive connections through multisensory encounters of awe and wonder.

Social learning theory

Much like cognitive learning, social learning theory supports that you are constantly learning and changing your understanding of the world. Theorists suggest that people learn by collecting information through observing the social world and through relationships.[28]

Becoming an empathic person is a process facilitated by language, behavior and social norms. We begin to understand that others have experiences different from our own through the development of language and social awareness.[29] As we develop understandings of others' experiences, we also become more aware of the social expectations of our behavior and social norms.[30] Put simply, a child can better understand that a dog likes to be touched gently when a parent can explain why—first as a rule and later with reasoning ("Touch her gently," and later, "You don't like to be pushed and neither does she").

We learn moral reasoning and moral behavior within our cultural contexts. The environment in which children are raised affects their capacity to empathize. Research shows that children growing up in homes with "hostile negative emotions" struggle to build empathy.[31] Another study looked at the effect of culture on our perception of animals.[32] This study found that urban children tended to project human needs onto animals whereas children from other cultures and environments better understood animals' own biological and ecological needs. The research suggested that this pattern was an expression of their 'everyday' or folkbiological knowledge passed on through the community and their interactions with their environment. Thus, when we look at how to develop empathy in our guests, we must consider the social environment and how it frames, fosters, or impedes the process.

Developmental stages

Moral development in children has been historically discussed through stage theory, where learning theorists break development into stages defined by age. It is important to remember that these categories are ideal types that vary depending on life experiences and education. In the following section, we will pull from several theorists' commentary on moral development.

Infancy to pre-K

We know from cognitive development research that children's brains begin making sense of the world from infancy and abilities such as language and social skills develop over time.[33] Young children are more likely to see animals and anthropomorphic peers. Often, young children behave as if others think and feel very similar to them while at the same time they notice that others respond differently to their behavior.[34] This limitation in their understanding is related to their undeveloped language skills.[35] At a young age children struggle to recognize a reality separate from their own and they have not developed ways of expressing or understanding how that the animal's wants, needs and intentions may differ from their own.[36]

Kindergarten through early elementary

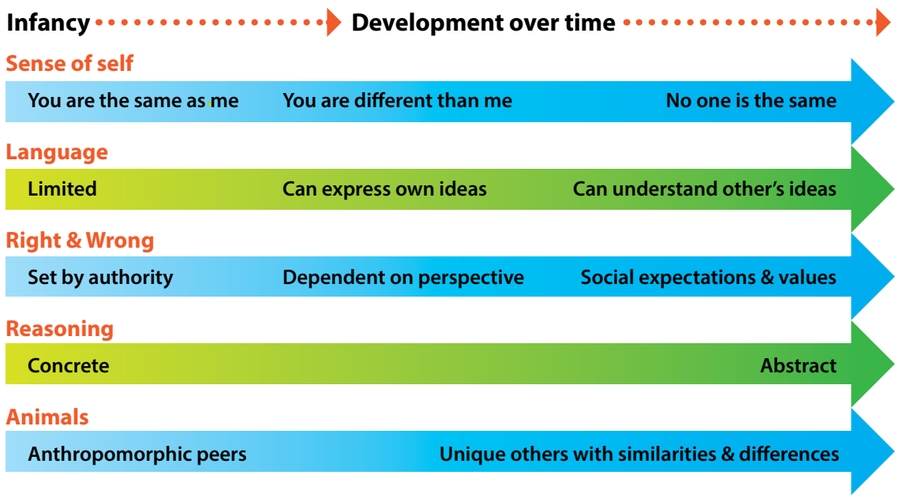
In kindergarten, the ability to read nonverbal cues and infer meaning from behavior drastically improves, as does the ability to use language.[37] During this time there is a natural bonding between children and animals.[38] However, animals, unlike people, cannot express their wants and needs in a common language so children will continue to project an animal's wants and desires from their own experiences, knowledge and the animal's actions. As children begin to understand that animals can choose to interact with them or not, moments when the animal appears to choose to interact with the child become very powerful child-animal connection builders.[39]

Early elementary through adulthood

As children mature through adulthood, their ability to comprehend language and express their needs improves. They become more socialized and base their moral understandings on social expectations of love, empathy, trust, generosity, kindness, sharing and fair treatment.[40] Understandings of diverse perspectives develop in elementary school as children practice and expand their understandings of social-moral norms, interpersonal expectations, theory-of-mind, and relationships with others.

Along with their understanding of language and social norms, children are also developing their ability to reason. Young children base their reasoning on concrete observations and logic.[41] In other words, they think in terms of what they can actually experience. As children learn, they begin to grasp more abstract ideas and concepts.[42] For instance, a younger child with concrete reasoning skills would understand their fish's behavior or any fish they have observed. Alternatively, a child who has developed abstract reasoning skills could predict the needs and behavior of a new fish they have never seen and how the fish might interact with its ecosystem. Theorists suggest that throughout our lives we continue to develop our ability to grasp others' complex, multidimensional, and distant perspectives.[43]

When we look at these different patterns in development over time, it can help to visualize them together. By looking at the themes next to each other, it is possible to see how the development of morals, language, and reasoning parallel changing relationships with others and animals. The chart below roughly spans birth through adolescence, however these patterns of development continue to mature and progress over a lifetime.



Contributing factors

Animal characteristics

Animals have differing abilities to elicit empathy. Studies have shown that young children's concept of 'animal' was a 'mammal-like' creature.[44] Gene Myers suggested that all animate creatures, including people, present different variations of agency, coherence, affect, and continuity that influence how we relate to them.[45] Animals express differing levels of these characteristics and it affects their "potential to elicit empathy."[46]

1. **Agency:** Animal presents behaviors of moving, eating, playing, social roles, and grooming, similar to human behaviors.
2. **Affectivity:** Emotion is sometimes hard to observe in animals so we most often attribute emotions to vitality affect, or the animal's patterns and qualities of arousal over time.
3. **Coherence:** The animal is easily understood as a whole animal with arms, legs, body, and face. One impactful characteristic is the presences of a face, especially eyes.
4. **Continuity:** More time spent with the animal increases a person's understanding of and empathy toward the animal.

On one hand, aquariums and zoos have animals like otters that people often empathize with without much effort. On the other hand there are animals like insects or sea anemones. Unlike their charismatic counterparts, these latter creatures do not express behaviors or emotions in ways that we easily understand and do not have mammalian faces. Furthermore, we are not likely to have them as pets or to see them portrayed in media without being extremely anthropomorphized as in cartoons. With some animals in our collections, there is even the misconception that they are not alive—making it very difficult to empathize with. Overcoming these natural barriers to empathy is a challenge but hopefully not impossible.

Barriers to developments

Beyond these physical and behavioral properties, there are other barriers to empathy.

Cultural stigmas: When we learn about animals through exposure to media, role models' values, and stories, we can build up prejudices against certain animals like spiders, snakes, or sharks. As lack of accurate species-specific knowledge is replaced with beliefs based in fear, it blocks empathy.[47]

Conflicting social norms and messaging: There is a great disparity between how society views different kinds of animals. There is not clear reasoning given for why some animals are considered part of the family, pets, or special while other animals are pests or objects for food or research.[48] In zoos and aquariums there is often not clear reasoning as to why some animals receive names and others do not.

Narrative framing: The language and story used to talk about an animal affects the development of empathy toward that animal.[49] The interpretation of the animal's behavior and experience will affect how someone perceives the animal and his/her actions.[50] For instance, if we introduce a crab as a biological example of a crab just like any other crab there will likely be less empathy than if the crab is introduced with a name, gender, story, and unique needs.

Moral disengagement: Empathy triggering experiences can be too intense. Starting as early as elementary school, if people are overloaded with highly emotionally triggering experiences, their minds can often protect them by disengaging.[51] People accomplish this moral disengagement by justifying their actions as good, shifting the blame to remove personal responsibility, disregarding the consequences as out of their control, or dehumanizing the victims.[52]

Environmental: When we remove animals' agency by teaching them to do tricks, not housing them in environments where they can participate in natural behaviors, or reducing them to mere scientific examples without seeing them as an animate other, we can decrease their ability to elicit empathy.[53]

Projection: As humans, when we empathize we are always making predictions about the experience of other humans or non-human animals. We pull on our understanding of what it is like to be in that situation. We can never know with certainty, however, what it is like to be another, we can only infer to differing degrees of accuracy.[54] Even something as small as being thirsty ourselves can make us more likely to think others are thirsty too.[55] Also, if we are in a 'hot' emotional state (stressed, angry, sad, in pain) or have recently experienced these 'hot' emotions we are more likely to over-perceive similar emotions in someone else.[56] This can lead to an inaccurate conclusion about other's experiences, perspective or needs.

Anthropomorphism: Anthropomorphism is a type of projection. It is defined as "the attributing of human characteristics and purposes to inanimate objects, animals, plants, or other natural phenomena."[57] Those who study this innate human practice found that it could be measured on a spectrum. At a low level people see animals as an unknowable other beyond moral concern, whereas at a high level animals experience the world just like humans.[58]

Anthropomorphism can both help and hinder one's ability to accurately empathize with others. To the degree that we can find true similarities with animals, anthropomorphism helps us better understand or empathize with the animal. Young children especially benefit from anthropomorphism and its ability to make animals relatable. However, as people mature, if they continue to project their experiences instead of trying to understand those of the animal, it can lead to incorrect empathy. Incorrect empathy occurs often. At an aquarium, one might hear, "The octopus must be so lonely!" Here guests are projecting their own social needs, not knowing octopuses do not live in groups. Since anthropomorphism is always occurring, especially in young children, and taking the perspective of others is important in developing a sense of caring for another (See practices), then the challenge may be to achieve a state of educated anthropomorphism.[59] Many of our interviews suggested that the tendency to anthropomorphize could be the initial point of engagement that educators have the task of "moving toward a more precise collaborative understanding" of animal's experience, behavior, and communication.[60] (More on anthropomorphism and its role in conservation and empathy in Appendix A)

Though there are barriers to empathy, Gene Myers said,
"Although unavoidably imperfect, there is no doubt that empathy is important in understanding animals, and also that it can be greatly improved with knowledge of the other. Of crucial importance is how one interprets signs of the other's feelings."[61]

Best practices

It can sometimes be difficult to measure the impact of educational experiences in informal learning environments. Another way to infer the impact of zoos and aquariums on empathy development is to look for the presence of research supported best practices in educational programming. This list of best practices was gathered from previous research measuring empathy development in various settings. In exploring the literature, six best practice categories emerged. They are grouped in an effort to make them more accessible. In practice, these different approaches overlap and are used together.

Framing

The way we frame our conversations about animals and the words we choose are important in all the following best practices. When children participate in conversations about animals, the language and behavior of the educator has the power to discourage or encourage empathy.[62] Educators can refer to animals as, "he," or "she," or by using an animal's names or words like "we," "together," or "all of us" to have an inclusive effect.[63]

Framing can also occur through behavior and the environment. How we interact with animals and how we narrate those actions has power. Additionally, sometimes things that we take for granted can still be picked up by children and visitors. Some examples of 'taken for granted behaviors' included: the way we transport animals, the way we handle animals, and trainer's behavior toward animals. By being proactive and transparent about the messages that may be unintentionally reinforced and the messages that we want to encourage, we could help develop more positive relationships with animals.

Framing can support empathy development but it can also support objectification, domestication or anthropomorphism if we frame animals as purely biological examples, only valued for their function, similar to pets or just like humans. If empathy for the animal is a desired goal, than the narrative needs to acknowledge the animal as a living individual that experiences the world from its unique perspective.

- **Example concrete practices:**
  - Frame conversations about animals as subjective others with unique experiences, jobs, needs and intentions.
  - Intentionally choose words that encourage children to see animals as animate others like pronouns and names.
  - Provide space and time for students to talk about an animal's personality, experiences, and intentions in comparison and contrast to their own.
  - Verbally acknowledge an animal's experience in conversation and allowing for questions about animal's perceived thoughts or feelings, using them as launching points for a more engaged conversation.

Modeling

In the development of affective skills like empathy, valued adults and teachers play an important role.[64] This moral learning is built through modeling, as well as relationships, dialog, practice, and confirmation.[65] For example, when researchers asked adults with strong environmental morals what impacted their love of the environment, they all credited childhood role models.[66] These role models had long-standing relationship with the child; they showed a fascination with the details of nature, disapproval of its destruction, and expressed care for and shared pleasure in interacting with it.

However, this presents a challenge in the informal setting. There is often very little time to develop relationships with our guests. In talking with Louise Chawla, she shared a story from Hamill Family Play Zoo at the Brookfield Zoo.[67] Working with their staff, she learned that they found the best way to support learning with the multitude of children coming through their doors was to empower the parents or caregivers to be moral role models. They did this through modeling positive behaviors for children and parents, rewarding positive child behavior in front of the parents, and encouraging the parents to engage in similar ways.

When the situation arises where we are lucky enough to work with the same students over several years of programming we have the potential to enter into moral role model status. Otherwise, supporting caregivers as role models and physically role modeling the desired behaviors can also be effective.

- **Example concrete practices**
  - Physically model the empathic behaviors we want students to perform—especially in moments where you have their undivided attention.
  - Support parents as moral role models by engaging them and modeling ways of interacting, asking questions, and talking about animals with their children.
  - Develop consistent messaging in programming with students to better reinforce moral learning over time.

Increasing knowledge

Not all knowledge is created equal when it comes to empathy development. By increasing student's knowledge of their own emotions and the experiences of others, students can more accurately perceive the emotions of others.[68] First, to better understand the potential emotions or the affect of others it helps to understand our own.[69] For instance, if you have never explored how and why you feel angry it is hard to imagine how or why another might feel angry.[70] Just by verbalizing our emotions and listening to the perspectives of others we engage in meaning-making and improve our empathy.[71] Secondly, by sharing information about animals' needs, experiences, behavior and life history we can improve people's ability to accurately empathize with animals.[72] Specifically, comparing and contrasting animal experiences to our own can promote deeper connections to the animals.[73] Jennie Warmouth, a University of Washington PhD candidate focusing on empathy development for animals, tries to share two similarities for every difference.[74] Other educators have practiced sharing more similarities with animals that are harder to empathize with and more differences with animals that elicit empathy with ease. By better understanding the "mental experiences of animals" we can improve the accuracy of our empathy by "integrating knowledge with feeling, and capitalizing on the motivational power of feelings."[75]

- **Example concrete practices**
  - Share information that helps guests understand how and why an animal behaves a certain way.
  - Facilitate conversations that share information about individual animals, their place in the aquarium, and their relationship to their wild relatives.
  - Draw on similarities and differences between an animal's experiences and our own.

Providing experiences

Some say that, "direct interaction with animals is the starting point for natural care."[76] Just by interacting and spending time in nature, people are more likely to develop a connection with it.[77] In the study conducted by Chawla she found that the majority of adults who cared for nature spent time in nature as children.[78] This time in nature was most impactful if it was in rich environments with little human constraints on exploration.

When relating this to animals, if children have the opportunity to interact with animals, more powerful interactions are associated with more naturalistic experiences. If an animal appeared to choose to interact with the visitor through their own agency, it builds a deeper connection then if the animal was being handled or engaging in trained behaviors.[79] These perceived mutual intentions help develop a bond between animals and people.[80] Overtime, guests can build relationships based on these moments of perceiving shared attention and the time spent observing and becoming familiar with the animals.[81] The more time people spend with animals, the more opportunities to build connections.

- **Example concrete practices**
  - Provide opportunities for guests to watch, touch, and observe animals.
  - Deeper affective connections with animals will occur if the animals are allowed to show agency (like eating, grooming, exploring, etc.), show agency while interacting with the guests (during trainings or feedings), or interact with the guests without staff presence (on exhibit).
  - Repeat experiences, if possible, to widen the opportunity for empathy.
  - Provide information about intent, motivation, and purpose of behaviors the guests are observing.

Practice

Going a step beyond spending time with animals, practice involves providing opportunities for people to successfully practice empathy and receive positive feedback when observed.[82] When students have the opportunity to successfully practice something, they build their self-efficacy or belief in their ability to do it.[83] By publicly positively reinforcing empathy it becomes a visible and valuable way of thinking.[84] In zoos and aquariums, where many people already have a capacity for feeling empathy for animals, we can affirm positive environmental behaviors and work toward building guests' environmental identities.[85]

Empathy can be observed and practiced through providing care for animals. By providing care, the child must attempt to understand what the animal is experiencing to know what the animals needs to be happy. Many organizations have harnessed this tool to help develop empathy in their guests through animal training, feeding and caring for animals, practicing vet care, and interacting with live animals empathically.[86]

- **Example concrete practices**
  - Provide opportunities for children to care for, feed, train, and interact with animals in ways that require accessing empathy.
  - Have discussions about how to know what different animals need.
  - Call out and positively acknowledge when desired empathic statements, questions, and resulting behaviors are displayed.

Activating imagination

The final best practice involves activating the imagination to better understand the perspective of another. Within the social work and medical fields, perspective-taking activities are at the core of empathy development.[87] When people cognitively take the perspective of another, they increase their concern for the animal's wellbeing.[88] For example, when students were asked to take the perspective of an animal, it greatly increased the student's empathy for them; whereas when they were just shown a picture and not asked to take the perspective they demonstrated less empathic reasoning.[89] Activating the imagination can happen in many ways, most commonly we may hear educators asking, "How do you think it would feel if someone did that to you?" but there are other practices that also encourage a mental and physical connection to others.

- **Example concrete practices**
  - Engage in perspective taking dialog.
  - Mimicry is physically moving or perceiving the world though another's perspective. It activates mirror neurons and helps promote kinesthetic empathy.[90] Through kinesthetic empathy we can better understand the attitudes or motor intentions of an animal just by moving as they do.[91]
  - Role-playing involves taking on the identity of the animal, either based on concrete observations or species knowledge, and then interacting with others or the environment as that animal. This activates connections between emotions and thoughts, allowing individuals to experience what it is like to be the animal and in turn increasing their empathy for it.[92]
  - Storytelling creates empathic responses as people identify with the characters.[93] Telling stories about the lives of animals and from the perspective of animals can increase children's connection to those animals or that environment.[94]

CONCLUSION:

Empathy is a complex ability that requires the development of different cognitive and affective mental processes. These processes can occur naturally within most of us but to fully develop empathy, skills must be tended to through formal and informal education. The literature suggests there are many ways to facilitate empathic learning including framing, modeling, increasing knowledge, providing experiences, practicing, and activating the imagination. It would help, however, to have more research measuring empathy for wildlife in zoos and aquariums. By identifying and incorporating these practices at these and other informal learning institutions, we should be able to increase our empathy development potential.

Appendix A:

Anthropomorphism and empathy

Though not the same, anthropomorphism and empathy are closely related concepts.

Anthropomorphism

The attributing of human characteristics and purposes to inanimate objects, animals, plants, or other natural phenomena.

(The American Heritage® New Dictionary of Cultural Literacy; 2015)

Recognizing perceived similarities in others increases our empathy toward others.

(Arluke, 2003; Root-Berstein et al., 2013)

Trying to empathize without understanding the animal can lead to anthropomorphizing.

(Root-Berstein et al., 2013)

Empathy

A stimulated emotional state that relies on the ability to perceive, understand and care about the experiences or perspectives of another person or animal.

Anthropomorphism is a naturally occurring process in humans. We are constantly trying to understand other people and animals to the best of our own understanding (Dewar; 2013). At a basic level it is a projection of our own experience on the experience of others.

There are many types of anthropomorphism; in relation to empathy we are concerned with the misattribution of human feelings, emotions, wants, and desires on animals. Since we can never truly know what an animal is thinking, it increases the risks of errors in our understanding (Hill, 1995; Myers, 2007). On one hand, anthropomorphism is an effective way to connect people to products, services and causes. On the other hand, it can also lead to heightened care for individual animals over their species, expectations of human-like social needs that animals cannot meet, and projection of negative human stereotypes on animals (RootBerstein et al., 2013).

Theorists argue that anthropomorphism lies along a spectrum and is influenced by what we determine as "human." (Root-Berstein et al., 2013)

ANTHROPOMORPHISM SPECTRUM

Animals=Unknowable Other

Animals are observed with feelings of "they-ness" and perceived difference to the point of alien or object.
(Hill, 1995)

"If we don't know if they can suffer or experience mental anguish like us, then great, we're off the hook for needing to care. This makes it easier for people to ignore the suffering we might be causing."
Carl Safina

(Cudmore, 2015).

Who cares, it is just a fish.

Animals=Similar but Different

- How accurate can we be?
- What do we know about this animal that is similar to humans? How do we know it?
- What do we consider to be human?
- If dogs can have PTSD can otters?
- Does it stop being "a human characteristic" if science proves it exists in some non-human animals? What if I have observed it in an animal's behavior but science has not studied it yet?

The gray area—
Where do you draw the line?

Animals=Human

Animals are observed with feelings of sameness to the point of sister or peer. Sameness includes same needs, experiences, desires and emotions. This is sometimes leads to what some call considered false or naive empathy (Hill, 1995).

Take for example justifying approaching wild animals through sympathetic reasoning—"They looked sad."

The octopus looks so lonely.

Young children are more likely to see animals as their peers (Myers, 2007). Adults take care of them both, feed them and cleanup after them. This projection likely decreases over childhood as they develop a greater understanding of animals' different experiences. Roughly, around the age of eight years children will be able to differentiate between their needs/experiences and those of animals.

Addressing anthropomorphism:

Anthropomorphism can be an initial point of engagement for educators to activate, moving learners toward a more accurate understanding of the animal's experience, behavior and communication (Lousie Chawla personal communication on June 2, 2015). Many suggest that we should aim for more enlightened anthropomorphism (Chawla, 2009). Instead of trying to eliminate an innate process of thinking, we might offset it by bringing awareness to our similarities and differences and creating transparency on the experiences of animals.

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Endnotes

[1]Shultz, 2011

[2]Berenguer, 2007; Chawla, 2009; Kals et al, 1999; Meyers et al., 2009; Pfattheicher, 2013; Shultz, 2000; Tam, 2013, Mayer and Frantz, 2004, Schultz & Tabanico, 2007; Clayton et al., 2011; Nisbet et al., 2009

[3]Berenguer, 2007; Chawla, 2009; Kals et al, 1999; Meyers et al., 2009; Pfattheicher, 2013; Shultz, 2000; Tam, 2013

[4] Mayer and Frantz, 2004, Schultz & Tabanico, 2007

[5]Clayton et al., 2011

[6]Kals et al., 1999

[7]Chawla, 2009

[8]Nisbet et al., 2009

[9]Myers, 2009; 2007; 2004; 2002; Ascione, 1992; Kohl & Wemmer, 2012

[10]Myers, 2007

[11]Cuff, 2014

[12]Eres et al. 2015

[13]Cuff, 2014

[14]Eres et al. 2015; Gerdes, 2013; Goldman, 2014

[15]Goldman, 2014

[16]Gerdes, 2013; Goldman, 2014

[17]Sims et al. in Myers, 2007

[18]Cuff, 2014

[19]Myers, 2007

[20]Myers, 2007

[21]Pfattheicher, et al., 2015

[22]Schultz, W. P. 2011

[23]Gene Myers personal communication on 5/28/15

[24]Shultz, 2000 and Berenguer, 2007.

[25]Myers, Sounders & Bexell, 2009

[26]Chudler, 2015

[27]Chudler, 2015

[28]Vygotski and Bandura in Crain, 2000

[29]Myers, 2007

[30]Crain, 2000

[31]Denham, 1998 cited in Myers et al., 209, p. 4

[32]Norbert Ross, Douglas Medin, John Coley and Scott Atran (2002) Their work shed light on culture's role in how we think about animals. They worked with groups of children from urban North American majority-culture, rural North American majority-culture and the rural Menominee Tribe. Through their research they found that only urban children tended to project a human model of thinking about animals behaviors. Rural children understood the biological and ecological needs of the animals better. Of the rural children, the Menominee youth showed even stronger understandings of biological and ecological reasoning at every age. Those these findings should not lead to wide-sweeping generalizations, however they suggested that this pattern was an expression of the 'everyday' or folkbiological knowledge passed on through their community and their interactions with their environment.

[33]Chudler, 2015

[34]Myers, 2007; Hoffman 1982

[35]Hoffman, 1982: When learning about social interactions in early years, Hoffman saw a lack of clarity between oneself and others

[36]Myers & Saunders, 2002; Myers, 2007; From another perspective, Myers explained that children do have a clear sense of who they are and how they relate to others but they cannot access the language to explore differences in perspective. He observed that children were able to understand that animals were living others that had different ways of interacting and behaving but they could not understand what they might be thinking.

[37]Myers, 2007

[38]David Sobel, 1996

[39]Myers, 2007

[40]Kohlberg in Crain, 2000; Myers, 2007

[41]Piaget in Crain, 2000

[42]Crain, 2000

[43]Crain, 2000

[44]Myers, 2007

[45]Myers, 2007, p. 4

[46]Myers, 2007

[47]Myers, 2007,

[48]Chawla, 2009, Myers, 2007

[49]Gene Myers personal communication 5/28/15, Jennie Warmouth personal communication 6/6/15

[50]Gene Myers personal communication 5/28/15, Chawla, 2009

[51]Dewar, 2013a

[52]Bandura in Crain, 2000, Myers, 2007

[53]Myers, 2007

[54]Hills, 1995; Gene Myers personal communication 5/28/15

[55]Dewar (2013 b) Our current state of mind affects how we perceive the experiences of others. Dewar found that when participants were thirsty they were more likely to think others were thirsty and parents emotional states affects how they perceive the emotional states of their children.

[56]Davis, Cocklin, Smith and Luce's, 1996

[57]The American Heritage® New Dictionary of Cultural Literacy; Root-Berstein, Douglas, Smith and Verissimo, 2013

[58]Root-Berstein et al., 2013

[59]Cited in Chawla, 2009. Gebhard, U., Nevers, P., & Billmann-Mahecha, E. (2003). Moralizing trees. In S. Clayton, & S. Opotow (Eds.), Identity and the natural environment (pp. 91-111). Cambridge, MA: MIT Press.

[60]Louise Chawla personal communication on June 2, 2015 "Anthropomorphizing is the initial opportunity to then move them to a more precise collaborative understanding of an animal's actual experience and behavior and what their behavior is communicating… So I think you start where children are and you go from there." Jennie Warmouth personal communication 6/6/15; Gene Myers personal communication 5/28/15;

[61]Myers, 2007, p. 92

[62]Chawla, 2009; Gene Myers personal communication 5/28/15; Especially in informal learning environments, empathic learning is greatly affected by the people you are with, Meridith et al., 1997

[63]Jennie Warmouth personal communication 6/6/15

[64]Chawla, 2007; 2009; Arluke, 2003; Bergman, 2004; Stout, 1999; Ornaghi et al., 2013; Myers, 2007 In a study done by Cheng and Monroe (2012) with 5,500 fourth graders participating in Lagoon Quest at Brevard Zoo, they found that teachers had a strong impact on students' relationship with nature.

[65]Nel Noddings Cited in Bergnam, 2004

[66]Chawla, 2007

[67]Louise Chawla personal communication on June 2, 2015

[68]Myers, 2009; Myers & Saunders, 2002; Stout, 1999

[69]Arluke, 2003; Myers, 2009

[70]Ornaghi et al., 2013

[71]Windschitl et al. 2012; Ornaghi, Brockmeier and Grazzani, 2013, p. 34. They engaged 110 first graders in 15 hours of classroom conversations about their emotions and the emotions of others. This process increased their ability to emphasize with others and improved their theory of mind.

[72]Myers, 2007

[73]Arluke, 2003; Pekarik, 2004, Hills, 1995

[74]Jennie Warmouth personal communication 6/6/15

[75]Hills, 1995, p. 141

[76]Myers and Saunders, 2002, 167

[77]Blizard and Schuster, 2007; Chawla, 2007, 2009; Cheng & Monroe, 2012; Kals et al., 1999; Matteo, Stephan and Lars, 2014. They found significant changes in kindergartener's emotional and cognitive affinity to the biosphere when they were able to spend more time in green spaces

[78]Chawla, 2007, 2008

[79]Myers, 2007

[80]Arluke, 2003; Kohl & Wenner, 2012; Myers, 2007; Myers et al., 2004

[81]Arluke, 2003; Kohl and Wenner, 2012; Myers, 2004, 2007; Myers and Saunders, 2002

[82]Arluke, 2003; Chawla, 2007, 2009; Cheng & Monroe, 2012; Myers, 2009

[83]Bandura in Crain, 2000; Chawla, 2009

[84]Louise Chawla personal communication June 2, 2015, 2009

[85]Myers et al., 2009

[86]Kohl and Wenner, 2012. Shelter dogs have been introduced into prisons to be trained by inmates. These programs show promising results in increasing empathy toward animals and other prosocial behaviors toward humans; Personal communication with Dezarae Jones-Hartwig on May 27, 2015. The Wisconsin Humane Society offers a series of empathy building programs for urban teens from Milwaki city-proper. Their PAL program pairs teens with shelter dogs. They learn animal behavior and body language, help care for and train behaviors, and teach other students about what they have learned. They also have the opportunity to provide care for rehabbing baby ducklings, which the majority of students cite as their most memorable experience. Overall, they see most students identify understanding that animals have feelings and that what they do makes a difference in animals lives as the most important thing they learned through the program; Nicole Mantz personal communication on May 3, 2015, At Cheyenne Mountain Zoo, guests can visit the Loft where they have the opportunity to help zookeepers feed and care for animals. Daily, zookeepers report 'defining moments' where they witnessed guests expressing new wonder and curiosity around the needs and experiences of animals.

[87]Gerdes at al., 2013

[88]Berenguer, 2010; Davis et al., 1996; Myers et al., 2009; Ornaghi et al., 2013; Schultz, 2000

[89]Berenguer, 2010. Student were asked to look at pictures of animals and people. They measured the student's empathy by observing their moral reasoning. For example, when the object was a human, peoples' reasoning was primarily anthropocentric whereas when they were asked to take the perspective of a vulture their reasoning was primarily ecocentric; Shultz, 2000 found similar results to Berenguer, 2010

[90]Myers, 2007; Varkey et al., 2006

[91]Shapiro, 1985, 1989 cited in Myers, 2007; Varkey, Chutke and Lesnick, 2006, When medical students mimicked the movements of elderly patients and role-played their experience their empathy for this population increased

[92]Myers, 2007, 2009; Stout, 1999

[93]Blizard & Schuster, 2007; Davis, 2004; Ornaghi et al., 2013

[94]Davis, 2004; Bilzard and Schuster (2007). Their work with fourth and fifth graders found that the type of story affected the quality of the children's experience and increased their connection to the environment; Ornaghi, Brockmeier and Grazzani, 2013, When students read stories about emotions they could predict the character's emotions and draw similarities and differences between themselves and the characters, increasing their empathy.

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