



ARTICLE

Empathy for Animals: A Review of the Existing Literature

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Abstract Empathy is often studied as it relates to humans. However, there is a increasing interest in its relationship, development and impact with non-human animals. This interest is often driven by a curiosity in empathy's role as an internal motivator for pro-environmental behavior change. As with many internal affective responses, the link is not always directly clear but growing evidence suggests that empathy towards others can influence the likelihood of pro-environmental behaviors as they relate to individual animals and potentially their larger communities or species. A hot zone for empathy development; zoos, aquariums, museums, sanctuaries, shelters, nature centers, and other informal environmental education organizations invested in animal conservation are challenged to understand, mitigate or capitalize on the empathy development already occurring in their institutions. These organizations provide opportunities for people to develop close relationships with individual animals, a critical step in the development of empathy. Their ability to facilitate hundreds of up-close interactions between humans and animals daily establishes these organizations as important venues for the exploration of empathy towards animals and its potential impact on promoting pro-environmental behavior. In this paper, we review some of the existing literature on empathy in relation to and with non-human animals, offer a definition as it applies to all species, and discuss key components of empathy development including barriers and promoters.

INTRODUCTION

As wildlife and wild places edge closer to extinction, humans are leading increasingly urbanized lives (United Nations 2014). With this urbanization comes a growing disconnect between people and the natural world (Turner et al. 2004). Environmental education seeks to reignite this connection and motivate people to take action on behalf of the environment (Hungerford and Volk 1990). A multitude of organizations and groups actively work to conserve wild animals and wild places. A subset of this group – including zoos, aquariums, museums, sanctuaries, shelters, nature centers, and other informal

learning facilities – offer opportunities for people to have educational experiences with wildlife and nature. Experiences in these settings are unique in that they provide impactful multisensory interactions with a diversity of animals that have the potential to influence participants' attitudes and behaviors based on their affective responses (Clayton et al. 2009; Miller et al. 2004). Research conducted in these facilities found visitors already possess an interest in animals and are therefore likely to experience affective responses when observing animals, including connectedness, associative identity, emotional affinity, and empathy (Berenguer 2007; Chawla 2009; Clayton et al. 2009, 2011; Kals et al. 1999; Mayer and

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Frantz 2004; Myers et al. 2009; Nisbet et al. 2009; Schultz 2000; Schultz and Tabanico 2007; Tam 2013). There is a body of research surrounding many of these affective responses in animal facilities, however there is a lack of substantive empirical research on empathy development in this domain, as it has historically been focused on companion animals in schools, healthcare, and humane education programs.

As we will expand upon, empathy is ever-present within zoos, aquariums, and other informal learning institutions wherein animals and their behaviors are constantly being interpreted to differing degrees of accuracy. As ambassadors for their wild counterparts, animals within these facilities and their human interpreters have a critical opportunity to build deep-rooted connections between the public and species in need. As William Godfrey-Smith describes (1979, 318), “The essential step in recognizing an enlarged community involves coming to see, feel, and understand what was previously perceived as alien and apart; it is the evolution of the capacity of empathy.” By not addressing the presence of empathy in the human-animal relationship, we let slip a powerful tool for developing internal motivation for conservation action and we risk supporting the growth of a community of animal-lovers with well-intended but misplaced or uninformed empathy. Through this paper, we will bring forward some of the literature to spark conversations and deeper questions surrounding the role of empathy in this new domain.

METHODS

In an effort to understand how empathy can be developed for animals, we began by conducting an initial exploration of the peer-reviewed literature for information concerning

the development of empathy for animals in informal learning environments. Finding limited research in this preliminary search, we conducted semi-structured interviews with seven leading experts in the field of conservation psychology and affect in relation to animals. Interviewees were chosen through purposive sampling. The interviewees approached were both supportive and non-supportive of professional animal care facilities, worked and wrote on the development of affect in children – including but not limited to empathy – had history working with animal care facilities, and were willing to advise in our research. They included: Gene Myers PhD psychologist and professor of environmental studies at Huxley College, Western Washington University, Carol Saunders PhD conservation psychologist at Antioch New England and formerly at Brookfield Zoo as Director of Conservation Psychology, Jennie Warmouth PhD educational psychologist conducting long-term research on empathy development with children and animals, Andrew Moss PhD conservation social scientist and education researcher at Chester Zoo, Kevin Kim-Pong Tam PhD Associate Professor at Hong Kong University of Science and Technology, Social Science Division, Louise Chawla PhD educational psychologist and professor in the Environmental Design Program in the University of Colorado Boulder, Associate Director of the Children, Youth and Environments Center for Community Engagement (CYE Center) and Co-editor of the journal *Children, Youth and Environments* and finally, John Fraser PhD Conservation Psychologist, Adjunct Professor in Earth Science at Indiana University, President and CEO of NewKnowledge, an interdisciplinary social science think tank. Among these interviewees, they have over 100 peer-review articles related to human’s affective relationships with animals

and of those 28 related closely to the development of empathy towards animals.

Interviews were conducted by phone, video conference or in person. Each interview was recorded with the subject's consent, transcribed and analyzed based on the following pre-set areas of interest: (1) research investigating the relationship between conservation behavior and the development of empathy, (2) best practices for fostering children's empathy towards a diversity of animals especially in live animal environments, (3) the potential for generalization of empathy from individual animals to entire species, (4) the role of anthropomorphism in empathy development and (5) existing assessment tools and strategies for measuring empathy development in informal learning settings. Though the interviews only present a selection of the current voices researching empathy development towards animals, these interviews helped provide specificity and depth into empathy's place in this unique learning environment and are cited as personal communication within this review. Using these cumulative sources, this paper will shed light on areas in which conservation organizations already are and could better impact the development of empathy for animals.

Empathy as a Construct

Over time and across disciplines, empathy has been defined and constructed in many different ways. Historically, research focused on empathy towards people. Studies show, however, that empathy towards animals is developed the same way as towards humans (Ascione 1992; Kohl 2012; Ruckert 2016); they are not different processes and one does not need to precede the other (Myers 2007). For the purpose of this review, we offer the following

definition of empathy that accounts for non-human animals:

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.

Defined as such, our encouragement for empathy development is dependent on the use of "accurate empathy". Throughout this paper, we will use the phrase "accurate empathy" to refer to an empathic response that is based in substantive knowledge of an animal's natural history, not projected assumptions. However, it is important to acknowledge that no matter how researched our empathy can be, it is always an approximation, especially when it comes to animals (G. Myers, personal communication May 28, 2015).

Empathy incorporates three distinct yet related abilities – affective empathy, cognitive empathy, and empathic concern (Cuff et al. 2014). Each of these processes occurs in separate parts of the brain but can all be used to take the perspective of another (Eres et al. 2015).

AFFECTIVE EMPATHY

Affective empathy is the ability to sense or physically experience the perceived emotions of another (Cuff et al. 2014; Eisenberg and Miller 1987; Mehrabian and Epstein 1972). For instance, when an individual observes someone experiencing an emotion, their brain responds similarly – almost as if they were experiencing the same stimulus (Eres et al. 2015). This process involves mirror neurons (Rizzolatti et al. 2001). Mirror neurons are hardwired into the brain to automatically respond to emotions in others – as in the case of sympathetic crying or contagious yawning (Goldman 2014). It is important to note that certain biological conditions affect how well mirror neurons can

function and grow but most people, and many animals, have this capacity (Gerdes et al. 2013; Goldman 2014; Perez-Manrique and Gomila 2018). There is limited research discussing whether or not mirror neurons respond in the same way when we perceive emotions in animals but initial evidence is promising (Myers 2007). This affective empathy response may be related to biophilia, our innate tendency and affinity toward the natural world (Kellert and Wilson 1995). Although whether we are responding to perceived emotion or actual expressed emotion from the animal may be debatable. This inherent affective relationship between people, especially children, and animals has long been a powerful building block for establishing care for the natural world (Kellert 2002).

COGNITIVE EMPATHY

Cognitive empathy is the ability to understand the experiences of others by recognizing and imagining their reality (Cuff et al. 2014; Davis 1996; Hoffman 1977). Demonstrated in humans and some non-human species, this is a learned mental skill developed as a person cultivates their theory of mind, or their ability to interpret and predict their own feelings and actions, as well as those of others (Perez-Manrique and Gomila 2018). Myers (2007) suggests that well-developed cognitive empathy relies on an understanding and ability to communicate through language how your experience compares and contrasts to others'. With cognitive empathy, the more one knows about the experience and perspective of another, the more accurate their cognitive empathy can be. For instance, while we may immediately feel affective empathic distress in seeing an animal distressed, through cognitive empathy we can pull from our understandings to inform our empathic conclusions. We may find that our

cognitive empathy supports our affective empathy, or as is common with animals, our cognitive empathy may not support our affective empathy. Visitors to an aquarium will often express sadness for an octopus housed in a small exhibit alone. As social beings that require and enjoy space, we struggle to accurately empathize with the needs of an octopus who, when given the choice, prefers to live alone and in small confined locations within the vast ocean. Cognitive empathy builds on our knowledge of an animal's individual natural history. Encouraging people to use their collective knowledge, life experiences and understanding of their own emotions can help them to accurately predict the emotions of animals (Myers 2007).

EMPATHIC CONCERN

Sometimes called compassion or motivational empathy, empathic concern asks that someone take action to relieve another's suffering (Eisenberg and Miller 1987; Mehrabian and Epstein 1972; Pfattheicher et al. 2015). Empathic concern toward animals may mean helping a pet that has been injured, or untangling a sea turtle trapped in fishing nets. It builds on the affective empathy we feel and the cognitive empathy we understand to prescribe action to relieve another's suffering. Presenting a unique challenge in terms of temporal and physical scale, conservation-centered education facilities focus heavily on working to improve the conditions of animals in the wild (Patrick et al. 2007; Rabb and Saunders 2005). The interpretive task, particularly for facilities housing animals, is to foster empathic concern for animals in the wild, as opposed to animals in their care. One tool for this framing is positive empathy, defined for our purposes as the motivation to help sustain or extend a positive state of being for

another by empathically sharing positive feelings such as joy, playfulness, satiation, positive social relationships or rest with the animal. Positive empathy is an emerging research area and thus a promising area for future investigation (Morelli et al. 2015). Distinct from negative empathy, or empathic sorrow, one's ability to feel positive empathy (or empathic joy) has important connections to social competence (Sallquist et al. 2009) and intergroup relationships by encouraging people to act positively toward others (Pittinsky and Montoya 2016). Positive empathy can also inspire its own suite of prosocial behaviors, such as spending, helping, or emotional support, though these connections have thus far been primarily indirect or correlational (Morelli et al. 2015; Telle and Pfister 2016). For instance, a zoo guest might donate money to purchase enrichment items for the elephants because they love watching them play when they visit the zoo and they want to help the elephants experience the positive outcomes related to enrichment, such as curiosity, activity, or fulfillment of social and biological needs. Similar to negative empathy, research on positive empathy among humans suggests that people are more likely to feel positive empathy for individuals with whom they have a close relationship (Gable and Reis 2010). Research on positive empathy suggests that people may be more likely to take action when they believe that that action will have a positive influence on the recipient, or that they will receive positive feedback or feelings (Batson et al. 1991). From a conservation standpoint, a facility might focus on how we can help preserve and improve the lives of wild animals by fostering visitors' understanding of what make these animals happy or thrive instead of focusing on the suffering of their wild counterparts.

Empathy and Behavior Change

By taking the time to feel or understand the emotions, experiences and needs of an animal, we may encounter situations where we empathetically recognize an unmet need or a chance to improve the life of an animal. In these moments we be more likely to take conservation action because of our empathetic connection to that animal. Conservation facilities' missions are rooted in their ability to affect behavior change. Motivating visitors to take pro-environmental action depends on a complex interplay among barriers, incentives, affective outcomes, and internal motivators (Hines et al. 1987; Kollmuss and Agyeman 2002; Schultz 2011). Internal motivators help answer the question of "why care". Empathy, as an internal motivator, can be an important factor in predicting an individual's willingness to take conservation action as it closely relates to the experience of another (Berenguer 2007; Chawla 2009; Kals et al. 1999; Myers et al. 2009; Schultz 2000; Tam 2013). For example, empathy can play a strong role in motivating someone to put a bowl of water out for a dog panting in the hot sun or donate to a campaign to save shelter animals after watching a empathy triggering video or hearing about a triumphant rescue story. Empathy's relationship with behavior varies depending on the desired behavior. The closer the behavior is linked to the experience of an animal, the more likely empathy will trigger a response (G. Myers, personal communication May 28, 2015). Empathy itself is not enough to change more complex behaviors where barriers, incentives and empowerment come into play (L. Chawla, personal communication June 2, 2015). The most common barriers or incentives that impact proenvironmental behavior change no matter the internal motivation, are prompts, commitments, feedback, social norms,

incentives, and convenience (Schultz 2014). A visitor might feel strongly empathy for sea animals getting trapped in plastic and want to take conservation action to reduce their plastic use but they are more likely to actually follow through with this change if there are clear and convenient alternatives, incentives for taking the action, measurable feedback for how their action is helping and social pressure to make the switch. There is research supporting an increased likelihood of more complex conservation behaviors if the person is prompted to feel empathy or compassion for the animal. Pfattheicher et al. (2015) found that compassionate feelings for the suffering of others were related to a person's pro-environmental values, pro-environmental intentions, and reported donations to environmental organizations. Furthermore, research by Schultz (2000) and later replicated by Berenguer (2007) found that participants prompted to take the perspective of an animal, or empathize with it, experienced increased biocentric concern and increased commitment to take conservation action on behalf of the animal. They could predict an individual's willingness to take conservation action based on their engagement with empathy triggering activities. Even with this encouraging evidence, there is still much to be explored in the relationship between empathy and conservation behavior change, including how easy it is to translate empathic concern for an individual to a larger, more abstract group of others, like a species. Carol Saunders suggests that the work that professional animal care facilities are doing to bridge the distance between people and animals "opens a new domain" for empathy research (C. Saunders, personal communication June 3, 2015).

Overall, research and theory suggests that empathy has the potential to be an effective affective motivator and predictor of helping

behavior towards others, although it may not directly lead to the uptake of complex conservation behaviors.

Development of Empathy

Empathy, like other emotional and mental capacities, is developed over time and reinforced through our interactions with the world. Myers et al. (2009) described empathy development as a cognitive-socioemotional-moral development process. Cognitively, some argue that evidence of empathic action in the form of sharing can be seen in children as young as a year old, though the motivation behind these actions can only be speculated (Baillargeon et al. 2011; Paulus 2014). As children's brains develop, they have the potential to grow their capacity from a simple affective response to more complex, nuanced and abstract reasoning (Kellert 2002; Kohlberg 1984; Piaget 1997). Ruckert (2016) worked with children and their development of reasoning around protecting endangered species, finding that as children practice and develop their empathic abilities over time, they are better able to predict or imagine the experiences or perspectives of animals very different from themselves. Socially, children begin seeing animals as anthropomorphic peers but improve their understanding of diverse perspectives as they practice social relationships and develop their theory-of-mind (Crain 2000; Hoffman 1982; Myers 2007). These social relationships with parents, peers, and animals have the potential to support or hinder empathy development. For instance, the role of the parent's socialization and modeling during toddler years is instrumental in supporting the development of empathy throughout the child's life (Chawla 2009; Paulus 2014; Taylor et al. 2013). On the other hand, children growing up in homes with "hostile negative emotions" can struggle to build

empathy, as their low ego-resiliency due to stress can impede their ability to empathize (Myers et al. 2009, 4; Taylor et al. 2013).

Beyond interactions in the home, the community and cultural environments in which a person develops also shape their empathic values and abilities (Cassels et al. 2010; Friedlmeier and Trommsdorff 1999; Trommsdorff 2013). Through the lens of domain theory, Smetana explored how children develop their understanding of moral concerns, much like empathy, through “reciprocal individual-environmental interactions” that vary depending on differing developmental tracks (2006, 4). Knowledge and reasoning about animal’s experiences can also be impacted by the developmental environment. A study working with groups of children from an urban North American majority-culture, a rural North American majority-culture and the rural Menominee Tribe found that the environment in which children developed played a role in the perceived needs of animals (Ross et al. 2003). Urban children tended to use a human model of thinking about animals’ behaviors while rural children better understood the animals’ biological and ecological needs, improving the accuracy of their cognitive empathy. Of the rural children, the Menominee youth displayed stronger biological and ecological reasoning at a younger age. The authors suggested the variance was an expression of the knowledge passed on through their communities and interactions with their environment.

Empathy Eliciting Characteristics

Within zoo-like facilities, there are a diversity of animals vying for the empathy of visitors. Professionals in the field notice a huge variance in animals’ ability to elicit empathy. Myers (2007) discusses the differing abilities animals

have to elicit empathy, suggesting that all animate creatures, including people, present different variations of characteristics that influence their potential to elicit empathy. To this end, Myers presents four characteristics that, if possessed, increase an animal’s ability to elicit empathy: agency, affectivity, coherence, and continuity. Agency refers to the ability of an animal to move, eat, play, groom, and present behaviors related to social roles, similar to human behaviors. Affectivity represents an animal’s ability to show emotion. Emotion is sometimes hard to observe in animals so people most often attribute emotions to vitality affect, or the animal’s patterns and qualities of arousal over time. This is connected to the concept of “belief in animal mind,” which addresses the understanding that an animal has feelings and thoughts (Hills 1995). Coherence means that an animal is easily understood as a whole animal with arms, legs, body, and face. One particularly impactful characteristic is the presences of eyes (Jipson and Gelman 2007; Myers et al. 2009). Lastly, continuity describes how more time spent with the animal increases a person’s understanding of and empathy towards that animal.

When considering the diverse species represented within animal conservation facilities, this information exposes unique challenges. Animals like sea anemones or barnacles meet very few, if any, of the characteristics for eliciting empathy. Chawla (L. Chawla, personal communication, June 2, 2015) sees hope for the less charismatic animals in observing children’s empathic interactions with ladybugs or scientists mourning over the death of a protozoa (G. Myers, personal communication, May 28, 2015). On the other hand, animals who exhibit many of these empathy eliciting characteristics, like primates, pachyderms and canines, elicit empathy very easily (Webber et al. 2017). This can present a challenge in live animal

environments when a great deal of empathy is felt for an animal but the observer may lack a deeper cognitive understanding of their experience.

Barriers to Empathy Development

Beyond these physical and behavioral characteristics, other factors affect the development of accurate empathy towards wildlife. Significantly affecting the interpretation of the animal's behavior and experience, language choice and narrative influence the perception of the animal and his/her actions (Chawla 2009; G. Myers, personal communication, May 28, 2015). When referring to animals, Jennie Warmouth (J. Warmouth, personal communication June 6, 2015) focused on the impact of pronoun choice and how impactful it is to choose "her" or "he" instead of "it." This moves the animal from an object to an individual with a particular perspective. Also, cultural narratives create beliefs that do not match biological or ecological realities, as is the case with spiders, snakes, or sharks (Myers 2007). For instance, movies can portray certain animals as evil or malicious instilling fear that impedes one's ability to consider the animal's experience. Furthermore, conflicting messaging about animals' value, obscuring who is worthy of moral consideration, may have an effect on a person's ability to feel empathy for that animal. Society does not provide clear reasoning for why some animals are considered pets while other are pests, food or objects for research (Chawla 2009; Myers 2007). Overall, these barriers of language choice and narrative framing surrounding animals and their experiences can be powerful tools to promote or dissuade empathy.

When considering barriers we cannot ignore that there is also the potential to elicit too much empathy. Starting as early as

elementary school, if people are overloaded with highly emotionally triggering experiences, their minds can protect them by disengaging (Dewar 2013a). People express this moral disengagement by justifying their negative actions, shifting the blame to remove personal responsibility, disregarding the consequences as out of their control, or dehumanizing the victims (Crain 2000; Myers 2007).

Finally, the development of accurate empathy is challenged by our natural tendency to project our understandings and experiences onto others. We can never know with certainty what it is like to be another; we can only infer to differing degrees of accuracy (Hills 1995; G. Myers, personal communication, May 28, 2015). Furthermore, Dewar (2013b) found that if someone is in a 'hot' emotional state (stressed, angry, sad, in pain) or has recently experienced these 'hot' emotions they are more likely to over-perceive similar emotions in someone else. Without diminishing the value of empathy, there is considerable debate as to whether we can ever completely accurately understand the experience of another.

Anthropomorphism

Sometimes a barrier to accurate empathy, anthropomorphism is a type of projection that involves assigning human characteristics and purposes to inanimate objects, non-human animals, or plants. Root-Bernstein et al. (2013) suggested that this innate human practice could be measured on a spectrum. At one end of the spectrum, people see animals as an unknowable other beyond moral concern, whereas at the opposite end, animals are believed to experience the world just like humans (Hills 1995; Root-Bernstein et al. 2013). Both can be detrimental to promoting empathic behavior. However, anthropomorphism can be used to understand

animal motivations and bring them into a sphere of moral-inclusion (De Waal 2000), and in this way can be a tool for building empathy and promoting conservation behavior.

Anthropomorphism can both help and hinder one's ability to accurately empathize with others. When true similarities are found with animals, anthropomorphism can help people better understand or empathize with the animal (Chawla 2009; J. Warmouth, personal communication, June 6, 2015). Anthropomorphism has also been linked with feelings of compassion or empathic concern (Sevillano et al. 2007; Tam et al. 2013). Whether our projections are correct or not, when we see animals as human-like, we have a greater likelihood of considering them worthy of moral-consideration and in turn, worthy of protection. Assuming we know what the appropriate actions are, anthropomorphism has potential to motivate conservation action (Tam et al. 2013). Young children, especially, benefit from anthropomorphism and its ability to make animals relatable (Gebhard et al. 2003; Myers 2007; C. Saunders, personal communication, June 3, 2015). However, as people mature, if they continue to project their personal experiences without trying to cognitively understand the animal's, it can lead to incorrect empathy that can negatively impact animals and people (Arluke 2003; Root-Bernstein et al. 2013; J. Fraser, personal communication, August 4, 2015). This can be seen when humans project our understanding of our infants' needs on young animals. People will come across baby deer curled up and alone, assume that it is abandoned and bring it to an animal rescue not understanding that the mother has left the baby there purposefully and will be back to collect it. Also, there are the accounts of people believing they can communicate with wolves or bears and end up dying or becoming seriously injured due

to their incorrect empathy. During our interviews with New Knowledge they cautioned that our sensory experiences of the world are dramatically different than animals so even if we try we will never know what it is like to be another species. Therefore, anthropomorphism might help activate compassionate emotions for these animals but our sensory perception of that experience is not an accurate representation of the animal's experience. It could very easily be dramatically better or worse than what we feel. For instance, we might be able to imagine but will never truly understand the world from the perspective of an animal that relies on echolocation instead of sight.

Zoos and aquariums have experimented with the use of anthropomorphism to differing ends. Animal keepers and caregivers often use anthropomorphism as an effective tool for making welfare decisions, despite the negative perceptions of anthropomorphism as a potential for misconstrual of animal experiences (Palmer et al. 2016). Some zoos encourage the use of anthropomorphism in young children as a way of encouraging connection to animals, particularly through play (Crumb 2014). Anthropomorphism has also been observed in conversations among zoo visitors, particularly with animals with more strongly anthropomorphic characteristics, such as mammals (Patrick and Tunnicliffe 2012).

It is important to note that the perspective of anthropomorphism as a negative construct is primarily isolated to western Judeo-Christian cultures. Many cultures around the world have a long positive history of perceiving animals as peers or fellow animals (W. Wong, personal communication, September 10, 2016).

Even with the challenges anthropomorphism presents, philosophers and researchers alike suggest that discouraging it may be futile since it is always occurring (Chawla 2009;

Hume 1957). Instead, theorists suggest that anthropomorphism could be the initial point of engagement for educators to activate learners towards a more accurate understanding (L. Chawla, personal communication, June 2, 2015; G. Myers, personal communication, May 28, 2015). Focusing on “enlightened” anthropomorphism, or the projection of accurate similarities between human and non-human animals, uses empathy to appropriately understand the needs of an animal at a deeper level of personal experience (Chawla 2009; Gebhard et al. 2003; Schultz 2000). In relation to children, Chawla (L. Chawla, personal communication, June 2, 2015) suggests that kids are reasoning about similarities and differences between themselves and animals from a young age so the best strategy is to meet them where they are at and work to develop a more accurate understanding or deeper emotional response. Across the spectrum, educators are challenged to encourage the development of accurate cognitive empathy by recognizing similarities and differences between human and non-human animal experiences (Chawla 2009; Schultz 2000; L. Chawla, personal communication, June 2, 2015; G. Myers, personal communication, May 28, 2015;).

Empathy Best Practices

When exploring research conducted around the best practices for developing empathy, several themes emerged in the literature including; framing the narrative and information given, getting to know and providing care for others, providing empathy role-models and activating the imagination. To start, we can increase empathy by intentionally framing the animal’s story to give them individuality, motivations, and experiences while also choosing information that draws similarities

between us and them (Chawla 2009; G. Myers, personal communication May 28, 2015; Myers 2007; Ornaghi et al. 2013). For instance, if a crab is resisting being picked up and the educator expresses, “We are going to let him be, he does not want to come out of his home today,” they are acknowledging that ‘he’ has a subjective experience and ‘his’ own intentions that can be respected. Also, there is a strong relationship between the amount of time we spend interacting with, caring for and getting to know nature and our connection with it (Blizard and Schuster 2007; Chawla 2007, 2009; Chen-Hsuan Cheng and Monroe 2012; Kals et al. 1999; Matteo et al. 2014). Chen-Hsuan Cheng and Monroe (2012) found the students’ connection to nature, including empathy for creatures, was positively associated with the amount of time spent in nature during the Lagoon Quest program at Brevard Zoo. Continuing on, role models influence the values, ways of thinking and actions we see as valuable (Arluke 2003; L. Chawla, personal communication June 2, 2015; Chawla 2009). The most powerful role models have long standing relationships with the children to model, encourage and praise patterns of behavior (Arluke 2003; Chawla 2009; Chen-Hsuan Cheng and Monroe 2012). Finally, the most well-researched method for building empathy is activating the imagination. This occurs when we engage in perspective taking through reflection, storytelling, role-playing, and mimicry (Blizard and Schuster 2007; Davis et al. 1996; Myers 2007; Varkey et al. 2006; Stout 1999; Ornaghi et al. 2013). When people cognitively or physically take the perspective of another, they practice empathy and in turn can increase their concern for the animal’s wellbeing (Berenguer 2010; Davis 1996; Myers et al. 2009; Ornaghi et al. 2013; Schultz 2000).

Empathy in Animals

The conversations around the validity of anthropomorphism are becoming more and more complicated as our knowledge and research around animal cognition grows. Perez-Manrique and Gomila (2018) collected an extensive review of the existing literature on sympathetic concern and empathic perspective taking demonstrated in non-human animal species. Focusing on the more advanced cognitive empathy abilities, they put aside trying to predict motivation, and instead looked at a host of studies and the behavioral and physiological reactions and responses of animals to their distressed peers. They found a wide range of evidence that fit their strict criteria for displaying empathic responses in animals from great apes, monkeys, dolphins, whales, corvids, voles and rats. One of the studies they reviewed found that rats will ignore treats to rescue a neighbor from a water bath and are even more likely to help when they have experienced the watery bath themselves (Sato et al. 2015). However, through their analysis of the existing research, they did find a general absence of systematic measurement needed to fully understand and compare the complex empathic abilities of animals. Even so, evidence seems to suggest that non-human animals, much like humans, present not only basic affective empathy but are capable of complex emotional experiences as well.

LIMITATIONS

In compiling this work, inherent limitations arose and should be recognized. To begin, the topic of empathy towards animals and empathy development in general is vast and, especially in the last few years, the published research has grown dramatically. Therefore, our

intention was not to capture all the possible research currently published on this topic. Instead, we focused specifically on the areas that were applicable to empathy for animals, hoping to begin a conversation that will advance our understanding of the role of empathy in the formation of relationships among humans and animals. Furthermore, this work presents one perspective towards the use of empathy in relation to animals. It is important to recognize alternative viewpoints. Some would argue that, by their very nature, facilities where animals are contained within exhibits that stimulate, fabricate and re-create reality limit the level of intimacy and depth that interactions with wild animals provide (Kahn and Kellert 2002). The animals in exhibits demonstrate different levels of comfort, desire or stress within their environment than their wild cousins, making it difficult to accurately generalize an animal's needs. Also, others feel that the very nature of viewing animals on exhibit separates the viewer from the animal and their experience (Berger 1991). Berger suggests that, in these moments, the animal loses its subjectivity and can only be observed. This objectification of the animal would make empathy difficult or impossible based on our previous discussions. Moving forward it will be important to assess the role empathy plays in each individual facility within the diverse field of animal conservation to understand its strengths and possible limitations.

CONCLUSION

The relationship between animals, empathy development and the mission for conservation is full of rich conversations and even more questions. We set out to open up the conversation and connect existing research on empathy development towards animals with the work being done in animal conservation facilities like

zoos and aquariums. Through this process it became very clear that we have only begun to understand the depth and potential of empathy for individual animals and eventually for their species. Many questions still linger around the strength of empathy as a motivator for more complex conservation action, the generalization of empathy from individuals to populations or species, and the potential of positive empathy as an alternative to suffering-driven compassion. Empathy in itself is a remarkably complex construct that is built over time and throughout myriad life experiences; for our purposes, we can best understand the role we play in empathy development through the behavioral correlates we observe. What we can say with certainty is that empathy can play an important role in understanding the experiences and needs of animals with potential avenues for affecting conservation behavior. Everyday more and more research is published exploring the links between people, animals, empathy and behavior.

It seems that visitors to animal conservation facilities are engaged in empathic thinking when observing and interacting with animals. This thinking is shaped and mitigated by both the visitor's previous life experiences and their interactions with animals, people and the environment in a facility. Even though the former interactions are often brief in the lifetime of an individual, they take place in powerful multi-sensory environments that inspire awe, wonder and develop strong cognitive connections with the non-human world (G. Myers, personal communication May 28, 2015). These connections can be affective, cognitive and aim to inspire compassionate empathy for the animal's wild counterparts. As practitioners we must attend to the ever-present empathy development occurring with children and adults within our facilities.

If we fail to address the presence of empathy in the human-animal relationship, we may ignore a powerful tool for developing internal motivation for conservation action.

However, to successfully employ this construct, practitioners must better understand its many forms, how it develops and what hinders and supports its growth within individual facilities. Therefore, as empathy research moves forward, it will be important to take a deeper look at the implications and effects of empathy-considerate education in the development of positive action in service of animal conservation within zoo-like facilities and beyond. **END**

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