MuseumsForward

Exploring empathy: The valence of visitors' empathy for zoo animals

Devonshire Lokke

Abstract

In the face of intensifying challenges wrought by our global climate crisis, informal science education institutions are embracing missions to repair human-nature relationships, in an effort to inspire environmentally-beneficial behavior change in the public. The purpose of this study was to further explore the pathway of empathy as a mediator between visitor experience and pro-environmental behavior, by more robustly characterizing the nature of human empathy for animals during self-guided zoo visits. The researcher interviewed 40 visitors to Woodland Park Zoo in Seattle, Washington about their empathy for animals. Study results show that visitors more frequently described experiencing positive affective empathy for animals at the zoo, but more often characterized their motivational empathy for animals' wild counterparts as negative. Findings reinforce previous research that suggests both empathy fatigue and lack of self-efficacy as major barriers to linking empathy with pro-environmental action. Implications for future research include further exploration of positive and negative empathy for animals as distinct in studies on the experience of zoo visitors. Implications for practice suggest that zoo professionals incorporate empathy best practices into informal interpretation planning, as well as continue pursuing efforts to inspire self-efficacy by offering visitors actionable ways to act on behalf of animals in response to their meaningful, empathetic animal encounters.

Keywords

empathy; zoo; animals

Committee Chair

Jessica J. Luke

Committee Members

Mary Jackson; Sarah Brenkert; Gregory Bratman

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Introduction

> *"It is not the land that has been broken, but our relationship with it... Nature herself is a moving target, especially in an era of rapid climate change. Species composition may change, but relationship endures."*
> Robin Wall Kimmerer, Braiding Sweetgrass, 2013

Humans, together with all other living beings on this planet, face an unparalleled climate crisis. Equipped with missions to inspire pro-environmental action and significant public trust, zoos and other informal educational institutions are turning towards empathy as a potential tool for strengthening human-nature relationships. Empathy is often understood to be characterized as three distinct abilities – affective empathy, cognitive empathy, and motivational empathy – and empathy for animals has been shown to correlate with pro-environmental behavior change. This article summarizes a study that explored positive and negative empathy as distinct experiences, and sought to describe how visitors characterize their empathy for animals during a self-guided zoo visit.

The Climate Crisis and a Call for Pro-Environmental Behavior

Scientific consensus demonstrates that human-caused climate change is triggering a variety of effects that put biodiversity, which both defines our unique planet and keeps our ecosystems thriving, under immediate threat. From natural disasters and extreme weather events exponentially increasing in frequency and intensity, to more gradual but devastating habitat loss - melting ice at the poles, sea-level rise, disappearing rainforests, acidifying oceans, this loss of biodiversity is not only devastating in and of itself, but also further exacerbates harmful effects within interrelated ecosystems. As a part of these ecosystems, humans are not immune to such threats, as they exacerbate refugee crises, public health emergencies, and deepened global inequity (Lyons and Bosworth, 2019).

Leaders in the field of environmental education are seeking to increase so-called pro- environmental behavior by rekindling human-nature relationships and motivating people to take action on behalf of the environment (Hungerford & Volk, 1990; Mantyka-Pringle, 2015; Turner, Nakamura, and Dinetti, 2004). Defined by Stern (2000), pro-

environmental behaviors are "those that positively impact the availability of resources for life on earth or that maintain the dynamics of ecosystems and the biosphere" (p. 408). Pro-environmental behaviors can be individual or collective actions, from reducing carbon-emissions by taking public transit or avoiding meat consumption, to enacting sweeping pro-environmental policy measures on a local to global scale.

Answering the Call: Zoos Explore Empathy

Institutions of informal science education, such as zoos, aquariums, and nature centers, are exploring ways they can inspire pro-environmental action. In particular, zoos accredited by the Association of Zoos and Aquariums (AZA) have outlined missions to both educate the public about biodiversity conservation and encourage behavioral change (AZA, 2019; Falk, Reinhard, Vernon, Bronnenkant, Heimlich & Deans, 2007; Woodland Park Zoo, 2019). Studies of zoo visitors suggest that they generally support such missions, viewing zoos as trustworthy conservation communicators (Ballantyne & Packer, 2016; Falk et al., 2007; Grajal, Leubke & Kelly, 2016). With this level of public trust, according to Rabb and Saunders (2016), zoos hold the power to "become transformative models, inspiring and motivating urban people around the globe to have a more harmonious and sustainable relationship with the natural world" (p. 1).

To utilize their influence, zoos are turning towards empathy for animals as a potential solution for strengthening human-nature connections. For example, the newly formed Advancing Conservation through Empathy for Wildlife (ACE) network, consisting of 20 AZA accredited zoos in the Northwest US, "envisions a conservation-minded society motivated by empathy towards all life" (Woodland Park Zoo, 2015). As the Woodland Park Zoo in Seattle, Washington summarizes, "when it comes to taking conservation or caring action, people need more than knowledge of what to do and why to do it: They also need a personal, emotional connection, and that's where empathy comes in" (Woodland Park Zoo, 2019, p. 1).

What is Empathy?

Empathy is a complex and multifaceted concept, but can most simply be described as "a stimulated emotional state that relies upon the ability to perceive, understand, and care about the experiences or perspectives of another" (Young, Khalil & Wharton, 2018, p. 329). Zoo

and aquarium studies show that visitors are not only capable of feeling empathy towards certain animals during their visit, but also across a breadth of animal species, from mammals to invertebrates (Knudson, 2019; Young et al. 2018). We also know from psychology research that empathy can be both dispositional and situational, both a trait and a state, both innate and learned (Tan, 2013; Young et al., 2018). Empathy can be developed over time and reinforced through our interactions with the world around us (Myers, 2009; Young et al., 2018).

Some indicators of empathy are observable and measurable, while others are more intrinsic cognitive states. Empathy may manifest as a variety of behaviors, including understanding an animal's needs, perspective taking, demonstrating appreciation, respect, interest or curiosity for an animal, expressing a desire to help an animal or species, demonstrating caring behavior or beneficial action towards an animal, and recognizing an animal as an individual with agency (MECAP Measuring Empathy: A Collaborative Assessment Project, Measurement Tools, 2019).

The literature presents empathy as three distinct yet related abilities. One is termed affective empathy, or "the ability to sense or physically experience the perceived emotions of another" (Young et al., 2018, p. 329). This type of empathy is characterized by an emotional response to others, expressed by reflecting their feelings in action or expression. A second is cognitive empathy, or "the ability to understand the experiences of others by recognizing and imagining their reality," often evoked by a combination of taking the perspective of another with an understanding of the context of their experience (p. 330). Finally, perhaps with the most relevance for a zoo aiming to inspire conservation action, motivational empathy (sometimes called compassionate empathy or empathetic concern) is "the ability to feel and show appropriate concern in response to another's needs and be moved to help in some way" (p. 330).

The majority of existing research on empathy implies that motivational empathy involves showing concern and empathizing with another's negative emotions, such as pain or suffering. However, increasing evidence supports viewing positive empathy, or empathizing with another's positive emotions, as its own distinct capability (Andreychik & Lewis, 2017; Young et al., 2018). For the purpose of this study, negative empathy is defined as sharing in the perceived negative emotions – fear, pain, or suffering – of an animal, and wanting to help alleviate those feelings (Young et al. 2018). Positive empathy, on the other hand, is defined as "the motivation to help sustain or extend a positive state of being for an animal by empathetically sharing positive feelings, such

as joy, playfulness, satiation, positive social relationships or rest with an animal" (p. 331).

When applied to motivational empathy, positive empathy, according to a study by Morelli (2015), might motivate us to take pro-social actions such as "spending, helping, or [offering] emotional support" (p. 58). In a zoo setting, for instance, when a guest donates money to help buy more enrichment items for an animal, because they have shared in its joy while watching it play, there might be positive motivational empathy at work (Andreychek, 2019; Mitchell, 2009; Morelli, Rameson & Lieberman, 2014).

Connecting Empathy, Motivation, and Pro-Environmental Behavior

Although the potential causal pathway between empathy, motivation and action is still an area of active inquiry and research, there is promising evidence that empathy is strongly correlated with a motivation for pro-environmental behavior. Many studies support the idea that zoos are uniquely poised with the potential to influence such change in attitudes and behaviors through impactful, multisensory interactions and close-up experiences with wildlife and nature (Clayton et al. 2009; Miller et al. 2004; Young et al., 2018). Several studies indeed show correlations between empathy for animals, increased concern for the environment, and environmental self-efficacy (or one's perceived capability and intent to take pro-environmental action) (Berenguer, 2007; Berenguer, 2010; Johnson, 2019).

Despite mounting evidence of the correlation between empathy and action, other studies highlight the limits of empathy and related emotions in their effectiveness as motivators. In particular, studies in the health sciences field show that consistent negative empathy is strongly correlated with burnout, or "compassion fade," even in highly empathetic individuals (Slovic, 2020). For Zoo professionals studying empathy in the context of a climate crisis, mitigating the effects of this "empathy fatigue," which may cause people to withdraw from conservation education rather than feel motivated to act, seems to be a commonly shared concern (Seattle Aquarium, 2020).

Similarly, there is concern from the perspective of climate change and conservation communicators that negative emotions, many of which are attributed to empathy – feelings like dread, fear, pain, suffering, concern, worry, and loss of another or for another's wellbeing – are not effective in the long-term for motivating the sustained pro-environmental action that we need, nor do they seem to be applicable

towards motivating action for the benefit of larger groups of individuals or exponentially broad problems (Roberts, 2017; Slovic, 2020).

However, a promising recent study by Andreychik (2019) proposes that "whereas strong and repeated connection with others' negative emotions can place individuals at greater risk for burnout, connecting with others' positive emotions may help protect against burnout" and even increase overall well-being (p. 147). Although the existing literature on empathy in zoos and aquariums rarely makes the distinction between positive and negative empathy, further exploration inspired by emerging insights like Andreychek's could lead to a better understanding of how positive and negative empathy occurs in zoo experiences. It is possible also that eliciting positive empathy for a zoo animal may be a more effective long-term motivator for pro-conservation action, in the face of increasingly negative emotions surrounding the endangered or suffering state and wellbeing of that species' wild counterpart (Young et al., 2018).

In summary, we know that zoos, as sites of informal conservation education, foster empathetic experiences in visitors toward animals. However, we know less about the complex nature of these experiences, and it is not yet differentiated in these organization's empathy initiatives whether they intend to elicit positive or negative empathy, or if the difference between the two significantly impacts intent to take pro-environmental action. Once we know more about the positive or negative nature of these experiences, future studies may be able to explore whether strategies encouraging either positive or negative empathy and associated emotions (joy, curiosity, fear, worry, loss, etc.) are more effective in zoo visitors for eliciting pro-environmental self-efficacy or action. The results of such studies might confirm or challenge research in other areas, such as climate change science communication, which are challenging appeals to negative emotions as the most effective intrinsic motivators for action.

Study Purpose

The purpose of the study described in this article was to better understand the nature of visitors' empathy towards animals during their visit at zoos. The study was guided by two key research questions:

1. How much of visitors' empathy for animals at zoos is positive vs. negative?

2. How do visitors characterize their feelings of positive and negative empathy?

Study Design

As defined by Creswell (2013), this study used a descriptive survey design, in that the data were collected from a sample of people with the goal of generalizing findings to a wider population of self-guided zoo visitors in the US. Specifically, the study used a two-part facilitated interview to gather qualitative and quantitative data, in order to describe adult visitors' experience during their zoo visit.

Sampling Strategy

Participants were recruited on-site at the Woodland Park Zoo, Seattle, WA, following social distancing guidelines put in place to reduce the risks of COVID-19 infection (the researcher and interview participants were wearing masks, and participants were approached and recruited at a 6ft distance), as well as virtually through social media platforms (Instagram and Facebook) of WPZ. Participants were approached at random and offered a small incentive (a sticker or a pencil) as a thank you if they agreed to participate, as well as a chance to win a Zoo Family Passport membership. Those who agreed were asked to take a photograph of one of four animals during their zoo visit, which was used during the post-visit interview to prompt participants' reflection about their experience. The predetermined animal types were selected based on evidence about shared characteristics that are most likely to correlate with human empathy, involving charisma, how familiar they are to most humans, how similar they are to humans biologically, and accessibility for visitors within the zoo (Myers, 2009). When reflecting on their experiences at the zoo, 13 participants of the 40 chose to talk about their visit with the gorillas, 13 chose the red pandas, 7 chose rhinos, and 7 chose the snow leopard.

Description of Sample

A total of 40 adults were interviewed. A majority identified as female (66%, n=25), followed by male (32% n=12), and 1 person identified as nonbinary (3%). The majority of participants (70% n=28) were interviewed in person, immediately after their visit, outside the entrance to WPZ. The remaining (30%, n=12) were interviewed virtually, over Zoom, within 3- days of their visit to WPZ.

Most participants (73%) were between the ages of 19 and 30 (n=12) or 31 and 40 (n=15). About half of participants were visiting with someone under the age of 18 (55%, n=21), a little less than half were currently members of WPZ (47%, n=18), and the majority were return visitors (84%, n=32) who had been to the zoo within the last year (55%, n=21). Forty-five percent of participants (n=17) had previously attended some kind of program or event hosted by WPZ, such as ZooLights, ZooTunes, Summer Camps, or WildBites. The majority of the sample was local to the Seattle area (58% n=22), 89% were visiting from somewhere within Washington State (n=34), and a few visitors were from Idaho (n=1), Utah (n=2), and Arizona (n=1).

Data Collection Procedure

Data were collected through a two-part facilitated interview (see Appendix A). Part one assessed whether or not visitors experienced affective empathy in a situational context, during their visit with one of four pre-determined animal groups: the gorillas, the snow leopard, the rhinos, or the red pandas. To do this, the researcher adapted five-items from the Shedd Aquarium's conservation learning instrument, designed to measure visitors' affective empathy on a 1-10 scale (Mast, Zhao & Maldonado, 2018). These items were self-reported indicators of empathy and its related emotions, including compassion for animals, concern for animals' well- being, sense of connection to animals and the natural world, and feeling moved or awed by their experience with animals.

If interview participants scored themselves as a 6 or higher for two items or more, it was determined that they may have experienced affective empathy during their visit, and they were then guided to move on to part two of the interview. Those who scored themselves a 5 or below on four or more items, indicating they likely did not experience affective empathy, were thanked for their participation, and guided to the demographic portion of the interview.

Part two of the interview gathered qualitative data on the positive and negative nature of visitors' empathy, and how visitors' themselves characterize these feelings. Each visitor was asked a close-ended question, measuring whether or not they felt positive or negative empathy during their visit, and then a follow-up open-ended question to further describe their feelings and experience in-depth. The survey ended with a section asking demographic questions, indicating descriptive data about the sample: characteristics such as home zip

code, age, gender, visitation frequency and membership affiliation with Woodland Park Zoo.

Data Analysis Procedures

Interviews were audio recorded, and participants' responses to part two of the interview were transcribed. Responses to open-ended questions were analyzed using emergent coding, in order to identify themes and patterns across responses. These qualitative data were coded and analyzed using a coding rubric (Appendix B). Closed-ended questions from part one, part two, and the demographic portion of the survey were quantified and analyzed.

Results

1. How much of visitors' empathy for animals at zoos is positive vs. negative?

Of those participants who progressed past the filter for affective empathetic reactions (n=38), 84% (n=32) of people self-reported feeling some type of empathy for one or more of the animals while visiting them at the zoo. The remaining 8% (n=3) of participants said that "no," they did not think that they felt empathy for the animals, and 8% said they were "not sure" (n=3).

Half of study participants (57%, n=21) described feeling positive affective empathy, saying that they shared in an animal's positive emotions. Thirty percent (n=11) said they did not, and 13% (n=5) expressed that they were "not sure" whether they shared in an animal's positive emotions.

Over one third of participants (38%, n=14) described feeling negative affective empathy, saying that they shared in an animal's negative emotions. A slightly greater portion said they did not (40%, n=15) and 22% (n=8) expressed that they were "not sure."

At least 35% (n=13) of the sample described instances of experiencing *both* positive and negative affective empathy for the same animal or species during their visit.

2. How do visitors characterize their feelings of positive and negative empathy?

Positive empathy

Participants' characterization of empathy was measured in two ways, distinguishing between affective and motivational empathy. Of those who described feeling positive affective empathy (57%, n=21), participants most often characterized their experience as sharing feelings of comfort, relaxation or peacefulness with the animals (41%, n=12). For example, one participant explained,

> "There was a moment where this gorilla, we thought it might move and instead it kind of just like sacked out, collapsed, and I felt that in my body. Both my friend and I kind of giggled and said, like, 'same here,' because it's a rainy, tired Sunday and it looked very restful. And, of course, that was without my brain checking myself, just my immediate body's felt sense, like, 'Oh yeah,' that feeling when you just collapse and let your body go… just watching its muscles relax feels positive to me."

Participants also described sharing feelings of playfulness or joy (28%, n=8), and fondness, love or companionship (17%, n=5). For example, one participant said, "I feel like I shared a sense of playfulness with the baby gorilla, the way it was interacting with the older gorillas, them finding ways of entertainment by messing around with each other." Another participant said, "Watching them be playful, watching them interact with the little baby keeping him entertained, it was joyful to watch that, super fun."

The remaining participants (11%, n=4) described their empathy in other ways, such as by wondering about the animal's happiness and wellbeing, sharing in the satisfaction of having a tasty snack, expressing a general sense of positive connection, or expressing empathy-adjacent emotions like gratitude, awe and appreciation for the animals.

When providing context for these moments of positive affective empathy, the majority of participants (78%, n=29) described the animal's behavior (its activity, social interactions, or physical expressions) as a cue to its emotional state or a catalyst for their shared feelings. Other participants (24%, n=9) showed cognitive empathy by describing an attempt to take the perspective of the animal. Some (14%, n=5) related their feelings to their understanding about the animal or its species, referring to knowledge they either had prior to their visit or knowledge they gained about the animal from zoo signage or interpretation. A few (11%, n=4) described the context of their surroundings as influencing their experience, such as the time of

day, the weather, COVID regulations, their kids' activities, or other things happening around them. A couple of participants (5%, n=2) talked about the animal's habitat, zoo care, or other controlled conditions of wellbeing.

Although the majority of participants characterized their affective empathy as positive, this was not true for the way that they characterized their motivational empathy. Seventy percent of participants described not feeling a desire to do something that might extend or prolong the positive feelings of the animals they visited (n=26) or their wild counterparts (n=27). Participants felt there was no need for them to intervene, such as the visitor who said, "I think the gorilla can experience exactly what they want at the time that they want it," and another who explained, "That's kind of outside of my realm of ability and responsibility." Others admitted that they weren't sure how to take action, such as the participant who said, "I'm not sure what I could have done, myself, for him." Another said that they would have liked to help prolong the positive emotional state of the animals they visited, but felt that they had no agency: "Yeah, of course. Well, I guess I would more venture to say you have that thought, and then reality sets in and there's nothing you can physically do."

Those few who did express a desire to act most often pointed to indirect, individual actions (13%, n=5), such as an intent to self-educate or educate their kids, as opposed to supporting the zoo's conservation efforts, or other collective actions. Eleven percent (n=4) described a lack of self-efficacy, either in knowledge or capacity, to act on behalf of the animal, such as the participant who said, "It would be hard to gauge how an action would be able to change their emotional wellbeing."

Negative Empathy

Of those participants who described feeling negative affective empathy, participants most frequently characterized their experience as shared feelings of boredom (38%, n=7), followed by sadness (18%, n=4), anxiety or stress (14%, n=3), and discomfort, annoyance, or grumpiness (9%, n=2).

Whichever particular feelings participants shared, when providing context for their experience, the majority of participants (54%, n=20) described the animal's wellbeing under zoo care or its state of captivity as a rationale. Often, these descriptions were accompanied by comments about the quality of animal care at Woodland Park Zoo relative to other zoos, such as the participant who explained,

> "I trust Woodland Park Zoo to have really good habitats, which is probably why I support it, and I know they do a lot to help the animals, both that they have here but also in the wild... but there are concerns about captivity in the back of my mind."

Nearly as many participants (49%, n=18) referred to the animals' behavior as having influence on their empathy experience. Additionally, nearly half (45%, n=10) of participants who described feeling negative affective empathy discussed moments in which they actively took the perspective of the animal, such as the visitor who reflected, "I thought about if I were caged, what it would feel like" or another who shared, "If I were in that position, I would be pretty bored, so I'm assuming he does or she does." Another participant identified how a moment of connection with the zoo's snow leopard triggered cognitive empathy towards its species in the wild as well:

> "It was looking straight at us, and that really helped me to try to get inside her brain and think about what must it feel like to be that animal in the Himalayas, what must it feel like to be that animal facing all of the pressures that human encroachment is creating, what must it feel like to be that animal struggling every day to catch enough food to feed her family, the ability to make that visual connection with her eyes was enormous for me."

Lastly, 23% of participants (n=5) talked about their knowledge about or understanding of the animal, and an equivalent portion (n=5) noted their personal surroundings as rationale for their response.

When asked about feeling negative motivational empathy for an individual zoo animal, again the majority said "no," they did not feel a desire to act (70%, n=26), with similar rationales as to the question about positive motivational empathy. The majority of explanations about desire to act indicated a lack of self-efficacy (37%, n=10), such as the participant who admitted, "I don't even know what to do. You know, it makes me feel helpless." Others noted an intent to take some kind of small, individual action (22%, n=8).

However, when asked about negative motivational empathy for the zoo animal's wild counterparts, the majority of respondents (57%, n=21) said that they did feel a desire to help animals in the wild to feel fewer negative emotions, to relieve their suffering, or counter their endangerment from human impact. Actions discussed included supporting the zoo by donating money, visiting, being a member, or

buying things in the Zoo Store. Collective actions mentioned intentions to support legislation, advocate for and preserve wild spaces, volunteer at a sanctuary, hold accountable big corporations and companies, and vote. Individual actions often involved raising one's own awareness about animals or environmental issues, self-educating, educating friends or family, loving animals in general, and eating vegan. Despite these intentions to act, distribution in coding for rationale shows the majority (43%, n=12) again characterized their intention with a lack of self-efficacy to follow it through to action.

A few others (n=5) specifically referenced the context of a global pandemic as a significant barrier or limitation to their capacity for empathy, both in the ways social distancing guidelines at the zoo minimized their sense of connection with zoo animals as well as reduced their emotional range or capacity to consider the state of wild animals. For example, one participant explained, "For me, in general, with the whole way society has been, it's harder to have extended-range kind of thoughts, not just physically but mentally as well, it's kind of like, we're here now. I'm just focused on what's in front of me."

Across all participants, including those who felt positive or negative empathy as well as those who did not, 43% (n=16) credited some type of zoo interpretation, either signage (text or video) interpretation (n=8) or interactions with zoo personnel (n=4), as a component of especially meaningful empathetic experiences. For example, one participant explained, "The staff member there was saying that she only goes in that yoga pose when she's relaxed and feeling not threatened, and that was nice to hear. I felt relaxed too." Several participants (n=4) suggested that having more information from or time spent interacting with zoo interpretation would have helped them to feel stronger empathy for the animals they visited.

Lastly, across all participants, several (8%, n=3) described feeling uncomfortable about affiliating human emotions with an animal's, incorrectly perceiving an animal's emotions, or anthropomorphizing. For example, on participant said, "I'm kind of leery ascribing people emotions or people behaviors to them. I think it's easy to feel a connection when you see them doing behavior that looks familiar to what people do, but who knows if that's like, the reason they're actually doing that thing." Another participant expressed frustration about being asked to characterize their emotions as distinctly positive or negative. They explained, "I think putting positive or negative on feelings can put it in a light, in my philosophy, that is not necessary. Just because you feel angry, doesn't mean that's a negative thing."

Discussion

The purpose of this study was to better understand the nature of visitors' situational empathy towards animals during self-guided zoo visits. Forty adult visitors were interviewed about their experience with animals at Woodland Park Zoo to gain insight into 1) how much of visitors' empathy for animals at zoos is positive vs. negative and 2) how visitors characterize their feelings of positive and negative empathy.

The data suggest that more adults experienced positive empathy than negative empathy towards animals at the zoo, and that about one-third of adults experienced both positive and negative empathy during their visit. These findings seem to challenge the pre-existing dominance of negative empathy as the primary focus in the existing literature on empathy for animals in zoo settings, and supports the idea that positive empathy is in fact a worthwhile emerging area of study in these settings (Andreychik & Lewis, 2017; Morelli et al., 2015; Young et al., 2018).

When it comes to how visitors characterize their feelings of positive and negative empathy, this study saw similar patterns as previous research has noted in the common expressions of empathetic experiences for zoo animals. First, the data show that the physical activity and behavior of animals has a significant influence on feelings of both positive and negative affective empathy. Interview responses commonly referred to animals' activity level, making eye contact, socializing, or acknowledging human presence as a key component of their feelings of empathy (or lack thereof). These characterizations support the idea that seeing an animal demonstrate agency by engaging in "natural" behaviors, enhances visitors' empathetic experiences (Myers, 2007). Visitors also characterized both their positive and negative empathy as cognitive, spurred by active perspective taking, despite a lack of formal facilitation or interpretation from the zoo (Cuff et al., 2014; Young et al., 2018).

One area where visitors' characterizations painted positive and negative empathy as especially distinct is in their different motivational abilities. This study did not illuminate any patterns that show how positive empathy inspires intent to take pro-environmental action in a way that is unique from those inspired by negative empathy, which other research has suggested, although these connections are primarily indirect (Morelli et al., 2015; Telle & Pfister, 2016). However, visitors did tend to characterize their negative empathy as a desire to help relieve the suffering of endangered or threatened animals in the wild, supporting evidence of the capability of empathy for an individual

zoo animal to build connections to the larger species in need (Young et al. 2018).

In terms of the boundaries and limitations of unfacilitated situational empathy, despite the higher frequency of self-reported instances of positive affective empathy, qualitative data from this study demonstrate that concerns for zoo animals' wellbeing & welfare both characterize and confuse visitors' positive and negative empathetic experiences. Visitors' conflicted feelings about the quality of life and welfare of zoo animals, including concerns about the effect of captivity on an animal as well as reflections about the ethics of zoos as institutions more generally, were shared across those whose empathy was characterized as positive or negative.

Additionally, although some visitors did express motivational empathy, most often as an intent to take action to reduce harm done unto wild animals, many of these responses were characterized by a lack of self-efficacy, in which participants described not having enough information about the animal, not knowing what actions to take, and even for some, feelings of "helplessness" or "hopelessness" about their capability to act or the impact of their actions. This, in addition to the lacking evidence of motivational empathy across the study, supports the idea that both empathy fatigue and lack of self-efficacy remain significant barriers to empathy as a mediator for pro-environmental action (Slovic, 2020).

Finally, the results of this study are limited in several ways. First, the topic of positive empathy for animals, as a phenomenon distinct from negative empathy or empathetic concern, is still an emerging area of study. As such, the definitions and boundaries of positive and negative empathy used in this study would benefit from further exploration and iteration. For example, in the interview, the researcher prompted participants with example emotions (drawn from the few existing definitions in the literature of positive vs negative empathy for animals). Participants often scoped their responses to fit the categories of emotions offered, rather than completely self- defining what positive empathy might look like for them. While this prompting was often needed to encourage participants to elaborate on their emotions, future studies might take an even more open-ended approach to characterizing positive vs negative empathy, in order to capture the more nuanced ways it is experienced by zoo visitors.

Additionally, this study does not measure or account for visitors' pre-dispositional empathy, which research suggests is also correlated with affective and motivational empathy, as well as intent to take pro-environmental action. This study measures only self-reported empathy,

and would be strengthened by the addition of pre-dispositional, observational or other indicators of empathy if adapted for future studies.

This study was also significantly limited in scope and sample diversity due to the context of an ongoing pandemic. First, the consequences of state-wide COVID restrictions made for a uniquely structured context for studying visitor experience, interpretation, and meaning making. This suggests that this study does not accurately reflect visitor experience during a pre- or post-pandemic WPZ zoo visit. Second, it is likely that the context of COVID limited the diversity of the study sample, excluding those who might regularly make up casual zoo visitors but who were unwilling or unable to risk infection by visiting public spaces during this time (such as older or immunocompromised folks and their caregivers). Additionally, participants were recruited online as well as onsite, through the Instagram and Facebook pages of WPZ communications. This method of recruitment gathered 30% of the study sample, and likely attracted people who hold a higher than average affinity for WPZ relative to everyday public visitors. While this study did not gather demographic information about race or education level, previous studies have demonstrated that WPZ's typical visitor is white, urban-dwelling, and formally educated. The research on empathy for animals in zoo settings would be greatly benefitted by collaborative studies featuring perspectives of Indigenous, POC, rural, as well as less formally educated zoo visitors.

Implications

This study has several implications both for the future of studying empathy for animals, and for working practitioners advocating for conservation education at zoos and aquariums. First, the results of this study support the precedent that zoos are important sites for fostering empathy, as visitors are experiencing empathy for animals during self-guided visits. Although we knew from previous studies that zoo visitors are likely to experience affective empathy, this study suggests that zoo practitioners might capitalize on positive empathy as a significant experience, and negative empathy as a more common intrinsic motivator for conservation action.

As the results of this study suggest, much of the visitor's empathy can be characterized as positive empathy. If positive empathy for animals can be measured distinctly from negative empathy in zoo settings, perhaps future research can unpack this phenomenon to show a more detailed picture of what positive empathy for animals looks like and

how it makes meaning for zoo visitors. With further research, education and interpretive staff at zoos might develop practices that target positive and negative empathy distinctly, and balance them to inspire action while preventing the fatiguing effect of negative empathy. For example, zoo exhibit interpreters might capitalize on visitors' experiences of positive affective empathy to inspire actions that improve the lives of animals' wild counterparts, by fostering further understanding about what makes animals thrive, instead of focusing on their pain or suffering.

However, when it comes to mobilizing the action-inspiring power of motivational empathy, this study reiterates the importance of educational interpretation and promotion of self- efficacy, to accompany occurring experiences of negative empathy. While there is still much research to be done on the causal links between positive versus negative empathy and pro- environmental action, I recommend that zoos emphasize promotion of self-efficacy in any empathy-based practices. By offering concrete, localized actions to accompany visitors' empathetic experiences, whether positive or negative, visitors may feel empowered to act on behalf of zoo animals' wild counterparts. Until then, further research might further explore the causal connections between positive and negative empathy, motivation, and self-efficacy.

In summary, zoos like Woodland Park Zoo might consider incorporating empathy best practices and empowering visitors with self-efficacy not only through formal educational programs, but also more passive interpretation pathways, such as exhibit signage and volunteer training. This might take the form of signage or volunteers interpreting animals' behaviors for visitors (particularly by emphasizing animals' agency), offering ways for visitors to act on behalf of animals (empowering self-efficacy), or more consistently assuring visitors of animals' wellbeing in a zoo setting (removing a major barrier to positive empathy).

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Appendix A

Instrument

Gorilla /Rhino / Leopard / Red Panda

INTERVIEW GUIDE

Recruitment Language

Hello! Are you on your way to visit the Zoo today? Awesome, that's so exciting! My name is Devonshire and I am a graduate student at the University of Washington, and I am conducting my thesis research on visitors' experiences with animals during their visit at the zoo. I'm looking for folks who are interested in participating in a little activity while they are here, just taking a photo, and then interviewing with me afterwards. Would you like to try out the photo activity and be a part of my study today?

Fantastic, thank you! Here are the instructions for the activity while you're visiting, and then afterwards, you will either come find me right here when you're leaving, or email me the photo as soon as you are done with your visit, and we can schedule a 10-15 minute virtual interview for later today or tomorrow. Do you have any questions for me?

Great, thank you! Enjoy your visit!

Interview Introduction

Hello again! Thank you so much for being here, and for participating in my study! My name is Devonshire, and I am a graduate student at the University of Washington, and I am conducting my thesis research on visitors' experiences with animals during their visit at the zoo.

This interview should take no longer than 15 minutes, but you are free to let me know if you want or need to end it at any time, okay? And before we start, is it okay with you if I record audio of our conversation, so that I can easily transcribe it later? I will be the only person who reviews the recording.

So, while you were at WPZ earlier, I asked you to take a photo of a particular animal you visited and share it with me. First, I'll put that photo here for you to see and I'm going to ask you to take just a moment to look over the photo: try to think back to your experience visiting this animal in the zoo. Okay, now we will get started with some questions: ready?

Part A: PHOTO ACTIVITY

1. ***Why did you choose to take a photo of this particular animal?***
2. ***Can you walk me through your experience visiting with this animal?***

3. ***Can you recall any memorable or special moments when visiting with this animal?***

Part B: FILTERING FOR EMPATHETIC EXPERIENCE

4. ***Thinking about your experience with the animals in this exhibit today, please indicate on a scale of 1-10 to what extent you agree with each of the following statements (where 1 means you Strongly Disagree and 10 means you Strongly Agree):***

1	2	3	4	5	6	7	8	9	10

Strongly Disagree *Strongly Agree*

   a. ***I felt emotionally awed by the animals. ___***
   b. ***I felt compassion for animals and the living world. ___***
   c. ***I became more concerned about the well-being of these animals in the wild. ___***
   d. ***I gained a sense of my connection with animals and the natural world. ___***
   e. ***I was moved by my experience. ___***

CALCULATE EMPATHY SCORE

_____

(If participant indicates a 6 or above for two or more items, move on to Part C. If not, go straight to demographics.)

_____

Part C: CHARACTERIZING VALENCE OF EMPATHETIC EXPERIENCE

Great, thank you for sharing some of your thoughts and emotions! For my particular study, I'm especially interested in the emotion of empathy. Now I'd like to ask you some questions about whether and how you felt empathy during your visit with the animals here today.

The definition of empathy that I am using is "being able to perceive, understand, and care about the feelings, experiences or perspectives of another animal."

5. ***Based on this definition, do you think you felt empathy towards any of the*** *[gorillas]* ***while you were visiting them in this exhibit today? ☐ Yes ☐No ☐Not sure***
6. ***Do you think there was a moment while visiting the [gorillas] when you felt like you shared in a [gorillas]'s positive emotions, such as joy, happiness, excitement, love or playfulness? ☐Yes ☐No ☐Not sure***

a. if yes, can you tell me more about that moment?

b. if not, why do you think you didn't feel that way?

7. ***Do you think there was a moment while visiting the [gorillas] today when you felt like you were sharing in any of the [gorillas]'s negative feelings, such as pain, distress, fear, boredom or suffering? ☐ Yes ☐ No ☐ Not sure***

a. if yes, can you tell me more about that moment?

b. if not, why do you think you didn't feel that way?

8. ***Do you think there was a moment when you wanted to do something to help the [gorilla) to feel more positive feelings, or feel positively for a longer period of time?***

☐ Yes ☐ No ☐ Not sure

a. if yes, can you tell me more about that moment?

b. if not, why do you think you didn't feel that way?

9. ***Do you think there was a moment when you felt like you wanted to do something to help to relieve a [gorillas] 's negative feelings? ☐ Yes ☐ No ☐ Not sure***

a. if yes, can you tell me more about that moment?

b. if not, why do you think you didn't feel that way?

10. ***At any point during your visit with these animals, did you feel like you wanted to do something to help [gorillas] living in the wild feel to more positive feelings? ☐ Yes ☐ No ☐ Not sure***

a. if yes, can you tell me more about that moment?

b. if not, why do you think you didn't feel that way?

11. ***At any point during your visit with these animals, did you feel like you wanted to do something to help [gorillas] living in the wild feel less negative emotions, like suffering, fear, or pain? ☐ Yes ☐ No ☐ Not sure***

a. if yes, can you tell me more about that moment?

b. if not, why do you think you didn't feel that way?

Part D: DEMOGRAPHICS

Lastly, I'd like for you to tell me a little about yourself, so that I can understand whose voices are included in my study and whose end up being excluded. These questions are optional, so if you'd prefer not to share something with me, you can say "skip":

---

12. What year you were born?___

13.Do you identify as:

☐ Female

☐ *Male*

☐ *Nonbinary*

14. Are you visiting with anyone under 18 today?

☐ *Yes* ☐ *No*

15. ***What is your home zip code (or country, if outside the U.S.?)*** ___

16. Are you currently a member of WPZ?

☐ *Yes* ☐ *No*

17. When was the last time you visited before today?

☐ *This is my first time!*

☐ *12 months or less*

☐ *1+ to 2 years ago*

☐ *2+ to 5 years ago*

☐ *5+ to 10 years ago*

☐ *more than 10 years ago*

18. Have you ever been to any programs or events hosted by WPZ?

☐ *Yes* ☐ *No*

a. *If yes, which one(s)?*_____
b. *Email (for prize drawing)*_

Okay, great! That is everything I need from you, thank you so much for being a part of my study!

Appendix B

Coding Rubric

QUESTION	KEY WORDS	CODE	CATEGORY	DESCRIPTION	EXAMPLE
C6.ab (Level 1) "Do you think that there was a moment while visiting the [gorillas] when you felt like you shared in a [gorilla's] positive emotions, such as joy, happiness, excitement, love, or playfulness?"					
Positive	Affective Reaction	**1**	**FONDNESS**	participant describes shared feelings of companionship, social connection, love, or kinship	"they seemed happy being all together, with family" "the mom with the baby reminded me of being a mom"
		2	**COMFORT**	participant describes shared feelings of being comfortable, content, relaxed, or at peace	"You could tell that they felt comfortable in their environment, they were cuddling, you know."
		3	**PLAYFULNESS**	participant describes shared feelings of playfulness or excitableness	"watching the mom and baby play, I felt playfulness being a mom myself"
		99	**NEUTRAL / OTHER**	participant describes sharing a neutral or another feeling with the animal	"it looked sleepy, but I don't know if that's positive?" "It was just doing its gorilla thing"
		0	**NONE**	participant describes not sharing any positive emotions with the animal	"I'm not sure I was sharing in its feelings"
C9.ab (Level 1) "Do you think that there was a moment while visiting the [gorillas] when you felt like you shared in a [gorilla's] negative emotions, such as pain, distress, fear, boredom, or suffering?"					
Negative	Affective Reaction	**4**	**ANXIETY**	participant describes shared feelings of anxiety or stress	"I wish they had more space and that could reduce feelings of anxiety."
		5	**BOREDOM**	participant describes shared feelings of boredom	"if I were in that position, I would be pretty bored, so I'm assuming he does/she does."

		6	**SADNESS**	participant describes feelings of sadness, loneliness, or lethargy	"I felt sad seeing him sitting all alone in the corner"
		7	**DISCOMFORT**	participant describes shared feelings of discomfort or unease (less extreme than anxiety or stress)	"it just crossed my mind that we made it uncomfortable, I think if it was real obvious that it was uncomfortable I would have also felt uncomfortable" "it looked like it was having a bad day."
		99	**NEUTRAL / OTHER**	participant describes sharing a neutral feeling, or another shared emotion	"maybe bored, but I don't think boredom is negative, necessarily"
		0	**NONE**	participant describes not sharing any negative emotions with the animal	"No, it didn't elicit that response in me"
C6.ab; C9.ab (Level 2) "Do you think that there was a moment while visiting the [gorillas] when you felt like you shared in a [gorilla's] +/- emotions?" "if yes, can you tell me more? If not, why do you think you didn't?"					
	Rationale / Description	**a**	**ANIMAL WELLBEING**	participant refers to the animal's physical or emotional wellbeing, or the effect of the animal's zoo conditions, habitat or care on its	"I wish they had more space and that could reduce feelings of anxiety. It seems like an unnatural thing."
		b	**UNDERSTANDING OF ANIMAL**	participant refers to the knowledge they have or gained about the animal, the information given about the animal through zoo interpretation, or a general understanding (or lack thereof) about the animal	"I don't know how red pandas really are in the wild." "the zookeeper was there telling us all about her" "we read the sign on rhino poaching" "I know Snow Leopards are solitary animals so it wasn't lonely"

		c	**ANIMAL BEHAVIOR**	participant refers to the animal's physical activity, social interactions, or behavior as cues to its emotional state	"he/she was pacing." "she was sleeping" "she looked content" "I didn't really get that vibe from the animal"
		d	**PERSONAL SURROUNDINGS**	participant refers to their personal surroundings or external conditions, including time spent at the exhibit, weather, their kids, or distractions	"I had my four year old, who was climbing on things" "we didn't spend too much time there because, covid regulations, keeping things moving"
		e	**PERSPECTIVE-TAKING**	participant refers to having taken the perspective of the animal, demonstrating active cognitive empathy	"I thought about if I were caged, what it would feel like"
		f	**PERSONAL BEHAVIOR**	participant refers to their own behavior or presence	"we leaned closer to the plexiglass and you know, we weren't tapping on the glass or
		99	**OTHER**	participant gives another rationale	"I'm kind of leery ascribing people emotions or people behaviors to them." "I think the gorilla can experience exactly what they want at the time that they want it."
		88	**I DON'T KNOW**	participant is expresses they are unsure	"I don't know"
		0	**NONE**	no response/doesn't elaborate	"I didn't consider it"
C7 "Do you think there was a moment when you wanted to do something to help the [gorilla] to feel more positive feelings, or feel positively for a longer period of time?"					

Positive	Motivational Empathy for Individual	**1**	**SUPPORT ZOO**	Participant shares their desire or intent to take action by supporting zoo actions or efforts	
		2	**SUPPORT COLLECTIVE**	Participant shares their desire or intent to take action by supporting external organizations' actions or efforts	
		3	**INDIVIDUAL ACTION**	participant shares their desire or intent to take individual action or self-educate	
		4	**LACK OF SELF-EFFICACY**	participant expresses a desire to take action, but the lack of self-efficacy (knowledge or capability) to do so	"I'm not sure what I could have done, myself, for him"
		99	**OTHER**	participant gives unclear/vague reasoning, or implies a desire to act in some other way	"I hope that all that is being done can be done to make that more comfortable for them"
		0	**NONE**	Participant describes not wanting or needing to take action	"I think the gorilla can experience exactly what they want at the time that they want it."
C10 "Do you think there was a moment when you wanted to do something to help relieve the [gorilla]'s negative feelings?"					
Negative	Motivational Empathy for Individual	**1**	**SUPPORT ZOO**	Participant shares their desire or intent to take action by supporting zoo actions or efforts	"I talked to my son about the voting booths at the zoo, where you can vote with coins or quarters for the conservation of an animal"
		2	**SUPPORT COLLECTIVE**	Participant shares their desire or intent to take action by supporting external organizations' actions or other collective efforts	"voting"

		3	**INDIVIDUAL ACTION**	participant shares their desire or intent to take individual action or self-educate	"I actually wanted to move away, and maybe he'd get comfortable again and get curled up. We left when that happened." "I wanted to bust them out" "I wish I could have just sat down there with it and hung out with it, and if I could have done anything for it, even just sitting quietly... I wish I could have somehow been able to interact with it in a more meaningful way."
		4	**LACK OF SELF-EFFICACY**	participant expresses a desire to take action, but the lack of self-efficacy (knowledge or capability) to do so	"I don't really know what I would be able to do for him or her, realistically, except boycott zoos maybe."
		99	**OTHER**	participant gives unclear/vague reasoning, or implies a desire to act in some other way	"I just kind of feel bad for them" "I just wish they had more space"
		0	**NONE**	Participant describes not wanting or needing to take action	"I would love to, but I don't think I would. I know myself pretty well and don't think I would actually do anything." "I don't think I have the emotional capacity with everything going on to do something" "No, she seemed happy and comfortable, so"
C8 "Do you think there was a moment during your visit when you wanted to do something to help [gorillas] living in the wild feel more positive feelings?"					

Positive	Motivational Empathy for Wild	**1**	**SUPPORT ZOO**	Participant shares their desire or intent to take action by supporting zoo actions or efforts	"I bought this because from the store because this money goes to empowering people to conserve snow leopard habitats"
		2	**SUPPORT COLLECTIVE**	Participant shares their desire or intent to take action by supporting external organizations' actions or other collective efforts	"I became a member of the Snow Leopard Trust" "I've always wanted to go volunteer at a red panda sanctuary. Red pandas particularly."
		3	**INDIVIDUAL ACTION**	participant shares their desire or intent to take individual action or self-educate	"I want to teach my kid"
		4	**LACK OF SELF-EFFICACY**	participant expresses a desire to take action, but the lack of self-efficacy (knowledge or capability) to do so	"In theory I would, but not realistically, I don't think I would follow through with that."
		99	**OTHER**	participant gives unclear/vague reasoning, or implies a desire to act in some other way	
		0	**NONE**	Participant describes not wanting or needing to take action	"no. I feel like they can just do their wild thing" "it didn't really cross my mind"
C11 "Do you think there was a moment during your visit when you wanted to do something to help [gorillas] living in the wild feel less negative feelings, like suffering, fear, or pain?"					
Negative	Motivational Empathy for Wild	**1**	**SUPPORT ZOO**	Participant shares their desire or intent to take action by supporting zoo actions or efforts	"I wanted to buy something from the zoo store that would go to their conservation"
		2	**SUPPORT COLLECTIVE**	Participant shares their desire or intent to take action by supporting external organizations' actions or efforts	

		3	**INDIVIDUAL ACTION**	participant shares their desire or intent to take an individual action or self-educate	
		4	**LACK OF SELF-EFFICACY**	participant expresses a desire to take action, but the lack of self-efficacy (knowledge or capability) to do so	"I don't know that much about how red pandas exist in the wild, so I don't know what I could do"
		99	**OTHER**	participant gives unclear/vague reasoning, or implies a desire to act in some other way	"I mean, so many things need help."
		0	**NONE**	Participant describes not wanting or needing to take action	"I wasn't really thinking about the ones out in the wild."