Early Childhood Zoo Learning: Empathy and Reminiscing

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Abstract

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Modern zoos hope to foster empathy for animals in visitors, which they hope will lead to meaningful behavioral changes that promote conservation. This qualitative study examines how young children may learn empathy for animals through reminiscing with caregivers about zoo experiences. Reminiscing, which involves meaningful and emotional conversations about past events, has been linked to developing prosocial behavior and empathy in children. The findings of this study contribute to the field of informal learning, zoo learning, museum learning and early learning by supporting an understanding of: 1) how children might build a greater understanding of empathy for more-than-human others through reminiscing with caregivers about ILE experiences, and 2) how caregivers understand the development of their young children's empathy in a zoo context.

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"A peculiar fact about the way we speak about animals is that we often have specific terms for their feet, but not for their happiness or anger." Fredrik Karrlson, 2012, p. 707

Chapter 1: Introduction

Young children's relationships are an important factor in their early cognitive development (Zero to Three, n.d.). In the context of those key relationships, some of the most important learning opportunities for young children occur with a caregiver in informal learning environments (ILEs), which may refer to a variety of public spaces, such as museums, zoos, aquariums, botanical gardens, and natural areas (Paris 2002).

ILEs have been especially important for early learners. in recent years, as the effects of the COVID-19 pandemic upended the education system for young children across the globe, forcing many of them to switch to remote learning. The shift to remote learning has posed particular difficulties for early childhood education, which emphasizes interaction and play (Bassok et al., 2020). Among other developmental impacts, the pandemic has led to a decline in prosocial behavior (Linnavalli & Kalland, 2021) among young children and disruptions in social-emotional learning (SEL) during a critical developmental period (Chen & Adams, 2022). At the same time, in recent years, there has been a marked interest in informal learning environments (ILEs) as spaces to foster SEL and, in particular, empathy (Murawski, 2016; Pedretti & Iannini, 2020; Young et al., 2018). Recent decades have seen a surge of interest in empathy in American society, from schools to politics to public discourse (Lobb, 2017).

Empathy is of particular interest to ILEs with living collections, primarily zoos and aquaria (hereafter referred to as "zoos"). Zoos offer their visitors a special opportunity to develop empathy by allowing them to observe animals and their behaviors (Young et al., 2018). These institutions hope to foster visitors' empathy to spur them to make behavioral

changes that can contribute to fighting climate change (Ballantyne et al., 2011; Ballantyne et al., 2018; Godinez & Fernandez, 2019; Hughes et al., 2012; Moss et al., 2017; Nygren & Ojalammi 2018; Rose & Riley, 2022; Taylor & Duram, 2021).

The current study's theory of change goes a step further, suggesting that zoos can also build empathy by providing young children with special experiences they can reminisce about with their caregivers. As detailed in the literature review chapter, empathy is a complex, and not wholly positive, construct, particularly how it manifests for zoo visitors. However, this work puts forwards that there A significant body of literature has linked reminiscing with a caregiver to the development of prosocial behavior, including empathy for other humans, in young children (Fivush et al., 2006; Habermas & Reese, 2015; Nelson & Fivush, 2004; Salmon & Reece, 2016; Pavlova et al., 2021; Thompson, 2006; Wareham & Salmon 2006). "Reminiscing" is used in this paper to mean a conversation about shared past events which include reflection as to why said events are meaningful to the individuals involved. This reflection as to what makes an event personally meaningful to those involved is what distinguishes "reminiscing" from reflection, and other forms of shared recollection of events (Fivush, 2008). "Elaborative reminiscing" is a process in which caregivers speak with children about the past in a way that is "detailed, emotional, and collaborative" (Salmon & Reese, 2016; p. 233). Relatedly, an elaborative conversation style is one in which the caregiver provides the child with detailed information in their statements and questions. The caregiver will continue to respond to the child with more elaborative questions and statements even if the child does not provide new information in response (Fivush, Haden, & Reese, 2006; Haden, Ornstein, Eckerman, & Didow, 2001; Reese, Haden, & Fivush, 1993).

The Current Study

This study is designed to explore how children learn empathy for more-than-human others through reminiscing with caregivers about their zoo experiences. Analysis involves looking at the young child-caregiver dyad in relationship with each other, co-constructing reminiscing conversations.

"More than human," or "more-than-human," is a term used broadly across sciences and the humanities (Price & Chao, 2023). More-than-human others is a concept originally introduced through science fiction, by More Than Human (1953) a novel by Theodore Sturgeon (Price & Chao, 2023). In 1996, David Abram originated the phrase "the more-than-human world" to refer to the natural world in his book *The Spell of the Sensuous : Perception and Language in a More-Than-Human World* (Abram, 1996). In contrast to similar terms, such as "non-human," "other than human" and "multispecies," Some scholars argue that "more than human" fosters an attitude of humility, celebrates the active involvement of various beings in our world, and more accurately encompasses indigenous and non-Western perspectives of the natural world (Bang, Marin, and Medin, 2018; Price & Chao; 2023; Tsing, 2014). The more than human others referred to in this zoo study are non-human animals, since that is typically the focus of a zoop visit. However, the wider body of more than human scholarship also encompasses plants, non-living entities, and transcendent beings (e.g. spirits, ancestors) (Price & Chao, 2023).

This study utilizes qualitative methods to examine the potential for ILEs to support the development of empathy in early childhood by allowing children to reminisce with caregivers about their zoo experiences.

Because of the focus on reminiscing, data collection took place both onsite at the Woodland Park Zoo (WPZ), and at participants' homes. This qualitative study draws on research literature from empathy, reminiscence, and zoos and other informal learning environments (ILEs).

Research Questions

This study was guided by the following research questions:

1) How do children learn empathy for more-than-human others through reminiscing with caregivers about ILE experiences?

   a) How do caregivers utilize support from the zoo to have elaborative reminiscing conversations?

   b) What contextual factors potentially contribute to or detract from elaborative reminiscence during these conversations?

2) How caregivers understand the development of their young children's empathy in a zoo context?

Theoretical Framework

Sociocultural Framework

This research study is inherently sociocultural in that it involves looking at the young child-caregiver dyad in relationship with each other, co-constructing reminiscing conversations. This project was informed by two particular sociocultural frameworks, the Unified Theory of Development and Sustained Shared Thinking, detailed below.

The importance of language in caregiver-child interactions is an important sociocultural concept (Vygotsky, 1978). Early conversations with caring adults help children develop narrative skills, and shape their narrative identity, "a person's internalized and evolving life story" (McAdams & McLean 2013, Fivush et al. 2006).

Sociocultural theory extends Vygotsky's (1978) view of learning as stemming from the interaction between individuals and their society One key concept in this paper from the work of Vygotsky is the importance of scaffolding. Scaffolding is a concept based on the work of Vygotsky, specifically the Zone of Proximal Development (ZPD) (1978). The ZPD is described by Vygotsky as "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem-solving under adult guidance, or in collaboration with more capable peers" (p. 86).

Also building on the ZPD, Goldstein (1999) looks at the importance of caring relationships for children's learning. Goldstein (1999) describes one-on-one learning interactions with a caring adult as an essential part of meaningful learning for young children. Goldstein's relational zone theory drew upon the affective elements of Vygotsky's ZPD and Noddings work in ethic of care (1984), which positions the ZPD as a socially-mediated space. This theory divides the ZPD into two domains: the affective domain, or the interrelational zone,

and the cognitive domain or the interpsychological zone (Goldstein, 1999). The interrelational zone describes motivation for learning, and explains what happens affectively during a caregiver-child interaction. The interpsychological zone describes scaffolding of concepts, and explains what happens cognitively during a caregiver-child interaction (Goldstein, 1999). This implies that the quality of the emotional relationship between the adult and child can affect the quality of the child's learning experience (Goldstein, 1999; Walker 2010).

Given the significance of the emotional relationship between adult caregiver and child, it becomes essential to examine how scaffolding functions in the context of caregiver guidance. Scaffolding is a temporary verbal and non-verbal framework provided by a more capable learner (in this context, an adult caregiver) to guide a more novice learner to master a concept or task that would be beyond the skills of the more novice learner on their own but that can be reached with assistance from a more capable and experienced individual (Wood et al. 1976). Scaffolding requires breaking down ideas or tasks into simpler components and guiding the learner to achieve success with them (Wood et al., 1976).

In the context of caregivers and their young children, the caregiver recognizes that the child needs something additional (guidance or a resource) to successfully work toward understanding or mastery of a task or concept (Wolf & Wood, 2012). Scaffolding from adult caregivers can help to extend this specific knowledge into larger ideas (Crowley & Jacobs, 2002).

Scaffolding is a broader learning concept beyond early childhood, but it has become common in the design of educational opportunities for young children in ILEs (Haas, 1996). An adult's prior knowledge may also impact scaffolding, research indicates that prior knowledge about exhibit content in ILEs may lead to more effective scaffolding by caregivers (Eberbach

and Crowley, 2017; Franse et al., 2020). Recently, a more nuanced view of scaffolding has emerged in the literature that puts forth that scaffolding can be reciprocal (Granott, 2005; Mascolo, 2005) and multi-directional, with roles shifting among family members (Mai and Ash 2012). Findings from Slovak and colleagues (2016) indicate that the most engaging scaffolded interactions occurred when parents and children built on the shared experience provided by the activity to have a dialogue with each other.

The impact of parent scaffolding is a crucial aspect in supporting children's social-emotional learning (SEL) at home (Slovak et al., 2016; Vadeboncoeur & Collie, 2013). However, many parents may lack the ability to provide the effective SEL scaffolding, particularly in addressing social-emotional skills that they may not be used to discussing directly (Slovak et al., 2016). Slovak et al. (2016) emphasizes the importance of scaffolding parental involvement and support, providing example questions, role-plays, and ongoing reinforcement techniques to help parents learn how to scaffold learning for their children.

In reminiscing conversations, adult caregivers have the opportunity to scaffold culturally-relevant concepts of narrative and time, as well emotional expression and understanding (Denham et al., 1992; Habermas and Reese 2015; Laible, 2004; Laible & Panfile 2009; Leyva et al., 2014).

In the past two decades sociocultural theory has been particularly influential on programming, exhibit design, and research related to young children’s learning and experiences in ILEs (Andre, 2017). In this way, most of the interpretations of caregiver-child experiences in this research study can be linked back to the work of Vygotsky (1978).

As a study grounded in sociocultural theory, this work aims to value the family context of reminiscing conversations, empathy development, and experiences with a zoo. By nature, family learning in ILEs is a social practice, with new experiences connected to a family's cultural background, interests, and memories (Bang & Medin, 2010; Falk et al., 1998; Ellenbogen et al., 2004; LeTourneau et al., 2020; Zimmerman et al., 2010). This project is framed by the value of reminiscing conversations. The sociocultural model of the development of autobiographical memory emphasizes the role of language and narrative in autobiography, as they allow for the sharing of past experiences and the reconstruction of personal experiences in social interaction (Fivush 2014). These concepts, family context and autobiographical memory, will be expanded upon in the literature review.

Unified Theory of Development

Caregivers have an important influence on how their children will learn to build relationships and empathy, as discussed in the literature review of this paper. But it is not only the caregivers that influence children, the influence is bi-directional. Sameroff's transactional model posits that children contribute to caregiving behavior in a transactional process between the caregiver and the child (Sameroff & Chandler, 1975; Sameroff, 2009). Sameroff (2010) proposed an expansion of this model, a unified theory of development (UTD) that integrated personal change, context, regulation, and representational models.

In Sameroff's UTD model, regulation looks at the balance between a child's regulation by others and self-regulation, and how it shifts over time from more of the former to more of the latter. This "other-regulation" is not just the child and their caregiver, but the dyad in context, and how the caregiver may help the child interpret their larger environment (Sameroff, 2010).

For his understanding of how different contexts affect the child, Sameroff drew on Bronfenbrenner's bioecological model (Bronfenbrenner, 1979; Bronfenbrenner, 2007). In this framework, Bronfenbrenner situates the individual within interconnected, layered systems. The family is described as part of the child's microsystem (Bronfenbrenner, 1979). Since Bronfenbrenner's (1979) publication of the initial ecological model, Bronfenbrenner and Morris (2007) have introduced refined guidelines for research to investigate development from a bioecological perspective. The core of Bronfenbrenner and Morris's (2007) bioecological model is process. From the original model (Bronfenbrenner, 1979) focus shifted from environmental influences to developmental processes experienced by individuals over time. The two defining claims are that 1) proximal processes, the developmental processes of ongoing interaction between an individual and their environment, are the engines of development and 2) the impact of proximal processes vary as a joint function of the characteristics of the person, the environment, the type of outcome, and change over time.

Sustained shared thinking

Like Bronfenbrenner's ecological model, sustained shared thinking supports the idea of children's development being deeply embedded in their social and cultural contexts. Sustained shared thinking (SST) is a sociocultural learning practice used to analyze conversations co-constructed by children and caregivers. Originating from the Effective Provision of Pre-School Education (EPPE) project in the UK, SST involves collaborative intellectual efforts to solve problems or clarify concepts, often occurring between a child and an adult.

Sustained shared thinking (or SST) takes place "when two or more individuals 'work together' in an intellectual way to solve a problem, clarify a concept, evaluate an activity, extend a narrative, etc. Both parties must contribute to the thinking and it must develop and extend the

understanding" (Sylva et al., 2004, p. 5). SST will most frequently occur between a child and an adult, but it may also take place between peers (e.g. two or more children, two or more adults) if one is a 'more knowledgeable other' (Vygotsky, 1978).

This practice, linked to Vygotsky's (1978) zone of proximal development (ZPD) and scaffolding (Degotardi et al., 2019; Purdon, 2016; Siraj-Blatchford, et al. 2002)., requires adults to understand the child's current skills and knowledge to engage them appropriately. The learning that takes place in SST is part of a situated social practice. It is a socially negotiated and mediated interaction happening in a particular setting. (Lave, 1991; Siraj-Blatchford, et al. 2002). An important aspect of SST is that both participants are contributing, actively co-constructing the learning, even if they are not playing equal roles in the process (Siraj-Blatchford, et al. 2002)

Parent-child reminiscing can enhance sustained shared thinking by fostering several key skills and interactions that are foundational to the deeper, more complex cognitive processes involved in sustained shared thinking (Neale & Pino-Pasternak, 2016).

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In reviewing sociocultural theory, UTD, and SST, these theoretical frameworks have emphasized the important role of caregiver-child conversations. As these frameworks have been brought together here (see Figure 1:

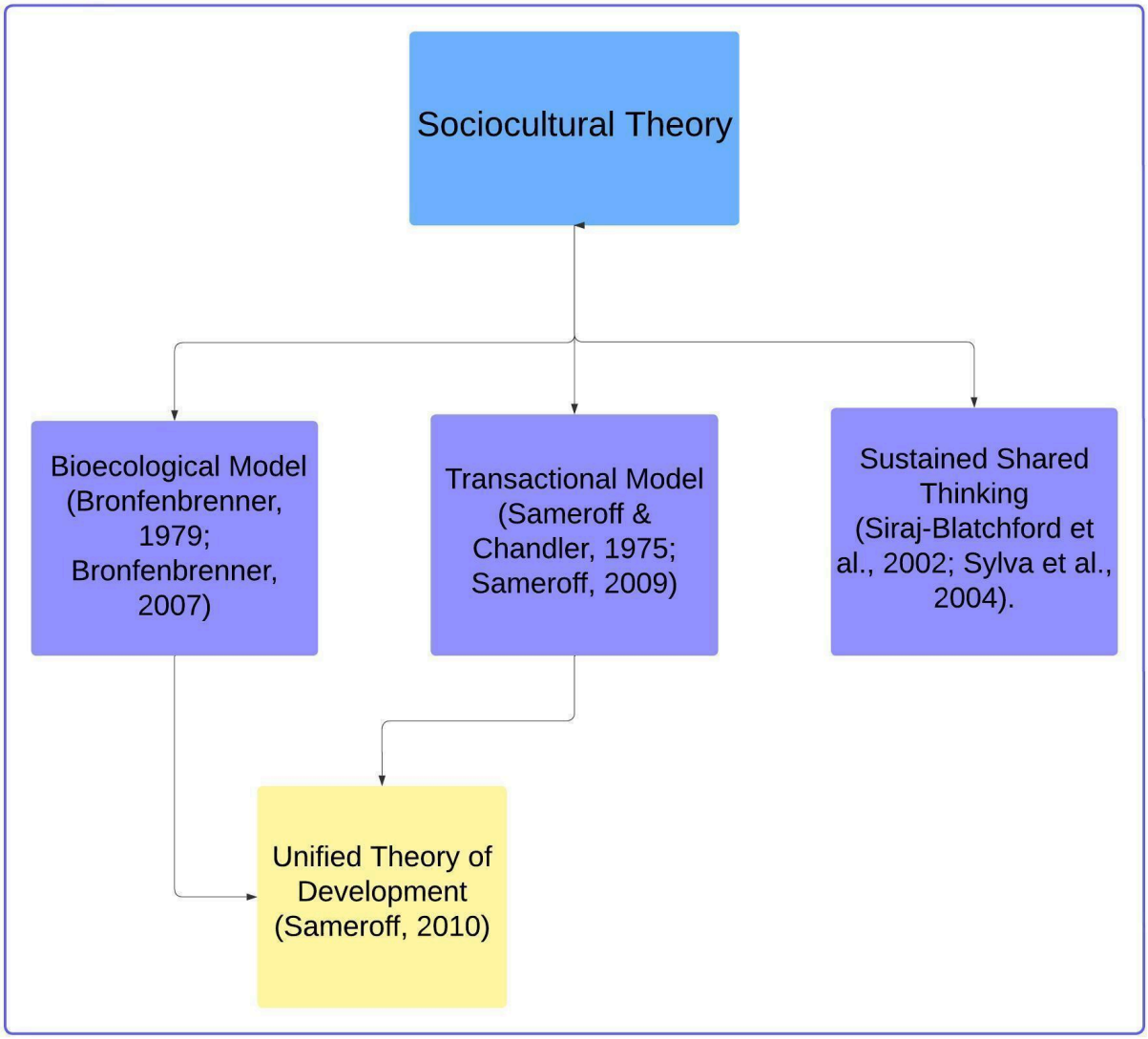
1) Sociocultural theory accounts for the value of scaffolding and co-construction in reminiscing conversations.

2) Unified Theory of Development (UTD)— Shaped by Bronfenbrenner's bioecological model (Bronfenbrenner, 1979; Bronfenbrenner, 2007), relationships leading to the development of emotional regulation, have been found to be closely related to empathy development (Decety & Jackson, 2004; Ornaghi et al., 2020; Peterson et al. 2018).

3) Sustained shared thinking (SST) is a situated practice which can be linked to both co-regulation (through joint attention) and sociocultural principles of co-constructed conversations and scaffolding.

These frameworks together can be linked to empathy and reminiscing, as seen in the following section.

Figure 1: Theoretical Framework



Chapter 2: Literature Review

Introduction

Although recent decades have yielded a rich body of research on children's learning in ILEs, there is still much researchers do not know about young children and caregivers in these spaces. This review draws on research on children and family learning in many different ILEs, parent-child reminiscing, and empathy. Because development of emotional regulation has been found to be closely related to empathy development, this chapter begins with an overview of co-regulation and joint attention. Empathy is a complex construct, so there is next an overview on the literature defining empathy and related constructs, as well as critiques and shortcomings of empathy,. Next, how empathy is developed, and the role of caregivers in nurturing empathy. reminiscing and conversation, and elaborative conversations. Then joint attention, examined at the beginning of this chapter and in relation to empathy development, is also reviewed as part of an overview of sustained shared thinking (SST). Next, this chapter examines research from Informal Learning Environments (ILEs), especially research pertaining to parents and caregivers. It concludes with research from zoos, with a focus on empathy and anthropomorphism in the zoo research literature.

Early Childhood:Co-Regulation and Joint Attention

Socioemotional development, including empathy development, for young children begins with receiving responsive care in infancy (Stern & Cassidy, 2018). Development of emotional regulation has been found to be closely related to empathy development (Decety & Jackson, 2004; Ornaghi et al., 2020; Peterson et al. 2018). So it is important to have an understanding of these concepts. Skills children acquire during the early years are fundamentally dependent on the quality of their interactions with their primary caregivers (Center on the Developing Child, 2007; ED-HHS, 2016; National Scientific Council on the Developing Child, 2020). "Development" is

defined here as change that comes about through a biological process or maturation, while "learning" does not just happen naturally, it is change that occurs as the result of an experience (Bransford, Brown, & Cocking, 2000). For the early childhood field, it is especially important to view learning and development holistically, across domains. Cognitive development is interconnected with social-emotional and physical development (Lewis, 2002; National Scientific Council on the Developing Child, 2020). A disruption in a child's social and emotional development will also impact their cognitive and physical development (Lewis, 2002; National Scientific Council on the Developing Child, 2020).

A secure relationship between a caregiver and a young child is developed through synchrony. For infants, synchrony means that they are matching up their biological rhythms with their caregiver (Feldman, 2007). Besides biological processes, it also includes coordinated attention, gaze, affect, and vocalizations (Brio et al. 2014; Feldman 2007). Synchrony leads to the development of important social-emotional skills, reduced stress levels, and improved cognitive functioning, and emotional regulation (Eisenberg, Cumberland, & Spinrad, 1998; Feldman, 2007; Lecle`re et al. 2014). For example, children ages three to four who are securely attached tend to be more prosocial and sympathetic towards others, traits which are positively correlated with empathy (Eisenberg et al., 2006).

Emotional regulation is a person's ability to utilize appropriate strategies to understand and manage their emotions (Eisenberg, Cumberland, & Spinrad, 1998). Regulation is, to some extent, a part of all learning and development in the first years of a child's life (Papousek, Schieche, & Wurmser, 2007). "Co-regulation" is the process that occurs when responsive caregivers offer supportive interactions to "facilitate a child's ability to understand, express, and modulate their thoughts, feelings, and behavior." (Murray, Rosanbalm, Christopoulos, &

Hamoudi, 2015, p. 3). By being present and attuned in stressful moments, a responsive caregiver can help calm an infant and help them organize their feelings, so they will not feel as stressed by similar situations in the future (Feldman, 2007).

Gradually, appropriate co-regulation with a caregiver leads to self-regulation as the child grows up and is able to manage more of their own emotions independently (Murray, et al. 2015). "Self-regulation" is when one is able to control one's thoughts and emotions to carry out goal-directed actions. It is essential for success in settings and contexts across the lifespan, including school, work, and personal relationships (Murray, et al., 2015). The development of healthy self-regulation skills depends on interactions with predictable and supportive caregivers, in predictable and supportive environments (Murray, et al., 2015). As children reach preschool age, they rely on adult caregivers less for external regulation, and more for providing strategies to cope with difficult emotions (Calkins, 2009; Sameroff, 2009).

Joint attention, or shared attention, is an essential mechanism of human development, closely tied to coregulation. It occurs when two individuals share focus on an object (Moore & Dunham, 1995). Joint attention begins with shared gaze between a caregiver and infant, most infants can follow a caregiver's eye gaze to establish reference by the time they are a year old and all can by 14 months (Moore & Dunham, 1995). It is closely tied to an infant's early language and communication abilities (Carpenter, Nagell, & Tomasello, Butterworth, & Moore, 1998; Tomasello,1995; Tomasello & Carpenter, 2007). When joint attention is established, it supports learning, and retention of new information (Tessler & Nelson, 1994). One study found that the level of engagement in toddlers (24 months old) in joint attention with their mothers correlated with the children's emotional regulatory abilities. (Morales, Mundy, Crowson, Neal, & Delgado, 2005). Joint attention is distinguished from shared gaze, which is seen as a less

advanced behavior, by the social and mutual nature of joint attention (Hoerl and McCormack, 2005).

Healthy development of self-regulation is closely tied to the development of other social-emotional learning, or SEL, skills. In recent decades, there has been increased focus on the importance of SEL for children's overall development (Denhem & Brown, 2010). Research supports that higher SEL skills are correlated with young children's overall positive social-emotional and academic outcomes (Heckman, 2000; Montroy, Bowles, Skibbe, & Foster, 2014). There is also support from the literature that ILEs, particularly children's museums, are places where children may build up these important SEL skills (White 2012; Luke & Windleharth, 2013). Not only that, but Luke et al. (2019) reported that caregivers may even notice their children building their SEL skills while in the children's museum, and value that aspect of the visit.

Empathy: Defining Empathy

What is meant by "empathy"? Broadly, empathy is the ability to resonate with the positive or negative emotional state of others (Singer & Klimecki, 2014; Wispé, 1991). At the turn of the twentieth century, the word "empathy" came into English from the German word "Einfühlung," meaning "in-feeling" (Lanzoni, 2018). Scholars across a broad range of disciplines have used the term "empathy" to describe a diverse spectrum of phenomena (Batson, 2009; Cuff et al., 2016; Lamm & Majdandžić, 2015). Disciplines also understand empathy in different ways—for example, while social neuroscience views empathy as an individual ability, anthropology views empathy as an embedded sociocultural process (Roerig et al., 2015). However, Eklund and Meranius (2021) found that disciplines are increasingly moving toward consensus when defining empathy. They state that: "In empathy, the empathizer

(1) understands, (2) feels, and (3) shares another person's world (4) with self-other differentiation" (p. 305).

Empathy is typically defined as including both affective and cognitive elements (Berliner & Masterson, 2015; Cuff et al., 2016; Ornaghi et al., 2020). Affective empathy is the experience of emotions in response to a stimulus, while cognitive empathy is the ability to understand others' emotions. Empathy may be viewed as a competency that may be developed throughout one's lifespan (Singh & Dali, 2013). In contrast, dispositional empathy is viewed as an individual trait that remains stable (Grühn, et al. 2008).

It may be more accurate to describe empathy as a category of emotions, rather than a distinct individual emotion (Stocks & Clark, 2020). A seminal work by Batson (2009) identifies eight distinct concepts of empathy: Knowing another person's internal state, including thoughts and feelings; adopting the posture or matching the neural responses of an observed other; coming to feel as another person feels; intuiting or projecting oneself into another's situation; imagining how another is thinking and feeling; imagining how one would think and feel in the other's place; feeling distressed at witnessing another person's suffering; and feeling for another person who is suffering (or empathic concern).

Young et al. (2018) provide a definition of empathy that encompasses both human and 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" (p. 329). This is also the definition of empathy used by the Woodland Park Zoo (2019). Because this definition encompasses both human and non-human animals, it will be the definition of empathy utilized for this study.

Empathy and Related Constructs

Different scholars have various ways of distinguishing empathy from related concepts, such as sympathy (Batson, 2009; Cuff et al., 2016). Generally, empathy is considered related to, but distinct, from compassion and sympathy. Sympathy only occurs in a negative emotional context, such as feeling sorry for a person in distress (Wispé, 1991), while compassion consistently involves positive feelings of concern, and motivation to take action on behalf of others. Empathy can involve both positive and negative feelings (Singer & Klimecki, 2014). These different constructs do interact. Findings from Yang and Yang (2016) indicate a notable interaction between sympathy and an individual's empathy which, in turn, impacts originality in creative performance.

Cognitive empathy, the ability to understand others' emotions, is closely linked to the "theory of mind" (ToM), or our ability to understand the mental state of another person (Bensalah et al., 2016; Blair, 2005; Cuff et al., 2016) and affective perspective-taking (Bensalah et al., 2016). ToM is often conflated with empathy (Blair, 2005; Brown et al. 2017) either because there is a positive correlation between the two (Eisenberg, Fabes, & Spinrad, 2006) or similar prerequisites for the development of both (Decety & Grezes, 2006). Theory of mind (ToM) is also developmentally connected to episodic memory (EM), memory for past personal experiences (Brien et al. 2021). There is a complex interrelationship between EM, personal narrative discourse skills, theory of mind, and executive functions that underscores their shared role in cognitive development and function (Brien et al. 2021).The importance of personal narrative will be discussed in greater detail later in this review

Autobiographical memory, or memory of the self, is made up of two different types of memories- personally experienced events (personal episodic memories) and self-related

information (personal semantic memories) (Brien et al. 2021; Crane & Goddard, 2008). In contrast to semantic memory's (SM) objective and fact-based nature, EM is characterized by its subjectivity, rooted in personal experiences and emotions (Brien et al. 2021). Empathic concern builds on both affective and cognitive empathy to drive someone to act on another's behalf (Pfattheicher et al., 2015). For example, a person displays empathic concern toward animals when untangling a wild animal trapped in a net (Young et al., 2018).

Scholars have disputed whether empathy must lead to a behavioral outcome (Cuff et al., 2016). However, they agree that empathic concern is an important part of prosocial behavior (Batson, 1991; Batson, 2009; Eisenberg, Fabes & Spinard, 2006). Batson (Batson 2011; Batson et al., 2015) developed the empathy-altruism hypothesis (EAH) from a series of experiments. According to the EAH, empathic concern leads to altruistic motivation. For example, when one person empathizes with another person, the first person's empathy causes them to be altruistically motivated to help the second (Batson 2011; Batson et al., 2015). Berenguer (2010) used Batson's work on empathy-altruism to put forth that, by manipulating empathy, one can improve moral reasoning about the environment (moral reasons for protecting the environment). Behavioral outcomes, specifically conservation-aligned behavioral outcomes, may be the central motivation for zoo empathy initiatives. However, because this study is looking at young children in the early stages of empathy development, all empathy-related behaviors are of interest, not only empathy-driven behavioral outcomes.

Regardless of these different conceptualizations of empathy, empathy is generally viewed as an integral part of a larger moral sense that promotes cooperation between individuals, both on a regular basis and in times of heightened distress (Moreno, Klute, & Robinson, 2008).

Empathy: The Positive and Negative

Just as there is no one single understanding of "empathy," there is a lack of consensus on the value of empathy, and whether its effects are generally positive or negative. Because empathy is a complex construct, neither wholly positive or negative, it is important to be aware of critiques and shortcomings of empathy, even though this project puts forth that empathy development is ultimately worthwhile.

In contrast to the recent surge of popular interest in empathy in recent years, there have also been some notable critics of empathy from a moral standpoint (Bloom, 2017a; Bloom 2017b; Kasperbauer, 2014; Prinz 2011). These criticisms should be considered in light of how humans empathize with animals. Bloom does not criticize the concept of empathy more broadly, but specifically "empathic affect matching" (Dahl, 2017), or "coming to experience the world as you think someone else does" (Bloom 2017a, p. 16). In particular, Bloom claims that empathy has significant flaws as a method for making moral decisions (Bloom, 2017a; Bloom 2017b). The major concern (Bloom 2017a; Bloom 2017b; Prinz 2011) is that empathy (specifically empathic affect matching, described by Bloom) leads to bias, favoring certain individuals one can empathize with, to the detriment of others. This bias can lead to inequitable treatment, and even violence, against those we do not empathize with (Bloom, 2017a; Bloom 2017b; Prinz 2011). Another critique of empathy is that it can unintentionally reinforce power imbalances if those who are privileged use it as an expression of power, which may entrench existing inequalities instead of challenging them (Kurian, 2019).

Some critics of empathy additionally note the "identifiable victim effect," the idea that people are significantly more inclined to offer help when there is a single, identifiable victim (vs a group, or an unidentified individual) (Kogut & Ritov, 2005). It is not wrong to use tools, such as narratives, to raise awareness for the needs of particular individuals, but some critics of

empathy point out that this aid could come at the expense of helping a greater number of individuals (Bloom, 2017a; Bloom 2017b).

A prominent criticism of empathy in the literature is the potential for negative empathy to lead to moral disengagement. If feelings of empathy are too intense, an individual may disengage as a protective response (Bandura, 1999; Dewar, 2013; Singer & Klimecki, 2014). Moral disengagement was influentially defined by Bandura (1999) as a process of cognitive restructuring that enables individuals to disconnect from their internal moral standards and behave unethically without feeling distressed. Moral disengagement can limit one's inclination to provide help in a moral dilemma scenario (Paciello et al., 2013). Research indicates significant negative correlations between empathy and moral disengagement, as well as positive correlations between moral disengagement and various forms of bullying, and misconduct in children (Dewar, 2013; Kokkinos & Kipritsi, 2018). A similar concept is empathic distress, also known as "compassion fatigue" (Chikovani et al., 2015; Eisenberg, 1989). This is empathy associated with negative feelings and a desire to withdraw from the situation in order to protect oneself from excessive negative emotions. Chronic empathic distress can lead to negative health outcomes. It can be especially challenging for individuals working in caring professions (doctors, therapists, etc.) (Chikovani et al., 2015; Eisenberg, 1989; Singer & Klimecki, 2014). Having a high degree of empathy as an individual can lead to a bias towards emotional negativity, potentially carrying a risk for empathic distress (Chikovani et al., 2015). A review of the literature on empathy by the Seattle Aquarium (2015), another member of the ACE Network, acknowledges that moral disengagement can be a barrier to empathy development in zoos and aquariums.

To better understand empathy in light of these criticisms, Lobb (2017) describes two kinds of empathy 1) doxic empathy, or the type of empathy that reinforces existing power

structures, and 2) critical empathy, a form of empathy that aims to confront and transform social suffering. Wilson and colleagues (2022) further distinguish "constructive empathy," for animals, or empathy that leads to purposeful and effective action(s), from empathy for animals that is not constructive:

> "For example, empathy for cats may inspire a person to feed feral cats in their neighborhood, thereby contributing to a health and welfare problem in the population, resulting in a greater need for culling. Unwittingly, then, the person has taken an action that is indirect opposition to their assumed intent—causing a cat to be euthanized instead of helping it survive." (Wilson et al., 2022; p. 419).

Even proponents of empathy caution not to overstate the significance of empathy in every moral context. Humans can be prone to errors of empathy. Goldman (2011) describes two kinds of empathy errors 1) "error of omission": leaving out relevant information while empathizing due to ignorance, and 2) "error of commission": when one's own experience is incorrectly projected onto another.

Despite these criticisms, the value of empathy is not without support from the research literature. Research suggests ways to offset the potential negative effects of empathy. . This paper has touched on the importance of self-regulation skills in relation to empathy in early childhood,but research indicates that the connection between these skills and empathy continues into adulthood. While findings from MacDonald & Price (2019) indicate that higher affective empathy in college students can lead to a negative effect on their mental health, specifically internalizing symptoms, the development of emotional regulation skills can prevent affective empathy from leading to internalizing symptoms (MacDonald & Price, 2019).

In one study, higher empathy led preschool children to share more when happy and maintain sharing when sad, while lower empathy resulted in less sharing after sadness, indicating that empathy may enhance the positive effect of happiness while reducing the negative effect of

sadness on sharing behavior (Guo & Wu 2020). Regarding moral concern for animals, some scholars argue that empathy is not necessary, and that more attention should be given to negative emotions, such as anger, to motivate humans (i.e. a human feels anger at seeing an animal being harmed, and is spurred to act to reduce or eliminate this harm) (Bloom; Kasperbauer, 2014; Prinz, 2011). However, others contend that this argument rests on a fallacy, because this anger that motivates moral concern for animals is itself linked to empathy, and anger alone is also prone to bias (Aaltola, 2018). Further, bias is not inevitably part of empathy, if one makes an effort to engage in conscious reflection about their empathetic feelings (Aaltola, 2018), and in some cases, empathy can actually reduce bias (Morris, 2019). Additionally, some argue that empathy is not just passive, it is just as, if not more so, related to taking helpful action than anger (Aaltola, 2018; Batson et al. 2002; Morris, 2019).

Some scholars have critiqued the current theories of empathy which are typically separate from theories of emotion (Dahl, 2017; Wondra & Ellsworth, 2015). Dahl (2017) argues that we cannot entirely separate the type of "empathic affect matching" that Bloom considers problematic from concern for others generally. Dahl (2017) further argues for the need to disentangle empirical psychological research from moral evaluations, and calls for a deeper understanding of empathy and morality as two distinct domains. Song (2018) defends empathy while also calling for a nuanced and balanced approach to understanding and advocating for empathy in moral discourse. Kurian (2019) criticizes the perception of empathy as "simple and inevitable" (p. 120) but advocates for a form of empathy grounded in nuance and introspection, encouraging people to be aware of their privilege and positionality, and respecting the agency and of those different from themselves.

In sum, part of the complexity of empathy as a construct is that it is not wholly positive. While positive and negative empathy share foundational empathic processes, they are distinct capacities that relate to different patterns of social behavior and social emotion. (Andreychik & Migliaccio, 2015). Research suggests that positive empathy is associated with pro-relational behaviors and acts of kindness aimed at increasing others' happiness, while negative empathy is linked to personal distress and helping behaviors in response to others' suffering (Andreychik & Migliaccio, 2015). It is important to understand both positive and negative empathy in the context of social interactions and prosocial behaviors (Andreychik & Migliaccio, 2015).

Development of Empathy

Scholars believe that empathy in mammals evolved from systems of responsive care for offspring and other kin (de Waal, 2008; Decety et al., 2012). According to Young, Khalil, and Wharton (2018) and Małecki et al. (2019), empathy is likely more prevalent in social animals or species, which relate to social groups. This implies that animals that depend on a group for survival have to be highly sensitive to what those near them feel, whether they are non-humans or humans. Van Lange (2021) claims that empathy in animals introduces an entirely new way of viewing animals, signifying that human feelings toward them may be reciprocated. Similarly, animals probably care about their species members. This multifaceted emotional trait can be seen in other primates, elephants, mice, and dogs (Małecki et al., 2019).

Despite these observations, the psychological and neurological mechanisms underlying empathy are contested, particularly for humans (Paulus, 2020; Lamm & Majdandžić, 2015). It has commonly been assumed that mirror neurons “are the very reason why we can empathize with others – being the little work horses that pull the carriage of our empathic abilities” (Lamm & Majdandžić, 2015; p. 19). However, there is no direct evidence that mirror neurons are

responsible for empathy (Lamm & Majdandžić, 2015; p. 19). Empathy is now thought to result from an overlap in brain circuits. For example, the same affective pain circuits are activated when experiencing pain oneself and when knowing that another is experiencing pain (Decety 2015; Lamm & Majdandžić, 2015; Singer et al., 2004; Singer, 2006). A deeper engagement with the neurological underpinnings of empathy is beyond the scope of this present work, but there is an extensive body of literature available (see Cuff et al., 2016; Decety & Jackson, 2004; Eres et al., 2015; Lamm & Majdandžić, 2015; Zaki & Ochsner, 2012).

Regardless of the mechanisms behind empathy, it is considered crucial to the social development of young children (Stern & Cassidy, 2018). It is linked to prosocial behaviors (Batson 1991; Batson 2009; Eisenberg, Eggum, & Di Giunta, 2010; Eisenberg, Fabes & Spinard, 2006; Wu & Kim, 2019), including reduced aggression and conduct problems (Eisenberg, Eggum, & Di Giunta, 2010; Johnson et al., 2017; Taumoepeau & Reese, 2013; Van Bergen et al., 2009). Components of empathy that have been shown to develop in early childhood include affective sharing, understanding emotions, and emotional regulation processes (Decety & Jackson, 2004).

Previously, researchers had assumed that young children were incapable of experiencing empathy (Piaget, 1965; Davidov et al., 2013; Zahn-Waxler, 1998; Zahn-Waxler, Radke-Yarrow, Wagner, & Chapman, 1992). However, Hoffman's (1975, 1987, 2000) important work with young children and empathy development showed that empathy towards others emerges during the second year of life (Zahn-Waxler, 1998), with early precursors of empathic arousal seen in infancy (Hoffman, 1975). More recently, research has more fully demonstrated that children display empathic abilities in early infancy (Davidov et al., 2013; 2021)

In contrast to the arguments from earlier researchers, Decety (2015) found that the

distressed reactions of infants and older children to the distress of others do not come from the confusion they feel between themselves and others, but from difficulties in regulation arousal. (Decety, 2015). Furthermore, higher levels of emotional regulation in 9-month-old infants can also predict higher levels of empathy at age 2 (Peterson et al. 2018).

Research now suggests that infants are capable of expressing empathic concern for others from as early as three months of age (Davidov et al., 2021) and that infants of this age also show a preference for those who act prosocially towards an unrelated other versus those who act antisocially (Hamlin & Wynn, 2011). Emotional regulation is also significantly related to empathy in toddlers (Ornaghi et al., 2020; Peterson et al., 2018). Thus, the existing research provides evidence that empathy development occurs in very young children and that it is a vital component of their healthy socio-emotional development.

However, empathy is not similarly displayed throughout childhood. Paulus' (2020) findings suggest that the psychological mechanisms underlying empathy in young children change as they grow from infants to preschoolers, with older children being more likely than younger ones to prefer helping a person who is needy instead of one who is not needy.

Individual capacity for empathy, or lack thereof, can broadly impact social functioning (Eisenberg et al., 2015). Furthermore, comparative psychological research on empathy indicates that while empathic ability is nearly universal among humans, empathic tendency is variable (Preston & de Waal, 2002). Empathetic tendency is the potential of one to empathize in their everyday life (Dereli & Aypay, 2012; Dokmen, 1987). Although humans are born with a capacity for empathy, empathy is not necessarily automatic, and the capacity to empathize with others can break down under challenging circumstances (Schumann et al., 2014).

A significant issue identified by research on empathy has been the decreasing levels of

empathy in the United States for the past few decades (Konrath et al., 2011; Schumann et al., 2014). In a large-scale study, American college students in 2009 were found to display, on average, less empathy than 75% of students in 1979 (Konrath et al., 2011). However, while circumstances may drive people to avoid empathy, they can also be motivated to move towards empathy (Zaki, 2014) and can learn to strengthen and develop empathy (Schumann et al., 2014; Zaki, 2019; Zaki, 2014; Zaki & Ochsner, 2012). While empathy is shaped early in childhood by relationships and other contextual factors, the mechanisms which support empathy are flexible and responsive to behavioral interventions (Decety, 2015).

Empathy and Caregivers

Early empathy development is shaped by close relationships (Decety, 2015; Hoffman, 2000; Tong et al., 2012), and the home environment is an important predictor of young children's empathy development (Tong et al., 2012). Young children's empathy and prosocial behavior are shown to be nurtured by parental warmth and sensitivity (Spinrad & Gal, 2018).

As discussed in the theoretical framework, empathy development for young children begins with receiving responsive care in infancy (Stern & Cassidy, 2018). By the time children reach preschool age, emotional regulation becomes less of an external process supported by adult caregivers and more of an internal process, with caregivers providing coping strategies as support (Calkins, 2009; Sameroff, 2009).

Observational research by Tong et al. (2012) found that several parenting factors, including parent-child interaction, stability of parenting practices, parental attitude, and mother's mental health status, were linked with the development of children's empathy. Stern et al.'s (2016) findings suggest that parent empathy aids in developing secure attachments, possibly because responsive caregiving behaviors are enhanced by empathy. When parents direct their

children's attention to the emotions of those around them, it enhances the children's sensitivity to the needs of others (Spinard & Gal, 2018).

Young children's empathy and prosocial behavior are nurtured by parental warmth and sensitivity (Spinrad & Gal, 2018). Findings from Ornaghi et al. (2020) indicate that maternal emotion-coaching style, along with emotion regulation, may help explain varying levels of toddlers' empathy.

Parents play a critical role in shaping children's understanding of internal psychological states and feelings through language and social interactions (Ornaghi et al., 2010; Vadeboncoeur & Collie, 2013). For example, discussing psychological states, such as fear, not only advances children's language skills related to these terms, but also enhances their self-awareness and understanding of others' perspectives and emotions. This, in turn, boosts their performance on tasks such as identifying the emotions of a fictional character (Vadeboncoeur & Collie, 2013). The importance of discussing psychological states and feelings is supported by results from Taumoepeau & Ruffman (2006), which indicate that when mothers engage their toddlers (15-month-olds) in emotion talk, it may predict their future use of psychological state language and their emotion task performance at 24 months.

To further emphasize the link between language and emotions, there is an association in the research literature between advanced language ability and empathy in toddlers (Ensor et al., 2011; Rhee et al., 2013; Ornaghi et al. 2017). Vadeboncoeur and Collie (2013) emphasize the role of parents in engaging their young through the use of personal pronouns, which signals the child's beginning consolidation of a sense of self, which is a necessary precursor to empathy. When children use these personal pronouns in dialogue, they can reflect on their own experiences and emotions and consider the perspectives of others. This reflective process is

crucial for developing a "logic of feelings" around age 7 that integrates intellectual and emotional understanding. (Vadeboncoeur & Collie, 2013).

Children's language abilities, particularly their ability to use complex sentences and express themselves verbally, may also be correlated to their tendency to anthropomorphize (Tahiroglu & Taylor, 2019). Specifically, children with higher verbal ability were more likely to use anthropomorphic language when narrating events in animated films (Tahiroglu & Taylor, 2019).

Imagination and Play

Imaginary play can benefit children's development of empathy, and related social-emotional skills. Imagination is a key part of empathy, allowing one to see another's perspective (Jensen, 2016). Research suggests that pretend play gives young children the chance to build up their emotional regulation abilities because they have the opportunity to practice intense emotional experiences in a safe environment (Brown et al. 2015; Hoffman & Russ, 2012). Piaget (1962) argued that all pretend play activities are at least in some part social, because even solo pretend play is performed with an imaginary other. Higher levels of imagination in play may correlate to higher levels of emotional regulation skills in young children (Hoffman & Russ, 2012).

Fantasy Orientation (FO) refers to an individual's propensity to think and play in a fantastical realm (Brown et al. 2015; Sharon & Woolley, 2004; Singer & Singer, 1990; Taylor, 1999). It is a trait that relates to children's inclination towards engaging in pretense, imagining fantastical scenarios, and incorporating fantasy elements into their play and thought processes (Brown et al. 2015; Sharon & Woolley, 2004; Singer & Singer, 1990; Taylor, 1999). FO is measured through various indicators such as the presence of imaginary companions,

participation in imaginative play, and the predisposition to engage in pretend activities (Brown et al. 2015; Sharon & Woolley, 2004; Singer & Singer, 1990; Taylor, 1999).

FO is associated with better Theory of Mind (ToM) understanding and is thought to provide a context in which both ToM and affective empathy may develop (Brown et al. 2015; Taylor & Carlson, 1997). Fantasy Orientation (FO) may also predict affective empathy beyond Theory of Mind (ToM) ability (Brown et al. 2015).

Engaging in doll play can offer children the chance to practice social interactions, fostering the development of emotions such as empathy (Hashmi et al., 2020). In a study commissioned by the toy company Mattel, Hashmi and colleagues (2020) found that the same neural regions were strongly activated for both social play and solo play with a doll, but not with an electronic tablet. They found that playing with dolls could give children opportunities to practice social interactions, fostering the development of emotions such as empathy. Wilson and colleagues (2022) built on this work to suggest that realistic animal statues, such as those found in zoos, could function in a similar way to dolls in these social interactions.

Conversations and Reminiscing

Caregiver-Child Conversations

Conversations with caregivers are an important mechanism and process through which children learn, as discussed in the theoretical framework (Fivush, Haden, & Reese, 2006; Haden, 2010; Thompson, 2006). . Although many different types of caregiver-child conversations are valuable for learning and this development, this project has a particular focus on reminiscing conversations. As detailed previously, “reminiscing” is used in this paper to mean a conversation about shared past events which includes reflection as to why said events are meaningful to the individuals involved. This reflection as to what makes an event personally meaningful to those

involved is what distinguishes “reminiscing” from other forms of shared recollection of events (Fivush, 2008). Hoerl and McCormack (2005) frame joint reminiscing as a form of joint attention to the past that involves linguistic interactions and the sharing of memories of specific past events. Specifically, they contend that joint reminiscing requires a shared language, particularly linguistic devices like the past tense, to allow two people to focus jointly on past events as well as their current environment (Hoerl and McCormack, 2005).

“Elaborative reminiscing” is a process in which caregivers speak with children about the past in a way that is “detailed, emotional, and collaborative” (Salmon & Reese, 2016; p. 233). Relatedly, an elaborative conversation style is one in which the caregiver provides the child with detailed information in their statements and questions. The caregiver will continue to respond to the child with more elaborative questions and statements even if the child does not provide new information in response (Fivush, Haden, & Reese, 2006; Haden, Ornstein, Eckerman, & Didow, 2001; Reese, Haden, & Fivush, 1993).

Narratives and Meaning Making

Conversations with parents begin to teach young children how they make meaning from personal events (Reese, Jack, & White, 2010). A particular form of memory, autobiographical memories, are memories related to the self, “transitory dynamic mental constructions generated from an underlying knowledge base” (Conway & Pleydell-Pearce, 2000, p. 261). These autobiographical memories make up autobiographical narratives, or the stories people tell about their lives, and help define how individuals situate themselves in relation to their closest relationships, and to society at large (Fivush, 2008). These narratives are shaped in early childhood by reminiscing with a caregiver (Fivush, 2008). The sociocultural model of the development of autobiographical memory emphasizes the role of language and narrative in

autobiography, as they allow for the sharing of past experiences and the reconstruction of personal experiences in social interaction (Fivush 2014)

Narratives enable children to represent alternative states of the world, understand past and present, comprehend alternative experiences, and differentiate between different feelings about the same event. Additionally, narratives provide a framework that allows participants to "fill gaps" in word meaning, knowledge, and action as they engage in social practices. Through listening to and creating narratives, children are exposed to a variety of emotional experiences and perspectives, which contribute to their cognitive and emotional development. Furthermore, narratives play a crucial role in enabling children to understand and represent their own and others' internal psychological states, fostering a deeper understanding of emotions and social interactions. (Fivush et al. 2006; McAdams & McLean 2013; Nelson, 2005; Vadeboncoeur & Collie, 2013).

Personal narrative discourse skills are part of a complex interrelationship along with episodic memory (EM), theory of mind, and executive functions (Brien et al. 2021).

As mentioned previously in this chapter, children can utilize personal narrative discourse to learn to create an organizational and evaluative framework that aids in the retrieval of EMs. This narrative structure not only helps in the recall of past experiences but also enhances children's ability to use these narratives to systematically arrange their memories (Nelson & Fivush, 2004). The process of articulating personal experiences requires the ability to integrate EMs while also ensuring narrative coherence (Brien et al. 2021; Westby & Culatta, 2016). EM is also linked to autobiographical memories, which research suggests have a positive relationship with empathy (Tani et al., 2014).

Caregiver-child conversations have many benefits, but they may be particularly

important for socioemotional development (Brownell et al., 2013; Fivush, Haden, & Reese, 2006; Laible, 2004; Salmon & Reece, 2016; Wareham & Salmon, 2006; Wang, 2013). Co-constructing emotional meaning in a conversation with a caregiver can lead to the development of greater emotional knowledge in young children (Brownell et al., 2013). The importance of questions from parents was introduced previously in this section. Questions from parents may encourage children to think about emotions and practice finding words to describe the emotions in their memories and experiences (Salmon & Reese, 2016).

Research indicates that parent-child conversations specifically about past emotions are linked to the development of socio-emotional skills (Laible, 2004; Salmon & Reece, 2016; Wareham & Salmon, 2006; Wang, 2013). When parents elaborately reminisce with their young children, they are co-constructing a supportive narrative. This process is crucial for young children's socioemotional, language, and cognitive development (Brownell et al., 2013; Fivush et al., 2006; Nelson & Fivush, 2004; Salmon & Reece, 2016; Thompson, 2006). A benefit of reminiscing about an emotional experience is that it allows a child to reflect on and reexamine the situation after some of the event's emotional intensity has abated (Salmon & Reece, 2016). Parent-child reminiscing may be particularly important for helping young children learn to process negative emotions (Laible & Panfile, 2009; Leyva et al., 2014), and research has suggested that discussing negative, rather than positive, emotions is linked more strongly to child well-being (Sales & Fivush, 2005).

Sociocultural theory supports that shared adult-child discourse is of importance as having a shared discourse with parents helps children build an understanding of emotions (Fivush et al., 2006; Laible et al., 2013; Vygotsky, 1978). When these conversations involve past emotional experiences, parents can also scaffold emotional expression and understanding, teaching children

about emotions in themselves and others (Denham et al., 1992; Laible, 2004; Laible & Panfile, 2009; Leyva et al., 2014; Warham & Salmon, 2006).

This socioemotional development is closely connected to the development of empathy, and there is also significant research focused specifically on empathy. In a longitudinal study of children's subsequent socioemotional development between 42 months and 48 months, Panfile and Laible (2012) linked the effect of reminiscing on socioemotional development and experiences to the development of empathy in young children. Results of another study, which utilized structured narrative elicitation tasks and observational empathy tasks, indicate that reminiscing about pain with parents leads young children to empathize more with others' pain (Pavlova et al., 2019). Reminiscing is also linked to the development of EM (discussed above) which is, in turn, intertwined with social development (Brien & Hutchins, 2022).

Beyond the ILE: Transfer and Reminiscing

Questions and explanations, some of the important features of SST (Degotardi et al., 2019), and connections across contexts may be tied to the successful transfer of learning from adults to young children. For example, one study on preschool students found that when children explained (prompted or unprompted) why an example was an instance of a particular rule, it had a large positive effect on enabling children to apply the rule to new examples (Brown & Kane, 1988).

These elaborative conversational interactions between parents and children may be especially important for encoding memories of particular events, leading to later elaborative reminiscing by children (Hedrick et al. 2009). In particular, joint discussion at the time of the event allows a child to recall specific details better (Hedrick et al. 2009). Many studies have also discussed the value of caregivers asking "wh-" questions, such as "why" and "what"

(Fivush, Haden, & Reese, 2006; Haden, 2010; Jant, Haden, Uttal, & Babcock, 2014), including studies set in museums (Benjamin et al., 2010; Haden et al., 2014; Jant et al., 2014; Tessler & Nelson, 1994). Crowley and Fender (2007) propose that certain aspects of conversations with caregivers (asking questions or asking the child to elaborate, prompting them to connect to prior knowledge) encourage children to focus on important features of an activity.

Conversation and Transfer

Jant et al.'s (2014) findings suggest that conversations may be important for transfer because they allow the caregiver to help the child make connections between an exhibited object and other contexts. They also may encourage the child to focus less on the object at hand and more on abstract ideas, a concept known as "concreteness fading" (Goldstone and Sakamoto, 2003). Relatedly, reminiscing in conversations with a caregiver may promote "cognitive distancing" (Sigel, 1993), in which children focus on something beyond the immediate environment. This cognitive distancing may build the kind of narrative skills valued by formal school environments (Fivush, Haden, & Reese, 2006; Sigel, 1993). Boosting caregiver-child conversations by offering additional information seems to increase the success of transfer or lasting impact.

Collectively, the research shows that drawing connections to other contexts plays a critical role in successful transfer. Co-constructed learning interactions with a caregiver allow for learning that travels across contexts, whether that is defined as transfer or boundary crossing. In keeping with sociocultural theory, another key part of these conversations is keeping the child involved as an active partner. The child's level of responsiveness positively correlates with how well the child will remember an event or activity (Haden et al., 2001; Hedrick et al., 2009).

Elaborative Reminiscing and Empathy

Elaborative reminiscing is one way caregivers may enhance empathy. To date, several studies have examined the link between maternal influence, reminiscing and empathy (Denham et al., 1992; Fondren et al., 2020; Laible & Panfile, 2009; Moreno, Klute, & Robinson, 2008; Ornaghi et al., 2020; Speidel et al. 2019; Tong et al., 2012; Valentino et al., 2015). For example, maternal sensitivity empathy positively correlates with empathy in children (Moreno, Klute, & Robinson, 2008; Tong et al., 2012) while maternal maltreatment has been linked with lower levels of elaborative reminiscing about emotional events, which negatively affects young children's emotional knowledge, language skills, and diurnal cortisol levels (Speidel et al., 2019; Valentino et al., 2015). However, if mothers who maltreat their children engage in elaborative reminiscing, the effects of the maltreatment on children may be moderated (Valentino et al., 2015; Fondren et al., 2020).

Elaborative conversation style

A caregiver's conversation style has also been shown to be associated with memory. Researchers have found a positive relationship between a more elaborative conversation style in caregivers and their children's ability to remember an event (Fivush, Haden, & Reese, 2006; Haden, Ornstein, Eckerman, & Didow, 2001; Jack, et al., 2009; Reese, Haden, & Fivush, 1993). Findings from Jack, et al. (2009) indicate that the style of early parent-child reminiscing has a long-term influence on autobiographical memory, into adolescence.

Family Context

How families will connect to particular informal learning settings will vary widely based on factors such as their cultural context and individual history. This can be linked to what informal learning experiences they find meaningful, and what, if any lasting impact and

knowledge construction such experiences may lead to (Bang & Medin, 2010; Gutierrez & Rogoff 2003; Marin & Bang 2018); NRC, 2009; Warren et al. 2020). It should be noted that although these learning environments are termed as "informal," they do have their own sets of established norms and expectations. These unspoken standards can be difficult to navigate for visitors from outside of the dominant cultural background (Dawson, 2014).

Caregivers have their own different theories and perspectives on how children learn (Gaskins, 2008), and families from different backgrounds will have their own styles of conversation and teaching with their children (Haden et al 2014; Gaskins, 2008; NRC, 2009; Tenenbaum & Callanan, 2008). Caregivers may play a wide variety of roles in family visits to ILEs, depending on many factors including cultural context, personal interests, and priorities for the ILE experience (Bang & Medin, 2010; Beaumont, 2010; Downey et al., 2010; Gaskins, 2008; LeTourneau et al., 2020; Puchner et al., 2001; Swartz & Crowley, 2004; Wood & Wolf, 2010). Additionally, different learning environments may call for different levels of adult-directed learning and interaction. (Callanan et al. 2019; Medina & Sobel, 2020). ILEs can support families in engaging with new activities and ideas while appreciating the unique knowledge and resources each family brings into the space, and how that can be built on for new learning (Ellenbogen et al., 2007; Falk & Dierking, 2013; Gutierrez and Rogoff 2003; Kumpulainen et al., 2014; Moll et al., 2005; NRC, 2009; Tenenbaum & Callanan, 2008).

While this research is informed by a knowledge of child development, a goal of this project is to examine how dyads experience the zoo's early childhood programming and resources in the context of each family, without judgment based on normative concepts of "best" practices. Instead, this work aims for a holistic, asset-based perspective on family interactions and activity.

In relation to zoos, Different religions and cultures have different beliefs about particular animal species, such as the sacredness of cows in Hinduism (Jegatheesan, 2015).
More broadly, different cultures have widely different perspectives on the relationship between humans and the rest of the natural world. The cultural background of children, and the environment in which they were raised, could influence their perception of animals' needs (Ross et al., 2003) and cultures that give children early exposure to nature have children who tend to be less prone to anthropocentric reasoning (Geerdts, 2016; Medin et al., 2010; Medin & Atran, 2004; Tarlowski, 2006). Also,

For example, many zoos present information on animals as members of an individual species. However, as discussed by Bang and colleagues (2018), indigenous people view different species in context, as being part of a larger ecosystem of reciprocal relationships. This includes viewing humans in relationship with other species as part of the natural world, rather than as separate observers (Bang, et. al., 2018).

Perspectives on anthropomorphism, or viewing non-human objects and lifeforms as having human traits and motivations, vary across cultures. Most modern western scholarship has a largely negative view of anthropomorphism, but other cultures around the world have long standing traditions of viewing animals and other members of the natural world as close to or more than human (Bang, et al., 2018; Belcourt, 2014; Holmberg, 2022; Hovorka, 2017; Latour, 1993; TallBear, 2011; Young et al., 2018). Among other reasons, this narrow perspective on anthropomorphism has led to calls among researchers to decolonize multispecies scholarship (Belcourt 2014; Holmberg, 2022; Hovorka, 2017; TallBear, 2011). Even though modern western scholarship has a largely negative view of the validity of anthropomorphism, it is still frequently used by adults to teach children about animals (Geerdts, 2016).

Reminiscing conversations also serve to scaffold culturally relevant traditions of narrative and the concept of time (Habermas & Reese, 2015). Different familial and cultural settings significantly impact how early memories form and how well they are retained. In the United States, studies on memory and a caregiver's conversation style have found a positive relationship between a more elaborative conversation style in caregivers and their children's ability to remember an event. An elaborative conversation style is one in which the caregiver provides the child with detailed information in their statements and asks detailed questions. The caregiver will continue to respond to the child with increasingly elaborative questions and statements even if the child does not provide new information in response (Fivush, Haden, & Reese, 2006; Fivush, 2014). Maori adults have the earliest childhood memories of any society studied to date, going back to age 2.5, which researchers attribute to Maori parents' highly elaborative style of telling family stories. (Reese et al., 2008). The type of reminiscing might change according to the culture, from a more individual focus (as in the United States or Western Europe) or a more collective focus (as in many African or Asian cultures). Cultures with a more individual focus tend to have more early childhood memories that are focused on themselves. Instead, those from more collective cultures have fewer early memories that tend to focus on group experiences (Wang, 2004).

Different cultures also have different conceptions of empathy (Atkins et al., 2016; Chopik, et al., 2017; Roerig et al., 2015). Culture may moderate empathy in response to seeing physical or social pain (Atkins et al., 2016).

To date, most research on empathy has been conducted with North American participants of European descent (Chopik, et al., 2017). A large-scale study of adults across 63 countries (Chopik, et al., 2017) found higher rates of empathetic concern in collectivist

countries. However, the larger research literature has been inconclusive as to the relationship between societal collectivism/individualism and empathy (Chopik, et al., 2017). Prosocial behavior, closely related to empathy, also manifests differently across cultures- in some countries, people are more inclined to give money to charity, while in others, they are more inclined to act to aid a stranger (Chopik, et al., 2017). As relates to animals specifically, findings from Ross and colleagues (2003) showed that urban children were more inclined towards a human model of thinking about animals' behaviors, while rural children had a more accurate understanding of the animals' biological and ecological needs, which improved the accuracy of their cognitive empathy (the ability to understand another's emotions). Of these rural children, indigenous youth displayed stronger biological and ecological reasoning at a younger age as compared to youth from North American majority-culture (Ross et al., 2003).

Eichbaum and colleagues (2022) argue that empathy is a culturally situated notion, and that there is a danger of individuals inaccurately projecting their own cultural norms and values onto others as part of the process of cross-cultural emphasizing. To counter that issue within this project, I will not only be looking at my own observations of empathy development, I will be listening to what caregivers have to say about their child and empathy development, and why they would describe it as such.

While there is no single "correct" way for children to connect or learn with caregivers in an ILE, Callanan and colleagues (2019) note that there are broader patterns of how these spaces may allow for key moments for learning to occur. This study aims to honor the individual contexts of different families while looking at what broader patterns of zoo-related activity in connection to reminiscing and empathy may exist.

Sustained Shared Thinking

As referenced previously, sustained shared thinking is a sociocultural learning practice that can be used to examine conversations co-constructed by children and caregivers.

Analysis from Degotardi et al. (2019) found four major intellectual features that were associated with episodes of sustained shared thinking in museum spaces:

1) Establishing shared attention: This can be challenging in a dynamic public space, like a museum or another ILE. Young children are excited to be there, and adults and children may be attracted to different areas within the space. Yet researchers found it can be done if adults are attuned to what their child is interested in, or if the adult is knowledgeable about their child's existing interests, and can use them to draw their attention to something relevant.

2) Questioning and explaining: Questions from the adult can help the child focus on certain details of the museum space, or make a connection to some form of prior knowledge or experience.

3) Diverse and technical vocabulary: Someone, often the adult, introduces specific, detailed vocabulary into their conversation, or sometimes the child introduces specific technical languages and the adult picks it up and extends it further in their conversation.

4) Making cognitive connections: Some children made these connections themselves, others are prompted by their adult caregiver. When the child connects the new information from the current conversation with existing knowledge, their learning deepens.

Findings from Degotardi et al. (2019) indicate that **establishing shared, or joint, attention** between adult family members and young children in a museum setting seems to make it more likely that a family will engage in learning talk. Joint attention plays a vital role for young children as they develop self-regulation abilities. Again, these self-regulation abilities are closely related to empathy development in young children (Decety & Jackson, 2004; Ornaghi et al., 2020; Peterson et al. 2018).

Based on findings from their research, Crowley and Fender (2007) propose that certain aspects of conversation coming from caregivers (asking questions or for elaboration from the

child, connecting to prior knowledge) encourages children to focus their attention on important features of an activity.

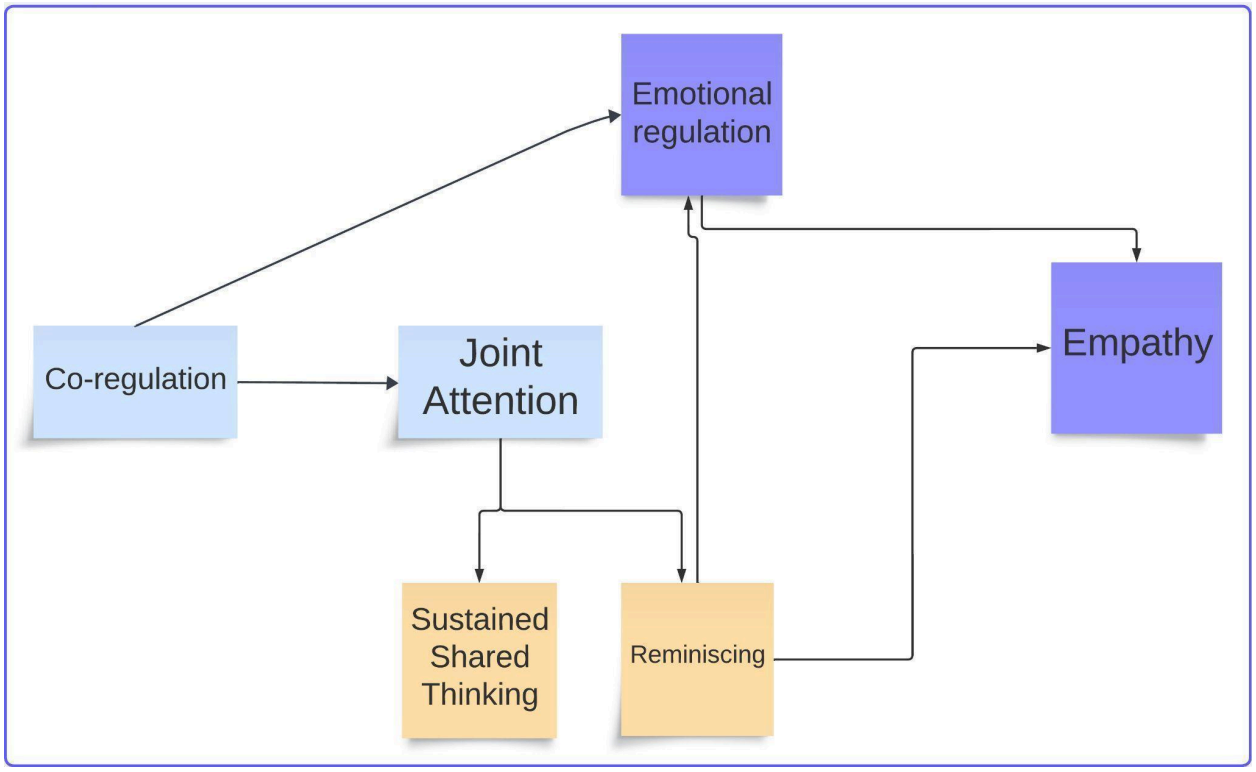
SST and Caregiver Conversations

As previously mentioned above, SST is linked to the ZPD and scaffolding. The adult must have an idea of the child's current level of skill and knowledge so that they may use SST to engage the child at an appropriate level. The adult should extend the child's learning to the next level with questions and sophisticated **vocabulary**, but not push so far beyond their abilities that they lose interest (Purdon, 2016). A caregiver may prompt their child to **make cognitive connections** between what they have learned together while pursuing the child's interests, or "island of expertise," and something that they notice in the ILE space. They may have taken the child to this ILE with the specific purpose of making these connections and building on an interest, for example, taking a child who loves trains to a train display (Crowley & Jacobs, 2002). The level of ease one may have in reconstructing a memory depends on how relevant the given context is to the memory, and on how the learner relates to the cues. If the cues relate to the learner's interests, that will likely improve the reconstruction of the memory (Koedinger, Corbett, & Perfetti 2012; National Academies of Sciences, Engineering, and Medicine, 2018). If a caregiver knows their child's interests well, they can provide appropriate cues to encourage cognitive connections, in the ILE space and other contexts. Another key part of these SST conversations is keeping the child involved as an active partner. A child's level of responsiveness also has a positive correlation with how well the child will remember an event or activity (Haden, et al., 2001; Hedrick et al., 2009).

To review, co-regulation with a caregiver leads a child to the development of healthy emotional regulation. This co-regulation is closely tied to joint attention. SST is a sociocultural approach that relies on joint attention . Reminiscing conversations are a practice of joint

attention between caregiver and child. Emotional regulation and reminiscing are related to empathy development. Higher levels of emotional regulation are correlated with higher levels of empathy development in young children, and emotional regulation can be a protective factor against negative empathy. These connections are illustrated Figure 2.

Figure 2:

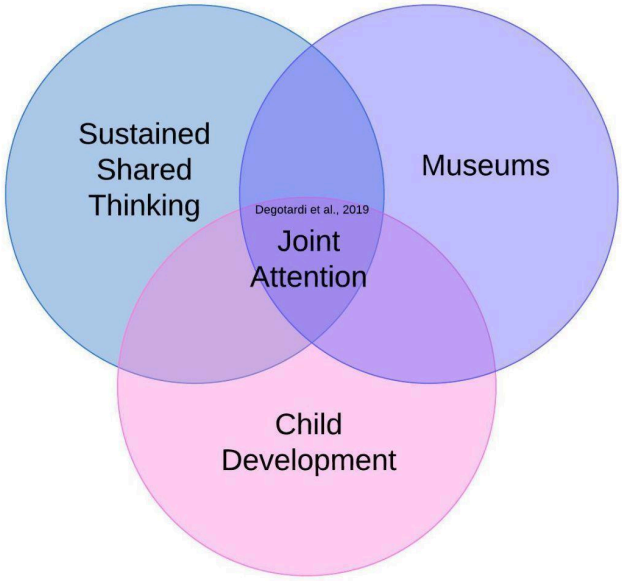


As stated in the theoretical framework, parent-child reminiscing can enhance SST by developing essential skills and interactions that underpin the more advanced cognitive processes (Neale & Pino-Pasternak, 2016). More research on the effect of a caregiver's conversation style on SST could be a promising area for future studies, as identified by Neale and Pino-Pasternak (2016). Parent-child reminiscing and sustained shared thinking are both forms of adult-child interaction that involve co-constructing narratives and engaging in extended dialog, with both employing an elaborative style that encourages children to contribute actively and reflect on their experiences. According to Neale and Pino-Pasternak (2016), despite their similarities, there are

crucial distinctions between these two constructs. One important difference is that SST research has a focus on explicit learning tasks and cognitive processes, while reminiscing research has more of a focus on personal context, emotions, and capturing the nuance of a conversation. The elaborative style analysis used in reminiscing research could be applied to sustained shared thinking to provide a more detailed understanding of the interaction dynamics and their impact on child outcomes, highlighting the potential overlap and complementary roles of these two types of interactions in supporting children's development (Neale & Pino-Pasternak, 2016).

Research on young children and caregivers in zoos specifically has been extremely limited, but there is a body of literature on this audience in other informal learning environments, especially museums. SST research indicates that establishing shared, or joint, attention between adult family members and young children in a museum setting seems to make it more likely that a family will engage in learning talk (Degotardi et al., 2019). Again, joint attention plays a vital role for young children as they develop self-regulation abilities. These self-regulation abilities are closely related to empathy development in young children (Decety & Jackson, 2004; Ornaghi et al., 2020; Peterson et al. 2018).‘ The relationships between these concepts is illustrated in Figure 3.

Figure 3:



Informal Learning Environments (ILEs)

This study has a focus on young children and their caregivers learning together during zoo visits and home activities. Looking at the ILE research from museums indicates that visits are most impactful for young children when they include active caregiver involvement (Letourneau et al., 2017; Marcus et al., 2017; Song et al., 2017; Willard, et al., 2019). Despite this finding, caregivers do not always interact with their children in museum settings (Downey et al., 2010; Letourneau et al., 2017; Song et al., 2017), or there is often a disconnect between caregiver and child so that the interaction is not sustained (Shine & Acosta 2000). This deficit is either because caregivers do not realize the value of play-based interactions in learning, or they feel uncomfortable or unengaged in ILEs (Downey et al., 2010; Song et al., 2017). Nevertheless, past studies have also found that guidance from the museum can lead to more meaningful

caregiver-child interactions. For example, pre-exhibit guidance, exhibit texts, and modeling from staff can help caregivers make the most of their visit.

According to literature on interest development, because visits to ILEs would be rare compared to everyday learning opportunities at home, children and caregivers are able to recall and reminisce about these specific experiences more easily. The authors theorize that if these experiences are easier to recall, they are easier for the child and caregiver to use as a basis to build further learning conversations later (Jacobs & Crowley, 2002). Besides tying into conversations around interests that originated outside of an ILE space, findings from Luke et al. (2019) mentions that caregivers may also learn more about their children's interests while in the museum, which the authors infer is information that the caregiver can build on in post-visit interactions.

Guidance and Confidence for Caregivers. In general, learners of all ages feel more motivated to engage in a learning environment where they feel that they belong and where their personal identity and experiences are respected (National Academies of Sciences, Engineering, and Medicine, 2018). In this context, ILEs are aware of the need to engage families, and "movement away from child-centered experiences and toward family-centered experiences has slowly permeated the collective attention of leaders in children's museums" (Wolf & Wood 2012). Nevertheless, even when labeled "family learning," these exhibits and experiences are usually centered on the experience of the child. Thus, museums are missing the important opportunity of providing a meaningful experience to adult audiences, which in turn would encourage caregivers to interact and learn with their young children.

Caregivers need ILEs to be explicit about the play-learning connection, and provide concrete examples that caregivers can recognize during their visits (Letourneau, et al. 2017).,

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Types of ILE Learning Supports

Enhancing Conversations

As discussed previously, adult caregivers can guide conversations with young children to extend learning. Such conversations may be important for extending learning beyond the ILE space and enabling caregivers to help children make connections across contexts and focus on broader concepts outside of the immediate setting (Brown & Kane, 1988; Goldstone and Sakamoto, 2003; Jant, Haden, Uttal, & Babcock, 2014). Research indicates that combining hands-on experiences with conversation improves retention (Jant et al., 2014). For example, at an aquarium, Rowe and Kisiel (2012) identified a "debrief" interaction where caregivers extend the experience by discussing concepts like vocabulary and scientific reasoning. The literature supports that guided conversations in ILEs increase learning value (Benjamin et al., 2010; Jant et al., 2014; Marcus et al., 2017; Polinsky et al., 2017; Van Schijndel et al., 2010; Vandermaas-Peeler et al., 2016).

Caregivers' language, such as causal language in science museums, influences children's exploration and learning (Callanan et al., 2019). The guidance ILEs provide can affect caregivers' goals and interactions with their children (Kim et al., 2010; Willard, 2019). For instance, when caregivers were encouraged to engage children with explanations during gear play, this shifted their children's focus from exploring to understanding their constructions (Willard, 2019). Children usually explain their reasoning when prompted by adults (Haden, 2010).

Simple instructions on key concepts before a visit can enhance caregiver-child conversations and understanding, particularly in STEAM topics, where many caregivers lack confidence (McClure et al., 2017). Adult caregivers with less experience visiting ILEs may not feel comfortable guiding their child through a visit. For example, if they do not feel knowledgeable about exhibit content or see it clearly provided by the ILE, they are less likely to spend time in that space with young children because they lack information to share (Bates, 2018; Bourque, Houseal, Welsh, & Wenger 2014). Pre-visit guidance can foster elaborative conversations and help children transfer knowledge from the ILE to home (Jant et al., 2014; Marcus et al., 2017).Studies show that providing caregivers with both conversation and content instructions significantly improves children's retention. For instance, Benjamin et al. (2010) found that instructions on building principles and elaborative conversations at a children's museum improved memory. Similarly, Polinsky et al. (2017) showed that scripts for spatial language at a block wall exhibit increased spatial language use and puzzle-solving skills These examples support the argument that additional instructions for caregivers can have a greater impact on children's learning.

Scaffolding opportunities should be provided for caregivers in all ILE exhibits (Wolf & Wood 2012). As described in the theoretical framework, scaffolding is an important tool for caregivers to guide their young children's learning. Scaffolding has been identified as a central tool for making learning in ILEs more effective for adults and young children (Andre et al., 2016; Geerdts et al., 2015; Marcus et al., 2017; Van Schijndel, 2010; Vandermaas-Peeler et al., 2016; Wolf & Wood, 2012). For example, a study by Vandermaas-Peeler et al. (2016) divided caregivers into a group that was given instructions and a group that was not. The study found that the instruction group spent more time providing scaffolding to explain the concept of

volume. As per the instructions they had been given, they asked more why and how questions, which encouraged their children to evaluate their thought processes and increased their correct explanations and reasoning. Scaffolding can be material (labels, signs, props) and social (Yoon et al. 2018). For example, an exhibit label with tips for family learning can serve as an effective scaffold for caregivers to support their children's learning (Wolf & Wood, 2012). Material scaffolds should be designed with a clear purpose so that it is easy for visitors to incorporate them into their conversations (Yoon et al., 2018). ILE exhibits and activities should provide sufficient information and be designed to ensure caregivers can quickly understand their support role to ensure successful scaffolding (Gaskins, 2008).

Giving caregivers an opportunity to reflect on their ILE visit can be a powerful tool to allow them to further develop or adjust their understanding of the experience (Haden et al. 2014; McInnes & Elpidoforou, 2018). The authors recommend that ILEs provide guidance for caregivers to reflect on their children's play. Being able to construct a reflective narrative for an experience may help to make it more memorable (Fivush et al., 2006).

Zoos

Zoos are favorite ILE destinations for families and caregivers with young children (Marcy, 2020). Despite this, current research has barely examined this key audience. The existing body of research has measured visitors' learning in terms of the impact of these places on their environmental knowledge, attitudes, and behaviors (Ballantyne et al., 2011; Ballantyne et al., 2018; Hughes et al., 2012; Moss et al., 2017; Taylor & Duram, 2021). Zoos must have a greater understanding of visitors' experiences during and after their visit; however, similar to the

research on early childhood audiences, there has been limited research on understanding how to strengthen the post-visit impact on zoo visitors (Packer and Ballantyne 2010).

Zoos are "places where non-domesticated animal species are kept for the purposes of conservation and protection from extinction, by strengthening wild populations whose genetic variability has been lost" (Kola-Olusanya, 2005; p. 300) notable ILEs where visitors can develop an emotional connection to wildlife and an appreciation for the natural world through free-choice learning experiences and without having to go out into the wild (Kola-Olusanya, 2005). In 1972, Robert Sommer published an article discussing the public educational role of zoos (Sommer, 1972). Sommer shared that common zoo practices of that time, namely caged animals, only reinforced visitors' misconceptions about the natural world. He also called for an investigation into what zoo visitors were really learning about animals and their environments, arguing there was a need to understand how zoos were affecting environmental attitudes and behaviors (Sommer, 1972). In the forty years after this piece was published, zoos have transitioned from seeing themselves primarily as places of entertainment to emphasizing conservation education.

Association of Zoos and Aquariums (AZA)-accredited institutions delivered 2,500 education programs in 2019 (Marcy, 2020). According to the AZA, "Education Programs refer to any formalized projects, programs, presentations, instructional materials, activities, and/or interpretive experiences undertaken by an AZA-accredited institution that: have a specific goal; have defined content; identify a primary discipline; utilize a specific delivery method; and target a primary audience" (AZA Conservation Education Committee, 2019). For 40% of visitors, participating in these programs entailed taking part in activities such as nature play spaces and discovery carts or engaging with interpretive staff (Marcy, 2020). The AZA reports that 94% of visitors "feel that zoos and aquariums teach children about how people can protect

animals and the habitats they depend on" (AZA, n.d.).

Much has changed for zoos in the past forty years, and there has been ongoing visitor research during this time. However, there is still a need for further research on the impact of zoo visit experiences (Ballantyne, 2007; Dierking et al., 2002; Nygren & Ojalammi, 2018; Roe et al., 2014). As noted, zoos are often interested in measuring visitors' learning specifically in terms of impact on environmental knowledge, attitudes, and behaviors (Ballantyne et al., 2011; Ballantyne et al., 2018; Godinez & Fernandez, 2019; Hughes et al., 2012; Moss et al., 2017; Nygren & Ojalammi 2018; Taylor & Duram, 2021). However, as noted previously, studies have indicated that zoos tend to overestimate the post-visit impact on visitor's behavioral changes (Fraser and Sickler, 2009; Hughes et al., 2012; Moss & Esson, 2013; Moss et al., 2017; Nygren & Ojalammi, 2018) and that using post-visit intentions as a measurement of behavioral change is a particular problem in zoo research (Hughes et al., 2012). Godinez and Fernandez (2019) reviewed the research on zoos and found that visitors were more likely to participate in conservation opportunities while at the zoo and less likely post-visit. Thus, researchers have called for research that not only examines whether zoo experiences have a lasting impact on visitors but also why this is or is not the case (Hughes et al., 2012).

While most visitors are open to learning about conservation during a visit, they are far more likely to be motivated to go to the zoo as an enjoyable outing with their families. Visitors will partake in learning, but only if it does not interfere with their intentions of enjoying the zoo as a social experience (Clayton et al., 2009; Fraser and Sickler, 2009; Nygren & Ojalammi, 2018; Therkelsen & Lottrup, 2015). This motivation contrasts with zoos' priorities of educating visitors. Furthermore, many adult caregivers view zoos as a place for their children to learn about care and empathy and appreciate the natural world rather than learn about environmental

information (Fraser 2010; Fraser and Sickler, 2009; Therkelsen & Lottrup, 2015). For many caregivers, this means viewing the zoo as a place to promote empathy and related constructs (such as altruism) as family values (Fraser, 2010). Zoo visits may have educational value for older (ages 7-15) children, but visits with interpretive materials alone, unguided by zoo educators, are not optimal for learning Jensen (2014b) In fact, unguided zoo visits are actually more likely to have a negative impact on children's understanding of animals and their habitats (Jensen, 2014b). This is supported by findings from Collins and colleagues (2020) that an educational intervention should be offered to children to maximize the educational value of a zoo visit

Children are an important audience for zoos. In their study of institutional priorities of zoos across the globe, Roe et al. (2014) found that one of the highest priorities of over 90% of the zoos studied is educating visitors and that school-aged children are a particularly high-priority group. In their most recent information on visitor demographics, the AZA reported that 69% of visitor groups are parties with children, and 57% of children are 11 and under. Two out of three adults visit a zoo with a child (AZA, n.d.). Thus, children make up a large portion of zoo audiences every year; however, little research has examined the impact of a zoo visit on children's learning (Collins et al., 2020; Therkelsen & Lottrup, 2015). There has been a dearth of research on early childhood and zoos in particular (DeMarie, 2001).

Overall, the literature supports the view that there are promising practices for zoos to strengthen their educational offerings to families that are currently underutilized:

- Jensen's (2014a) findings indicate that while zoos may provide children with positive educational experiences, interpretive materials available for unguided visits do not lead to optimal educational experiences. Thus, zoos should strengthen their offerings by providing interpretive materials more conducive to unguided family learning.

- Opportunities for reflection and contemplation in a zoo or wildlife park are

positively correlated with a long-term impact on visitors' environmental knowledge and practices (Ballantyne et al., 2011; Hughes et al., 2012; Packer and Ballantyne, 2010). As discussed, giving caregivers an opportunity to reflect on their ILE visit can be a powerful tool to allow them to further develop or adjust their understanding of the experience (Haden et al., 2014; McInnes & Elpidoforou, 2018).

- Nature play in ILEs may instill conservation values in young children, which is one of the mission goals of zoos and aquariums in particular (Ernst, 2019).

- Fraser and Sickler (2009) recommend that zoos connect with the different values of their visitors when planning interpretation rather than focusing solely on scientific and environmental content. Relatedly, Packer and Ballantyne (2010) recommend that zoos offer many options for interpretation and education to best accommodate the broad range of prior experiences visitors bring to the zoo. Findings from Dove and Byrne (2014) indicate that zoos must connect with visitors' prior knowledge to design effective interpretation.

- Research has indicated that a promising practice for zoos and wildlife parks aiming to impact long-term conservation behaviors is providing visitors with post-visit resources (Ballantyne et al., 2018; Hughes et al., 2012).

Recommendations from the literature- the use of interpretative materials, reflection, nature play, accommodating individual family experiences, and post-visit resources, will be considered in the current study.

Empathy and Zoos

Research indicates that zoos offer children an opportunity to develop empathy (Clayton, Fraser, and Saunders 2009; Mukherjee & Mukherjee, 2023; Rose & Riley, 2022). As noted previously, many adult caregivers view zoos as a place for children to learn about care and empathy (Fraser and Sickler, 2009; Therkelsen & Lottrup, 2015).

Empathy for the natural world can lead to pro-environmental behaviors (Chawla, 2009; Rose & Riley, 2022). Findings from Clayton and colleagues (2014) indicate that zoos can evoke an empathic response that motivates visitors to take action against climate change. It should be noted that an emotional connection to conservation action is not necessarily

empathy. The Seattle Aquarium (2015) outlines other concepts which also connect to conservation action. Because these concepts remain focused on the personal, rather than expanding to the viewpoint of others, they remain distinct from empathy. These include "Connectedness to nature," "Environmental identity," "Emotional affinity toward nature," "Environmental self-efficacy," and "Nature relatedness." A 2019 analysis of the existing literature found mixed results when looking at studies of visitors' conservation knowledge retention (Godinez & Fernandez, 2019). To more accurately measure the impact of conservation education on visitors, research should compare zoo visitors and non-zoo visitors (Godinez & Fernandez, 2019). Instead, most existing studies have only looked at zoo visitors (Godinez & Fernandez, 2019).

Wilson and colleagues (2022) distinguish "constructive empathy," or empathy that leads to purposeful and effective action(s), from empathy for animals that is not constructive:

"For example, empathy for cats may inspire a person to feed feral cats in their neighborhood, thereby contributing to a health and welfare problem in the population, resulting in a greater need for culling. Unwittingly, then, the person has taken an action that is indirect opposition to their assumed intent—causing a cat to be euthanized instead of helping it survive." (Wilson et al., 2022; p. 419).

Relatedly, there are scholars who challenge the concept of zoos as positive spaces for humans to develop empathy for more-than-human others. Multiple scholars have expressed concerns that visitor data gathered zoos by zoos is often inaccurate, or lacks methodological rigor. (Collins et al., 2020; Jensen, 2014a; Marino et al., 2010; Mellish et al., 2019; Dawson & Jensen, 2011). For example, studies have indicated that zoos tend to overestimate the post-visit impact on visitor's behavioral changes (Fraser and Sickler, 2009; Hughes et al., 2012; Marino et al., 2010; Moss & Esson, 2013; Moss et al., 2017; Nygren & Ojalammi, 2018). Beyond methodological concerns, zoos are not without controversy (Fennell, 2013). Zamir (2007)

argues that zoos can only offer humans paternalistic relationships with animals, and are therefore immoral. Kellert and Kahn (2002) put forth that ILEs displaying animals in captivity can never fully recreate the of interacting with wild animals, and the corresponding benefits for children.

However, the research literature has also indicated unique benefits of zoos in fostering empathy. Zoos also offer children an opportunity to connect with nature. This is especially valuable for children who may otherwise have limited opportunities to connect with nature in other ways (Godinez & Fernandez, 2019; Kellert 2005, 2012). According to Kellert (2005, 2012), early childhood experiences with nature are crucial for all areas of development, including social-emotional development. These experiences with nature may be differentiated as "direct," "indirect," or "vicarious" (Kellert, 2005). While "direct" experiences refer to outdoor play in natural settings, "indirect" experiences refer to play in human-designed settings such as parks or gardens, or visits to ILEs such as zoos and natural history museums. "Vicarious" experiences include reading a book or watching a film about nature (Kellert, 2005). "Indirect" experiences with nature, such as visiting a zoo, may offset a lack of "direct" nature experience opportunities (Kellert, 2005, 2012). Additionally, zoo visitors can attempt to connect with an animal, which may serve as an important precursor to empathy (Clayton, Fraser, and Saunders 2009). Results from one study indicate that exhibits with live animals lead to more frequent and complex learning talk among visitors (Allen, 2002). Characteristics of animals that make them more likely to elicit an empathetic response from children include coherence, affectivity, continuity, and if the animal is perceived to be an animate other (agency) (Myers, 2007).

Zoos want to utilize visitor empathy and transform it into action. Influential

environmental educator David Sobel (1996) expressed concern that children exposed to too many negative messages about the natural world suffering harm would develop "ecophobia," or a fear of nature and feelings of disempowerment towards environmental issues. He proposed that developing empathy in children could combat this "ecophobia" (Sobel, 1996)

The research literature has indicated a number of specific techniques as promising practices for fostering empathy in zoo environments (Akerman, 2019). The Seattle Aquarium (2015) outlines six best practice categories: framing of animals as unique living individuals, modeling empathy, increasing knowledge (of one's own emotions, and those of others), providing experiences with animals, and practice with empathy. These overlap with many practices described by Akerman (2019). These promising practices described by include highlighting particular animals as individuals (Clayton, Fraser, and Saunders 2009; Sevillano et al., 2007), encouraging visitors to take the perspective of an animal (Sevillano et al., 2007), opportunities to provide animals with hands-on care (Randler et al., 2012), and anthropomorphism (Akerman, 2019).

Anthropomorphism and Zoos

As mentioned previously in this paper, there are differing views on anthropomorphism. It can at times aid or detract from a person's ability to empathize with non-human others (Young et al. 2018).

Researchers believe that anthropomorphism may stem from overextension of cognitive mechanisms. People tend to use anthropomorphism as a way to bridge gaps in their understanding of non-human entities. This is particularly common when it comes to internal states or traits of these entities, which are not immediately observable. (Guthrie, 1993; Severson & Woodard 2018). Anthropomorphizing exists in many forms in a span ranging from mild (such

as using a metaphor to refer to something nonhuman) to strong forms (Root Bernstein et al., 2013). Cultural anthropomorphism is the use of human culture to explain non-human animal behavior (Karlsson, 2012), for example, describing a reproducing pair of non-human animals as "husband and wife."

While young children do regularly engage in anthropomorphism, they are also able to make distinctions between living and nonliving objects (Backscheider, Shatz, & Gelman, 1993; Gelman et al., 2022; Jipson & Gelman, 2007). By age three and four, children are able to show some biological knowledge, distinguishing plants and animals from non-living artifacts (Backscheider, Shatz, & Gelman, 1993; Jipson & Gelman, 2007). By preschool age, children understand that animals but not objects can move by themselves, engage in goal-directed behavior, undergo biological processes such as growth and self-healing (Backscheider, Shatz, & Gelman, 1993; Massey & R. Gelman, 1988), and possess mental, emotional, and perceptual states (Backscheider, Shatz, & Gelman, 1993; Massey & R. Gelman, 1988; Rosengren, Gelman, Kalish, & McCormick, 1991).

As described in the theoretical framework, culture and family environment can influence anthropomorphism. Children's early cognitive frameworks may be more flexible and less anthropocentric than previously thought, and children's levels of anthropocentrism can vary depending on familial and cultural context (Hermann et al. 2010; Medin et al., 2010). Parents with high levels of biology expertise (scientists, zookeepers, etc.) talk more about specific biological properties with their children, and their children are less inclined to anthropocentric reasoning (Tarlowski, 2006). Cultures that give children early exposure to nature have children who tend to be less prone to anthropocentric reasoning (Medin et al., 2010).

Besides animals, there is a growing body of anthropomorphism work focused on children interacting with robots and other non-sentient objects. Anthropomorphizing animals requires different levels of imagination compared to technology or inanimate nature, with children being more likely to anthropomorphize animals (Severson & Woodard, 2018)

Waxman and Medin (2007) discuss the concept of dual status for humans, that humans are seen in two ways in the United States. They are part of the broad group called "animals," which includes both humans and nonhuman animals. At the same time, they belong to the specific group called "humans," distinguished from nonhuman animals. This dual status influences how people in the United States make inferences because it affects how they think about and compare different categories and their characteristics. When humans are seen as part of the larger "animal" category, it emphasizes their inclusion within the animal kingdom. However, when a nonhuman animal is the starting point and a human is the target, the unique "human" category comes into play, reducing confidence in inferences about nonhuman animals (Waxman & Medin, 2007).

A rising initiative in the Advancing Conservation through Empathy (ACE) for Wildlife Network focuses on intentionally narrating the stories of zoo animals to build empathy and engagement with zoo visitors (Burnet, 2024). As discussed previously in the literature review, it is thought by zoos that feelings of empathy can prompt conservation-aligned behavior. To this end, the ACE for Wildlife Network promotes zoos including not only scientific facts, but also engaging stories about the lives of zoo animals, into their interpretation. This is termed “critical anthropomorphism” by the organization (Burnet, 2024). In more academic terms, Karlsson (2012) defines critical anthropomorphism as a communicative strategy that involves the

intentional and critical use of anthropomorphic projections in the study of animals and ethical theories.

Anthropomorphism can be beneficial, however some anthropomorphic behaviors can compromise animal welfare (Mota-Rojas et al., 2021). Zoos that utilize anthropomorphism should ensure that visitors do not confuse animal behavior with an incorrect projection of their own perspective (Akerman, 2019). Because human social relationships are the highest priority, humans are compelled to incorrectly assign human intentionality to other entities (Guthrie, 1993). For animals like primates that people tend to anthropomorphize, and do so inaccurately, the ACE for Wildlife Network actually recommends a focus on differences rather than critical anthropomorphism (Burnet, 2024). The Woodland Park Zoo does include some wording specifically around this in their signage. For example, zoo visitors may think it is a sign of connection to make eye contact with a gorilla, but a sign explains "Gorillas prefer to look at each other from the corner of their eyes. A direct stare means he may feel threatened. Our animal keepers have learned to peek sideways, out of respect. Can you try that?" (Burnet, 2024; Woodland Park Zoo, n.d.).

Western culture tends to have a mixed relationship with anthropomorphism in general. This includes teaching young children about animals and the natural world. For example, findings from Kallery and Psillos (2004) show that while the majority of preschool teachers shared that they saw anthropomorphism as inefficient in the classroom because it would lead to misconceptions about animals, most of these same teachers used anthropomorphic language in their science lesson plans.

Anthropomorphism can be an efficient tool of communication, and it can be useful when utilized with critical evaluation (Karlsson, 2012). Anthropomorphism is linked to empathy. Like

play, it involves the creative process of imagining and projecting internal states (Severson & Woodard, 2018). Karlsson (2012) suggests that avoiding anthropomorphism altogether is not a viable option, as it may lead to other forms of morphisms, such as mechanomorphism (or the attribution of machine characteristics to living things). Because it may not be possible to eliminate anthropomorphism entirely, zoos may instead wish to think of it as a potential tool- an initial way to engage with visitors, and to share more accurate information about non-human others (Akerman, 2019; Chawla, 2009).

Because empathy is multifaceted and complicated, much remains to be explored about the potential for zoos and empathy development.

Summary

In sum, empathy is a complex construct that can describe a category of emotions. For purposes of this research, Young et al. (2018) provide a definition of empathy that encompasses both human and 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." Empathy development is important for young children, and there is a strong positive relationship between supportive caregivers and home environments and the development of empathy. Conversations with a caregiver are important for children's learning, and elaborative reminiscing conversations with a caregiver can enhance children's learning and development in a number of ways. "Reminiscing" is used in this paper to mean a conversation about shared past events which include reflection as to why said events are meaningful to the individuals involved. These reminiscing conversations may be particularly important for socioemotional development. This includes the development of empathy. ILEs, such as zoos, can offer caregivers and young children unique experiences to foster elaborative reminiscing conversations. Among ILEs, zoos

can offer visiting caregivers and children an opportunity to view and connect with live animals. While children are an important audience for zoos, little research has examined the impact of a zoo visit on children's learning. There has been increasing interest in the past decade in zoos as places to foster empathy, but no examination of the role of caregiver-child reminiscing conversations in this empathy development.

Chapter Three: Methodology

This chapter outlines the study's methodological plan. The chapter specifically includes discussions around the (a study design, b) rationale for the research approach, c) description of the research setting d) description of participants, e) methods of data collection, f) approach to data analysis, g) researcher positionality..

Current Study

This study is designed to explore how children learn empathy for more-than-human others through reminiscing with caregivers about their zoo experiences.

Because of the focus on reminiscing, data collection took place both onsite at the Woodland Park Zoo, and at participants' homes.

Home activities were designed to encourage reminiscing conversations by including conversation prompts.

Research Strategy, Design, and Methods

Study Design

This study utilized qualitative research. According to Merriam (1998), the overall purpose of qualitative research is "to *understand* how people make sense of their lives and their experiences" (p. 24). This research is well-suited for qualitative study because I want to look at the details of interpersonal interactions and try to understand the experiences of these caregiver-child dyads.

As noted in the prior section, multiple scholars have expressed concerns that visitor data gathered by zoos is often inaccurate, or lacks methodological rigor. (Collins et al., 2020; Jensen, 2014a; Marino et al., 2010; Mellish et al., 2019; Dawson & Jensen, 2011).

Zoos are often interested in measuring visitors' learning specifically in terms of impact on environmental knowledge, attitudes, and behaviors (Ballantyne et al., 2011; Ballantyne et al, 2018; Hughes et al., 2012; Moss et al., 2017; Nygren & Ojalammi 2018; Taylor & Duram, 2021). However, studies have indicated that zoos tend to overestimate the post-visit impact on visitor behavior changes (Fraser and Sickler, 2009; Hughes et al., 2012; Moss & Esson 2013; Moss et al., 2017; Nygren & Ojalammi 2018) and that using post-visit intentions as a measurement for behavior change is a particular problem in zoo research (Hughes et al., 2012). Research that looks at not only if, but why, zoo experiences do or do not lead to lasting impact on visitors has been called for (Hughes et al., 2012).

Moss & Esson (2013) were also critical of the preponderance of quantitative research in zoos. They posit that by focusing only on the goals of the institution (are visitors learning what we want them to learn?) it limits the range of what we may learn about the visitor experience. Moss et al. (2017) calls for more detailed research studies that look at visitors over a longer time span. Even a museum study by Marcus et al., which employed an experimental method, concluded that a different approach is needed to contribute to the ILE literature, one that is "less burdensome for families and feels more like an extension of the museum experience" (p. 177).

Setting

Woodland Park Zoo is a zoo in Seattle, Washington. The zoo is very active in wildlife conservation, and conservation education. According to the zoo's most recent strategic plan, they host approximately 1.3 million visitors every year (Woodland Park Zoo, n.d.c). The mission statement of the institution is "Woodland Park Zoo saves wildlife, and inspires everyone to make conservation a priority in their lives" (Woodland Park Zoo, n.d.a).

The Woodland Park Zoo is committed to building empathy in their space and within their larger community.The zoo is a member of the Advancing Conservation through Empathy (ACE) Network. Founded in 2019, ACE is "a network of 20 AZA-accredited zoos and aquariums in a seven-state northern region of the US which leverages the strengths and diverse perspectives of our partner organizations to accomplish our missions through integrating empathy into [their] work." (Woodland Park Zoo, n.d.b). The ACE Network believes that "empathy is a leading pathway to behavior change."

WPZ has also developed an"Empathy Wheel" as a tool for audience engagement. This wheel consists of six steps:

1) The first step is to assure the visitor that the animal they are observing is cared for and is treated well.
2) The second step is to introduce the animal as a unique individual, with a name and pronouns.
3) The third step is to give the visitor opportunities for connection with the animal, this includes opportunities for interaction, and highlighting similarities and differences between the animal and people.

4) The fourth step is to teach the visitor about the care and biology of that particular animal's species. This includes information about what that species needs in the wild, and how they are cared for in the zoo.
5) The fifth step is to encourage perspective-taking by asking the visitor questions about what they think the animal is doing, or how they may be feeling.
6) The sixth and last step is to encourage the visitor to take a caring or conservation action, such as speaking softly around the animal, or consciously purchasing wildlife-friendly products (Woodland Park Zoo Staff, n.d.c.).

The zoo is also part of the Empathy Collaborative, a co-design project working with Seattle communities and Antioch University Seattle (Woodland Park Zoo, n.d.b).

The Woodland Park Zoo's commitment to education also makes them a natural partner for this research. Education is one of eight core strategic principles of the zoo (Woodland Park Zoo, n.d.c). As part of their plan to educate visitors, the zoo aims to inspire through extraordinary experiences: "Through the educational and emotional experiences we provide at the zoo, out in our community, and in the virtual world, we can spark a deeper sense of understanding, empathy, and engagement that leads all people to embrace a conservation ethic."(Woodland Park Zoo, n.d.c, p. 12).

Participants

Young children and their caregivers are the focus. Although zoos are favorite ILE destinations for families with young children (Marcy, 2020) current research has barely examined this key audience. A total of six caregiver child dyads participated in this study (see Figure 1). For this study I recruited dyads, where the caregiver is accompanied by only one young child, because when adults are outnumbered, the logistics of child management interfere

with attentive adult participation (Clayton et al. 2009). Recruitment was looking for children in these dyads to be between the ages of 36 and 48 months old (two of the child participants are younger than this).

WPZ staff expressed their willingness to assist with recruiting participating dyads through one of their regularly-occurring education programs. Little Zoo Waddlers is a five-week indoor class series designed for children ages birth-3 and a caregiver that takes place in Zoomazium, WPZ's indoor play space for kids 8 and younger. All participants of Little Zoo Waddlers were invited to participate in this study. One dyad was recruited from Little Zoo Waddlers. Other dyads were recruited via a social media posting. A short survey was filled out by potential participants to provide information to be used for participant selection.

The focus of selection was a convenience sample, where I aimed for some reflection of a typical sample where possible (mothers and fathers, some diversity in caregiver ethnic/cultural background).

Data Sources and Data Collection

This is a field-based qualitative study. Observation notes were collected in a zoo setting, and video data was collected in the homes of select caregiver-child dyads. This on-site data is complemented by semi-structured interviews.

Initial Survey. A short survey was used for participant selection (Figure 7).

Interviews. The initial interview was designed to give some background information and context about the child and their family. A final interview took place approximately two weeks after the second zoo visit. In this interview, the caregivers were asked to reflect on how anything about the zoo visits or conversations with their child in relation to empathy. Both interviews throughout this study were semistructured, with a mix of questions that have more or less structure to allow

greater flexibility to respond to emerging ideas (Merriam & Tisdale, 2016). The semistructured format also allowed flexibility for questions to accommodate for differences among participants (Merriam & Tisdell, 2016). All interviews were conducted through a video-conference platform, to allow them to easily be recorded. These recordings were then transcribed for coding.

On-Site Observation Field Notes. I took field notes of these interactions as part of the ongoing process of analysis. These field notes were descriptive, with the addition of reflective analytic memos.

On-Site Audio Recordings. Audio recordings were made of the caregiver-child dyads interacting in the zoo on personal recording devices given to the dyads.

Home Video Recording. Parents were given two activity kits with materials accompanied by a list of instructions and conversational prompts adapted from Van Bergen and Salmon (2010) to begin reminiscing conversations during the activities (written by me, connected to the observation framework, see Figures 5-6). Parents were encouraged to be flexible with these activities and conversation prompts, and adapt them as felt natural to them and comfortable and engaging for their child. Two dyads chose to complete the second activity in more than one session, because in the first session the child was losing interest after a short time (in one case, the child was ill). Each dyad was able to choose what time and which part of their home to film in. The home recordings took place approximately two-five days after the zoo visits. This delay between the event and the reminiscing conversation is in line with previous reminiscing research (Van Bergen & Salmon 2010; McGuigan & Salmon, 2004).

Approach to Analysis

All data from participating dyads (n=6), 36 distinct pieces of data in total, were transcribed and entered into Dedoose. Ben and his father spoke Indonesian together during all

zoo visits and home recordings sessions, these were both translated and transcribed by a professional translation service. Data from this study was analyzed using a hybrid inductive thematic approach, combining deductive and inductive reasoning (Braun & Clark, 2006; Swain, 2018). This was not entirely inductive in the sense that observations of empathy experiences was based on the "Empathy towards Animals: Observational Assessment Framework" from the Woodland Park Zoo (see Figure 2). This code sheet was developed for "all audiences," I adapted my own coding sheet to be more developmentally-appropriate for young children, focusing on certain behaviors and interactions specific to the participants, young children and their caregivers.I took analytic notes throughout the process of data collection. I began with a set of deductive codes based off of this empathy assessment framework and a review of the literature on reminiscing. I then performed a round of open coding, using an inductive process to name categories, to see where my deductive coding sheet should be adjusted.

Validation

I utilized multiple strategies for promoting validity and reliability, as described by Merriam & Tisdell (2016) : inter-rater reliability, triangulation, member checks/ respondent validation, researcher's position or reflexivity, and rich, thick descriptions. Interrater reliability was completed in Dedoose after a first cycle of coding to ensure that the primary researcher was generally accurate. Merriam & Tisdell (2016) states that "the question of internal validity- the extent to which research findings are credible- is addressed by using triangulation, checking interpretation with individuals interviewed or observed, staying on site over a period of time, asking peers to comment on emerging findings, and clarifying researcher biases and assumptions. (p. 265) My method of data collectionl provides two forms of triangulation- multiple methods of data collection, and multiple forms of data. Patton (2015) explains that

triangulation increases a study's credibility against the concern that bias may be coming in from relying on a single method or investigator. These multiple data sources allow me to provide rich, thick descriptions (Geertz 1973) of the experiences of these dyads. I have conducted member-checks with participating caregivers to try to ensure that my analysis of the data accurately reflects their experiences. I explore my positionality as a researcher later in this work, and continue to do so throughout the process of analysis.

Figure 4: Participants

Child name	Age at beginning of participation	Child race	Main language spoken at home with child?	How would caregiver best describe their relationship to child?	Has visited WPZ with this child before?
Aaron	23 months	White	English	Mother	Yes, frequently
Ben	43 months	East Asian	Indonesian	Father	Yes, 1-2 times
Chloe	41 months	White	English	Motther	Yes, 1-2 times
Dylan	46 months	South Asian, Latino	English	Father	Yes, 1-2 times
Eli	42 months	East Asian	English	Mother	Yes, 1-2 times
Felix	34 months	White	English	Mother	No

Figure 5: Empathy towards Animals: Observational Assessment Framework

Empathy towards Animals: Observational Assessment Framework

Empathetic or Emotional Expression		Indicators		Example of observed indicator
1. Understanding animals' needs	a.	Talks about animal's basic needs (food, water, oxygen, shelter, space)	a.	"*The bear needs access to water*"
	b.	Talks about secondary animal needs (e.g. safety, health, comfort)	b.	*"My dog needs to get exercise and go for a walk every day."*
	c.	Compares self to animal	c	*"I like playing with my brother too, just like the baby gorilla."* *"The tortoise and I both like apples."* *"The gorilla troop reminds me of when I lived at home with my siblings."*
	d.	Contrasts self to animal	d.	*"The lizard likes bugs for breakfast, but I like waffles."*
2. Perspective taking	a.	Predicts or speaks to animal's state, emotion or wants	a.	"*I think the otter is angry."*
	b.	Provides reasons for prediction of animal's state, emotion or desires	b.	"*It's so hot outside. I think that tiger is happy to be swimming right now."* *"The porcupine seems curious because it's looking around and sniffing a lot".*
	c.	Verbally mimics animal, speaks in voice of animal	c.	"*Ssssss*" (hisses like a snake) Observes sloth bear sunbathing and says "*ah, this feels so nice. I'm a happy bear."*
	d.	Physically mimics animal behavior (biomimicry)	d.	Sticks tongue out like a snake.
3. Demonstrates appreciation or respect for animal	a.	Verbalizes appreciation, gratitude, or love for the animal		*"I love wolf eels".* *"The possum was so cool. I wanted to tell her she's awesome."*
	b.	Verbalizes positive feelings about animals' characteristics		"*I can't believe how smart octopuses are.*" "*Wow the snake's skin is so cool looking."*
	c.	Shows physical affection		Smile at animal, hugging, petting
	d.	Verbalizes negative feelings about the animal		"*I hate spiders."* *"That opossum is so ugly."*

Empathetic or Emotional Expression		Indicators		Example of observed indicator
4. Demonstrates curiosity or interest in the animal	a.	Asks questions about the animal or seeks out information	a.	*"Are these two bears brothers?" "Where do ostrich live?"* Looks for or engages with written or interpretive materials
	b.	Observes animal closely	b.	Watches animal with expressed interest or focused attention.
	c.	Expresses observations of animal	c.	*"Her feathers look like wood" "It (a raccoon) uses its paws like little hands"*
	d.	Prolongs observation or repeated observation of animal	d.	Returns to see animal or wants to view longer
	e.	Retreats or withdraws from animal, avoidance of contact	e.	Physically moves away from animal
5. Expresses desire to help animals (individually or as a group)	a.	Expresses concern for an individual animal's well-being	a.	*"Is that lion o.k.? It looks like he's limping."* *"Are we scaring him?"*
	b.	Wants to take action/behave in a way that helps an individual animal	b.	*"That turtle has flipped onto his back. I want to turn him back over."*
	c.	Expresses concern for animals overall/as a group	c.	*"The number of birds that are endangered is alarming"*
	d.	Wants to take action/behave in a way act to help animals overall	d.	*"Next time I'm at the beach I have to be more careful where I'm stepping so I don't kill the anemones."* Pledges to take an action.
	e.	Shares beneficial actions with others	e.	*"Don't bang on the glass." "You can buy recycled paper to help animals."*
6. Demonstrates caring behavior or beneficial action towards animal(s)	a.	Promotes safe and comfortable environment for animal	a.	Approaches the animal slowly, speaks softly, maintains distance.
	b.	Physical interaction/touch is gentle or appropriate	b.	Touches animal gently, uses two fingers or recommended technique.
	c.	Self-regulates behavior in response to the animal's cues	c.	Refrains from moving closer if the animal indicates discomfort or stress.
	d.	Provides for the need of the animal	d.	Refills water dish.
	e.	Protects or reduces danger to an individual or group	e.	Moves worm off the path and into the grass. Votes for pro-wildlife initiatives.
	f.	Demonstrates intent to harm animal, puts animal in danger	f.	Touches roughly, touches areas of discomfort (e.g. eyes). Pulls seastar from rock.

Observation Code sheet

Date: _____

Program/experience: _____ Group type: _____ Ages: _____

Notes:

Expressions of Empathy and Related Emotions: Observation Code sheet			
	OBSERVATIONS	**X**	**Notes/supporting evidence**
1) Understands needs of an animal			
a.	Talks about/expresses animal's basic needs (food, water, oxygen, shelter, space)		
b.	Talks about/expresses secondary animal needs (e.g. safety, health, comfort, emotional wellbeing)		
c.	Compares self to animal		
d.	Contrasts self to animal		
2) Able to consider perspective of animals			
a.	Predicts or speaks to animal's state, emotion or wants		
b.	Provides reasons for prediction of animal's state, emotion or desires		
c.	Verbally mimics animal, speaks in voice of animal		
d.	Physically mimics animal behavior (biomimicry)		
3) Demonstrates appreciation or respect for animal			
a.	Verbalizes appreciation, gratitude, or love for the animal		
b.	Verbalizes positive feelings about animals' physical characteristics		
c.	Demonstrates physical affection/appreciations		
d.	Verbalizes negative feelings about the animal		
4) Demonstrates curiosity or interest in the animal			
a.	Asks questions about the animal or seeks out information		
b.	Observes animal closely		
c.	Expresses observations of animal		
d.	Prolongs observation or repeated observation of animal		
e.	Retreats or withdraws from animal, avoidance of contact		

5) Expresses desire to help animals (individually or as a group)			
a.	Expresses concern for an individual animal's well-being		
b.	Wants to take action/behave in a way that helps an individual animal		
c.	Expresses concern for animals overall/as a group		
d.	Wants to take action/behave in a way act to help animals overall		
e.	Shares beneficial actions with others		
6) Demonstrates caring behavior or beneficial action towards animal(s)			
a.	Promotes safe and comfortable environment for animal		
b.	Physical interaction/touch is gentle or appropriate		
c.	Self-regulates behavior in response to the animal's cues		
d.	Provides for the need of the animal		
e.	Protects or reduces danger to an individual or group		
f.	Demonstrates intent to harm animal, puts animal in danger		
7) Recognition of animal as an individual			
a.	Speaks to animal's independent movements/making choices		
b.	Refers to animal by name or pronouns		
c.	Greets or says goodbye to animal		
d.	Speaks directly to animal		
e.	Comments/inquires on animal's relationship with other animals or people		

Figure 6: Data Collection Timeline

Step:	**Approximate Timeframe:**
Participant selection	
Initial interviews	Week 1-2
Initial zoo visit	Week 3-4
Recording at home	Week 4-5, the week of the initial zoo visit
Second zoo visit	Week 6-7
Recording at home	Week 6-7 the week of the second zoo visit
Second interview	Week 9-10
Begin in-depth analysis	Week 11

Positionality

I come from a background working in ILE education. I am very familiar with ILEs and the kind of parent-child interactions that often occur in them. Because of years of working with ILEs , there is potential for bias towards the view tha ILEst are special places that create enriching, meaningful experiences for people, and a bias towards viewing museum visits by families through an education lens, and assume parents are there in the role of "facilitator" as described by Falk's work (2006) on museum visitor motivations. There is also the potential for bias to enter this work through my perspective as a parent, and my own personal parenting views. Potential bias as a researcher is a danger mentioned by Merriam & Tisdell (2016) "Deciding what is important- what should or should not be attended to when collecting and analyzing data- is almost always up to the investigator. Opportunities thus exist for excluding data contradictory to the investigator's views" (p. 264).

Figure 8: Home Activity 1

Zoo Bear Activity

Materials included:
2 bear template sheets
1 plain sheet of paper
1 paper bag
Cotton balls
Note: Depending on the age of your child, you may choose to let them help with certain steps (cutting, stapling) or these steps may be completed by an adult. Please make whatever choice is safe and appropriate for your child.

Part 1. Bear

1) Introduce the activity to your child
    a) Say "Remember when we went to the zoo?"
    b) Pause for child's response, respond to anything they have an interest in talking about the zoo.
    c) Say "Remember when we saw the bears at the zoo?"
    d) Pause for child's response
    e) Say "Today we get to make a bear like we saw at the zoo." (or something like this).
2) Cut out bears. Save the extra paper from cutting, you might want to use it later.
3) Lay the cut out bears nose to nose. Have your child color in some small feature, like the nose, so you know these sides will be facing outwards.
4) Have your child color the outside of the bear.
5) Flip the bears over, and have your child color on the inside of the bear:

a) Talk with your child about what a bear might like to eat. Have them draw food a bear might eat (for example, fish, berries, bugs, honey, plants, meat). If they are excited about drawing a food that bears do not eat in the wild (for example, pizza, ice cream, bread) ask them to draw it on the blank piece of paper to feed to a person.

b) Optional- If your child has been learning about the human body, you can draw some simple internal organs inside the bear (heart, brain, lungs) and connect to what they know about these parts inside their body.

6) Put the two sides of the bear together so that the outsides are facing outwards.

7) Use staples or clear tape to seal most of the bear except for an opening around the head.
8) Time to feed your bears more food to prepare for winter!
    a) Ask your child if they remember seeing any animals eating in the zoo. What were they eating?
    b) Fun information: In the wild, bears go into a state of rest called "torpor" in winter. This means that their body slows down, they sleep more and eat less. This is a lighter sleep than "hibernation." Bears must eat enough before their winter rest. Share something about this with your child.
    c) Use the cotton balls to "feed" your bear before their winter rest.
    d) Talk about what kinds of food you are feeding the bear, how those are foods that are good for keeping the bear's body healthy.

Part 2. Bear Cave

9) Ask your child if they remember seeing any animal homes at the zoo. What were their homes like?
10) Take the cut grocery bag, and cut along the black semi-circle drawn on the bottom of the bag. Be careful to only cut out the semi-circle, not through the back of the bag.
11) Staple or tape the back of the bag to seal it off.
12) Cut or tear up the extra paper from cutting out the bears to make grass or leaves to put in the cave
13) Let your bear try out the cave!

See p. 2

Part 3. Imaginative Play

14) Ask your child what their bear's name is, and how old they are.
15) Talk with child
    a) Say "Pretend you are a bear in the zoo. What do you need?" Pause for response.
    b) "If you are the zookeeper, how do you take care of this bear?"
    c) "How do you think the bear is feeling now?"

Optional add-ons: make another cave, or another part of a bear's habitat, out of blocks, play dough, recycled materials, or any other materials you have at home.

Figure 8: Home Activity 2

Komodo Dragon Activity

Materials included:
2 Komodo dragon body template sheets
2 Komodo dragon tail template sheets
1 plain sheet of paper
1 cute paper bag
Cotton balls

Note: Depending on the age of your child, you may choose to let them help with certain steps (cutting, stapling) or these steps may be completed by an adult. Please make whatever choice is safe and appropriate for your child.

Part 1. Komodo dragon

1) Introduce the activity to your child
    a) Say "Remember when we saw the Komodo dragon at the zoo?"
    b) Pause for child's response
    c) Say "Today we get to make a Komodo dragon like we saw at the zoo." (or something like this).
2) Cut out the two Komodo dragon body pieces and two tails. Save the extra paper from cutting, you might want to use it later.
3) Staple or tape one tail piece to one body piece.
4) Lay the cut out body pieces nose to nose. Have your child color in some small feature, like the nose, so you know these sides will be facing outwards.
5) Have your child color the outside of the templates.
    a) Optional- Komodo dragon's have claws on their feet. Your child can draw on these claws, or decorate the feet in any other way that they would prefer.
6) Flip the templates over, and have your child color on the inside:
    a) Talk with your child about what a Komodo dragon might like to eat. Have them draw food a Komodo dragon might eat (They are carnivores. for example, reptiles, birds, deer. If these animals might be upsetting for your child to "feed" to a dragon, young dragons eat bugs). If they are excited about drawing a food that Komodo dragons do not eat in the wild (for example, pizza, ice cream, bread) ask them to draw it on the blank piece of paper to feed to a person.
    b) Optional- If your child has been learning about the human body, you can draw some simple internal organs inside the bear (heart, brain, lungs) and connect to what they know about these parts inside their body.
7) Put the two sides of the Komodo dragon together so that the outsides are facing outwards.

8) Use staples or clear tape to seal the lower half and tail of the Komodo dragon, leaving the top open
9) Use two staples or pieces of tape to seal the top and bottom of the Komodo dragon's head, leaving an opening at the mouth.
10) Take the pink pipe cleaner, and thread it through the mouth, going out through the back of the head.
    a) Optional- Bend over one or both ends of the pipe cleaner to avoid poking anyone with a sharp end.
11) Have your child experiment with moving the Komodo dragon's tongue in and out of the mouth.
12) Use the cotton balls to "feed" your Komodo dragon through the open back of the dragon.
    a) Fun information: Komodo dragons eat big meals, large Komodo dragons can survive on only 12 meals a year in the wild.
    b) Talk about what kinds of food you are feeding the Komodo dragon, how those are foods that are good for keeping their body healthy.
    c) After you place the cotton balls inside, you and your child can decide where you want to seal the back of the dragon with staples or tape so that you can still move the tongue (or choose not to seal the back and let the cotton balls fall out) .

Part 2. Burrow
13) Take the cut grocery bag, and cut along the black semi-circle drawn on the bottom of the bag. Be careful to only cut out the semi-circle, not through the back of the bag.
14) Staple or tape the back of the bag to seal it off.
15) Cut or tear up the extra paper from cutting out the templates to make grass or leaves to put in the cave
16) Let your Komodo dragon try out the burrow!

Part 3. Imaginative Play
17) Ask your child what their Komodo dragon's name is, and how old they are.
18) Talk with child
    a) Say "Pretend you are a Komodo dragon in the zoo. What do you need?" Pause for response.
    b) "If you are the zookeeper, how do you take care of this animal?"
    c) "How do you think the Komodo dragon is feeling now?"

Optional add-ons: make another burrow, or another part of a habitat, out of blocks, play dough, recycled materials, or any other materials you have at home.

Figure 9: Home Activity 2

Snake (or Millipede) Accordion Book Activity

Materials included:
2 cardboard rectangles
2 strips of plain paper
3 sheets of page templates
1 strip of pink paper
Notes:

- You may use tape instead of glue throughout this project
- If you are taping the "head" and "tail" on you can do either step 3 or step 4 first. If you are using glue, it is best to go in order, and
- Depending on the age of your child, you may choose to let them help with certain steps (cutting, gluing) or these steps may be completed by an adult. Please make whatever choice is safe and appropriate for your child.
- Your child's responses for the book can be about either or both zoo visits. When they say something, try to clarify if you or they remember which zoo visit it was (just do your best).

Part 1.

1) Introduce the activity to your child
    a) Say "Remember when we went to the zoo?"
    b) Pause for child's response
    c) Say "Today we are making an animal book about our zoo visits. This book will also look like a zoo animal. Do you think you would like the book to look like a snake, or a millipede?" (it is ok if the child doesn't know yet which they prefer).
2) Fold the paper strips like an accordian
    a) Allow your child to participate in the folding as much as possible.
    b) Fold one paper strip in half widthwise.
    c) Fold the top flap in half again, bringing the bottom edge to the top crease.
    d) Flip the paper strip over and do the same on the other side. The paper strip will look like a "W" when you are finished
    e) Repeat the whole process on a second paper strip
    f) Tape the paper strips together to make one long strip (see picture)
3) The pages
    a) You may choose to use the page templates included to make pages (cut them out and glue them on the paper strip, or just read the prompt aloud to your child and let them draw a response directly on the paper strip.
    b) The prompts are numbered in the order you should go through them with your child and add them to the book.

c) Responses to each prompt can contain as many words as your child would like to use, or minimal words (for example, the name of their favorite zoo animal).
d) For each prompt, invite your child to draw a picture and say something about it.

See p. 2

e) Depending on the age of your child, they may write a few simple words in the book themselves, or you can fill in all of the words for them.
f) For the extra panels, ask your child "Is there anything else you want to say or draw about our time at the zoo?" They can choose to fill out additional pages, or leave them blank.

4) The cardboard pieces (on the brown side) will be the front and back of your back, also the "head" and "tail" of your animal.
   a) If you want to keep things simple, you can leave out the cardboard pieces and just use the front and back paper panels as the "head" and "tail" of the book.
   b) If using cardboard: Lay each one on top of a paper strip just to check the size, you can trim it down if you and your child want a smaller cover, or make one side of each piece slightly rounded to look more like a snake/millipede head and tail.
   c) If you are making a snake- you can either attach the pink strip of paper (the "tongue") with tape, or layer it between the paper strip and the cardboard when you glue the cardboard on.
   d) With the brown side facing out, invite your child to color eyes on the head (most species of millipedes have eyes, but some don't!) and color the head and tail if they would like.
      i) A snake's body is covered with scales, a millipede's body is covered with segments that look like lots of parallel lines.
   e) Glue each cardboard piece on the end of separate paper strips (see picture).
5) When everything is dry, read through your book together with your child.

Part 2. Imaginative Play

6) When everything is dry, allow your child to make their snake/millipede slither or crawl
7) Ask your child what their snake/millipede's name is, and how old they are.
8) Talk with child
   a) Say "Pretend you are a snake/millipede in the zoo. What do you need?" Pause for response.
   b) "If you are the zookeeper, how do you take care of this snake/millipede?"
   c) "How do you think the snake/millipede is feeling now?"

Optional: Invite them to share their book with another parent or adult family member/friend who was not at the zoo, and tell them about their zoo experience.

Figure 7: Initial Survey Questions to be Asked

Screening question: if the caregiver is the child's legal guardian (only accepting caregivers who are the child's legal guardian)

Non-screening questions: child's birth month and year, relationship between caregiver and child (mother, father, grandparent, etc), if they have visited Woodland Park Zoo before (if yes, how many times, are they members, etc), have they visited other ILEs, and how frequently.

Chapter Four: Findings, Discussion, and Recommendations

Profiles of Participants

All names listed are pseudonyms.

Dylan

Dylan is three and a half years old. He lives with his parents, and a baby brother who was born weeks before Dylan began participation in this study.

Dylan really enjoyed play while at the zoo. He told his dad that the zebras were playing, and he initiated joint pretend play with his dad, pretending to be mama and baby of a number of different animal species.

Dylan referred to many animals as being in relationship as a "baby and mama," at the zoo and during his home activities. For example, while looking at the penguins:
"Dylan: Is she swimming to her mama?
Dad: Yeah, she could be swimming to her mama. Look at him. He must go to the same swimming class you go to."

Dylan was the only child in this study who really expressed an interest in the plants at the zoo. He and his dad talked about the signs that said "do not touch the plants" and what that meant for keeping the plants safe.

Eli

Eli is three and a half years old. Eli is one of five siblings. Family is a very important theme to Eli. In the first interview, Eli's mother emphasized that family, and being around many other children, was a big part of Eli's daily experience. He lives in a condo in a building with other children, and he goes over to their houses. When he is babysat, it is by grandma and grandpa, he is always around family.

Eli had a lot to say about animal families during both zoo visits. Eli's mom shared that he really wanted his whole family to be there with him for the second zoo visit. He kept telling his Dad that he wanted to return to the zoo as a family,

Eli's mother mentioned that she was surprised by how focused he was on the idea of animals having families like his at the zoo: "I was kind of not expecting how focused on family he would be. So, the first time we saw the gorilla and it was just like he assigned everyone a role. It

was automatic like, "Oh, that's mommy and that's daddy and that's the baby." And then he was like, "Where's the brother? Where's the sister?" And so, I didn't realize that his world... He thought all animals should have what he considers a complete family, so that was kind of interesting to me."

During the home activity conversations, he continued to talk about family
"Even talking about the prompts about the zookeeper, how do you keep a zoo? What do you do to make it happy? It was nothing like, "Let me feed this animal." It was nothing like that. It was just like, "He's happy with his family.

According to his mother, Eli was very interested in details at the zoo, such as locks on gates, or animals having injuries. For example, he asked his mother questions about the Komodo dragon having a band aid on its tail. In the first zoo visit, Eli was very interested in a picture of a cow receiving medical care, a sort of topical cream, after being attacked by a lion. His mother connected it to when he had been injured in the past and he had cream put on his hand.

His mother also noted how much fantasy was at play in what Eli had to say at the zoo and about the zoo. During a zoo visit he shared that the Komodo dragon wasn't happy because a T-Rex ate its baby, and when they could not see a tiger in the exhibit he suggested that was because a ninja turtle came and killed it.

Ben

Wilson is three and a half years old. He is an only child, and lives with his mom and dad. His father shared that they usually do all leisure activities as a family, with both mom and dad.

The family took a visit to the San Diego Zoo a few weeks after their last WPZ visit, and before the final interview.

The father had indicated before the San Diego trip that the child was not very engaged by Home Activity 2, the snake book. However, he later shared in the second interview that " I think he enjoyed a lot more than what I thought in a sense. Specifically I think the second activity is a little bit too advanced for him, but he's excited about it. He take his snake, show it to his mom later on, and then he make it more like a sticker book. So we have a Christmas sticker, and each of those page, he wants to stick a sticker and he build his snake sticker book. So it's just kind of interesting to see that activity evolve. I mean, not necessarily the way that initially we talked about. Right? But he is excited about a snake, to make it as a sticker book." The child even asked his parents to pack the snake book to take on the trip to San Diego.

His father mentioned that seeing the orangutans in San Diego reminded his son of the orangutans in WPZ, and he remembered that in WPZ they sleep in hammocks.

In the zoo, the child engaged in anthropomorphizing by labeling some of the animals as “mama,” “papa,” and/or “baby.”

Chloe

Chloe is three and a half years old. She lives with her parents, and an older brother and sister. Chloe had the most notable occurrences of positive prosocial behavior changes related to empathy and the zoo.

Chloe’s mother shared that she was very interested in helping animals after seeing WPZ zookeepers interacting with animals at the second zoo visit. Chloe’s mom shares that after the second zoo visit “She thought it was really funny how the zookeeper had come over and the pig came running for the food. I can't remember what the pig's name was, but she specifically called the pig by its name and talked about his snack, and told the kids [her siblings] she was excited to tell them about the insects we saw.”

Chloe’s mom shared that Chloe has been roleplaying taking care of her stuffed animals at home since the second zoo visit “I have noticed she has talked about what animals like... Almost like taking care of her animals versus just having friendly conversations, talking about what her animals need, kind of like what the activities were about, which I don't think she'd done before.”

Chloe’s mother shared that she was surprised how Bug World had been so interesting to Chloe. “she was really quite interested in the insects and then insect world. And since then, we've picked up earthworms. It seems like she is more interested now in her surroundings”

Chloe’s mother noted that at the zoo that Chloe was very interested to see that animals are being taken care of, particularly because their moms were not there with them, and concerned about their lack of toys

Felix

Felixis two and a half years old. He lives with his mom, dad, and older sister.
Felixspent a lot of time doing imaginary play with his mom in Farm World at WPZ.

Felixwas very engaged in Bug World, and said “I love you” to some of the bugs.

Felix and his mom looked at a sign about how rhino horns grow over time, and talked about what kind of horn his sister would have (at age six) and he would have (at age two).

Felix was very interested in the warthogs on his second visit to WPZ, and sang them an extended lullaby. For part of the lullaby he asked his mom to join and sing along with hm, for part he wanted to sing on his own, He referred to the sleeping warthogs as “a mom and baby snuggling.”

Aaron

Aged only 23 months when he began participating, Aaron is the youngest child participant in this study. Aaron is an only child, he lives with his mother and father. His mother is his primary caretaker, but his father also provides a lot of parenting support.

In our initial interview, Aaron's mother discussed how her gentle parenting approach was informed by less than optimal experiences in her own childhood. Both of Aaron's parents encourage Aaron to talk about emotions, recount his own feelings, and create narratives to help him process emotional experiences: "When he falls or anything like that, I've really been trying to ask him like, "Hey, can you replay that for me?" I help him along obviously because he can't say everything yet. And then at the end I'll be like, "Well, how did it make you feel?" He can say happy, but I don't know that he knows what happy is. He does happy and he smiles, but I don't think he quite gets it like, oh, that's what that feeling is. But if he fell and he tells me or he is pointing and saying, this is what happened, and I say, "Oh, well, that was probably shocking or that might've been scary for you." And then again, with the pushing, it's like if you wanted somebody to move, that's probably really frustrating that they didn't get out of your way by reading your mind."

For example:

"So today we were running around and we were playing chase with some of the other kids, and he just turned around and smacked into a chair, which he was not pleased about. And he was crying. And so when he came over, because he was crying and I asked if he was okay, and I said, "Can you tell mom what happened? Can you take me through it? We can replay it." And actually, he moved his little feet like this, like I was running. And then he took me over to the chair and he'll point at the chair and I say, "Okay, so you were running and then did you hit the chair?" And he'll usually say yeah. Or he'll say no if I'm not on point with what he's trying to tell me. And then sometimes he'll set himself down to show me that he fell and then it's like, "Oh, okay, so then you fell. And that was probably scary. But mom came to you right when she saw that you were hurt. Are you okay?"

Aaron and his mother were the only participants who were members and regular visitors of WPZ. They are also members and regular visitors of Point Defiance Zoo and Aquarium in Tacoma. Aaron and his mother were the only dyad recruited from the Little Zoo Waddlers program at WPZ. His mother had very positive things to say about the program, especially the zoo educators facilitating the program. She said that she had learned a lot not only about zoo animals, but about child development and how to parent.

Aaron's mom mentioned that he connected a snake in a story book they read together with the snake that they made in the book activity. And so I think he was very excited, that it was like, "Oh, this is a snake. Hiss, hiss." "And actually he was really excited to see the snakes.

We went to Point Defiance and he was actually very excited to see the snakes. I think that was all connecting in his head too, that, "Ah, making a snake." “And even the hissing, because I think I did say, "Oh, remember snakes say hiss, hiss, hiss.” And he'll hiss at me now randomly too. I'm like, "Thanks. Thanks for hissing at me, kiddo.

Aaron’s mother noted for the second activity that she was surprised by Aaron’s understanding of longer sentences and complex concepts:
“It always surprises me how much more he understands of what I'm saying than I think he will. And I try to do short ... Just a few words with him so that he can pick things up easier. But it's always surprising even when I don't do that, how much he actually picks up of what I'm talking to him about.”

She was very surprised and impressed that Aaron was able to respond to the prompt asking about her favorite animal by naming an animal that she loves:
“Even asking like, "Oh, what do you think mom's favorite animal at the zoo is?" I asked him and then I said, "What's mama's favorite? What's mama's favorite?" It's just crazy to me that something that ... Last year who couldn't really talk, that now I'm actually having conversations with him about things that he's remembering or how he interprets it….And what was crazy too is I actually do really like goats, he was not wrong. And I tell him that, whenever we go to Point Defiance and feed the goats, I always tell him, "Oh, mommy loves goats. Mommy loves the goats." He wasn't wrong.”

Since the beginning of this study, Aaron has shown more interest in animals at the zoo, and more indications of relating to the animals. According to his mother “He was looking and interested but even just at our other visits, I've noticed how much more interested he is at actually looking and, "Oh, this thing is doing something. It's actually moving and eating, and these are things I do."

Aaron’s mother attributes these changes to Aaron growing older, and that she and her husband have been spending a lot of time at home talking to Aaron about being gentle with their pet pug:
“we've been really trying to work with him on being gentle, that, "Frodo feels things too, and if you're too rough with him, it scares him…. I'm not sure if it has to do with that as well that we're trying to show him that, "Hey, Frodo has feelings too."

His mother said that she enjoyed being a part of this study because she enjoys when Aaron tells “little stories about his day, what sticks with him, what he wants to tell Dad.”

Findings by Theme

Anthropomorphizing

All of the children engaged in some sort of anthropomorphizing, both at the zoo and during the home activities.

In particular, many of the children referred to animals as having families, designating animals as having specific family roles. Three of the four children who had one or more siblings talked about zoo animals as having siblings, reflecting their own family composition (e.g., a sister, a brother and a sister). Dylan had a newborn sibling who had been born a month before data collection, so this child was possibly less accustomed to sibling roles in a family. They did refer to non-baby animals as being the "baby" or "mommy and baby." In one example, the child talked about one penguin swimming toward another as a baby "swimming to her mama," or a turtle "swimming for her mama turtle"

Five of the participating children did some labeling of zoo animals, and zoo animal statues, as having different family roles. Chloe, for example, likened a group of gorilla statues to a mommy, daddy, and different siblings (giving them the names of her and her siblings). Ben, an only child, talked about various animals, such as the giraffes, having a mommy, daddy, and a baby. Some of the animals referred to as babies were juveniles or depicted as such (e.g., the tapir, and some of the gorilla statues). Others had no discernable physical markings of being a juvenile, and were in fact also adult animals, but a child had assigned them that role. Felixtalked about two sleeping warthogs as a "mommy and baby snuggling together," and spent several minutes singing them a lullaby, "Hush, Little Baby." He started by singing alone, then he asked his mom to sing with him, then he said he wanted to sing to them alone again. He wanted to spend a long

time watching the warthogs sleep, and talked with his mom about how warm and cozy they were sleeping together.

Eli, in particular, spent a lot of time talking about animals having families. For example, he discussed the monkeys and the gorillas having roles as “mommy,” “daddy,” “baby,” “brother,” and “sister.” According to his mother:

“I was kind of not expecting how focused on family he would be. So, the first time we saw the gorilla and it was just like he assigned everyone a role. It was automatic like, "Oh, that's mommy and that's daddy and that's the baby." And then he was like, "Where's the brother? Where's the sister?" And so, I didn't realize that his world... He thought all animals should have what he considers a complete family, so that was kind of interesting to me.”

While working on his Komodo dragon Home Activity 1, Eli wanted to represent “a dad lizard, mom lizard, and… baby lizard”. His mom was encouraging him to draw smaller lizards in the Komodo dragon’s stomach to represent smaller lizards she may have eaten, but Eli insisted that the smaller lizard in the stomach was a baby.

“Eli: And that's his baby.

Van: Oh, it eats its baby? Is that what you're saying?

Eli: No.

Van: No, it doesn't eat his baby?

Eli: That's his baby.”

The exception to this family role trend was Aaron, the youngest participant. He did, however, express a particular interest in seeing a baby animal, namely, a baby tapir.

Other Anthropomorphizing

Beyond reference to animal families and family roles, there were many other instances of anthropomorphization. During their visit to the zoo, all of the children greeted at least one animal with a "hi," or said "bye" on their own initiative. Other “his” and “byes” were initiated by adults, which the children followed. During the first home activity, all of the children described the animal they made as being their own age, except for Felix, who said his Komodo dragon was the same age as his mom and dad.

Some other examples of anthropomorphizing include children referencing the animals as having needs similar to their own, or playing. Chloe's mother observed:

Mom: “Well, I thought it was just really interesting how she personified so many things. When she recognized her needs, she was concerned that they didn't have the toys, where were their blankets and pillows? Things that we would expect to be comfortable. She really connected that they would have the same wants and needs that we have. I thought that was really interesting.”

Both Dylan and Felix suggested that animals in the zoo were playing when they observed the animals running around. Similarly, Aaron suggested that otters might enjoy playing with toy boats, mirroring his own play activities, During the home activity Aaron wanted to feed his bear a treat from the fridge because he knew that his food came from the fridge. His mother suggested that the bear might like berries, but Aaron said "No, I like cheese and this bear would like some cheese too." This behavior highlights how the children identify with and anthropomorphize animals, attributing human-like needs and desires to them.

Play and Imagination

The importance of imaginative play was another key theme from the data.

Dylan really enjoyed play while at the zoo. He initiated joint pretend play with his dad, running around in an open area pretending to be mama and baby of a number of different animal species, including a tiger and a bird.

Dylan: You be the Momma bird, and I'll be the baby bird. If the baby asks for something, you give him something.

Dad: Okay.

Dylan: I want something.

Dad: What do you want?

Dylan: A leaf.

Felix and his mom played in joint imaginative play for an extended time in the Farm World area of WPZ. Felix especially enjoyed pretending to milk the cow and churn butter, and he talked with his mom about how we get milk from cows.

Some of the children had some very imaginative things to say about the animals at the zoo. Eli made fantastical remarks, such as suggesting that the komodo dragon was sad "because a T-Rex ate his baby" and referencing ninja turtles. While they were looking at the turtles, Dylan told his dad that sometimes bears turn into turtles (for context, the brown bear exhibit is near the pond turtle exhibit at WPZ).

Play and Statues, Stuffed animals, and other toys

The realistic brass animal statues throughout WPZ were very engaging for the children. Aaron asked specifically to see the otter statues. His mother brought him to that area and he wanted to spend a lot of time giving the otter statue a hug. He tried to move the otter, and asked to take it with him when they left the area. Chloe talked about the zoo gorilla statues being like a family, similar to her family, with parents and a brother and sister. Many of the children asked to

take a picture of them with the Komodo f=dragon statue. Felixtook a picture sitting on this statue after looking at the real Komodo dragon, and talked about riding the statue with his mom while making his own Komodo dragon in Home Activity 1.

Children enjoyed extending their zoo-related pretend play with objects. This included statues throughout the zoo, stuffed animals in the Zoomazium, and stuffed animals and other toys at home. As previously mentioned, Chloe's mother specifically mentioned that she had begun taking care of her stuffed animals at home:

"I have noticed she has talked about what animals like... Almost like taking care of her animals versus just having friendly conversations, talking about what her animals need, kind of like what the activities were about, which I don't think she'd done before.

Aaron was very involved with stuffed wolf ("oggie", short for "doggie") in Zoomazium, and he liked seeing the real "oggies" in the Northwest Trail area. Aaron talked with his mom about putting the "oggie" in a pretend cave in Zoomazium to go to sleep, and he wanted to say hi to some animals he saw on the screen in Zoomazium, for example red pandas, and he wanted "oggie" to say hi to the other animals too

Aaron's parents use playing with his duplo blocks, a favorite home activity, to reminisce with him about zoo experiences:

"If we're playing Duplos or something, he has little tiger Duplos and so he'll say roar and I'll say, "Oh, do you remember hearing roar today? Do you remember when we heard roar?"And he'll say, "Yeah."

Home Activity

All of the children enjoyed playing with the animal from Home Activity 1 (either a Komodo dragon or a bear). Aaron brought a blue duplo block over to the paper bag "cave" so

that it would have some water in its home. All of the parents mentioned that the children had wanted to show their animals to family members and had played with them in the days, or in the case of Aaron and Chloe, weeks, after completing the activity. Chloe's mom noted that in the weeks beyond the activity they had been having conversations about Komodo dragons at home.

Some of the children had very imaginative things to say about their animals from Home Activity 1. For example:

Dylan: When the fish comes, the fish will eat the bear. There will be no more bears.

Dylan's dad:Oh my goodness.

Dylan: Then we won't be able to ride the bears.

Dylan's dad: Oh my goodness. We won't be able to ride the bears because the fish ate them?

Dylan: Yeah.

Dylan's dad: That's so sad. I love riding the bears

Dylan: Yeah and me too. But they're going to be a little bit faster.

Taking Care of Animals

Children in this study expressed an interest in taking care of animals. These caring behaviors could also be interpreted as being tied to anthropomorphism (see Discussion). Findings from this study indicate that seeing animals cared for by zookeepers is impactful for how some children think about animals and empathy. Chloe's mother shared that she was very interested in helping animals after seeing WPZ zookeepers interacting with animals at the second zoo visit. Chloe's mom shares that after the second zoo visit "She thought it was really funny how the zookeeper had come over and the pig came running for the food. I can't remember what the pig's name was, but she specifically called the pig by its name and talked about his snack, and told the kids [her siblings] she was excited to tell them about the insects we saw."

Eli asked questions about the Komodo dragon having a band aid on its tail. In the first zoo visit, Eli was very interested in a picture of a cow receiving medical care, a sort of topical cream, after being attacked by a lion. His mother connected it to when he had been injured in the past and he had cream put on his hand

During the second interview Aaron's mother said that he had been talking a lot about past events that involved feeding animals at other locations (fish at a hatchery, goats at a farm, donkeys). While feeding goats, his mother mentions that he wanted to make sure that he got to feed all of the goats, even the smaller ones who were less persistent about putting themselves forward for food.

All of the children showed some level of interest in caring for their animals as part of Home Activity 1. They enjoyed feeding them, and putting them in their paper bag “cave” to sleep. Possibly related to Hame Activity 1, during Home Activity 2, Dylan was very interested in drawing all of the animals a home and some food to eat, even if that was not suggested by the prompt.

Parents Modeling Empathy

In the zoo, parents talked about behaving in ways that would keep the animals safe and comfortable. This included saying “hi” and “bye” to animals at the zoo. Sometimes they paired their modeling with a verbal explanation, such as speaking with a quiet voice and telling their child explicitly that we (parent and child) cannot be too loud or we might scare the animals.

Multiple parents mentioned not touching, or not being able to enter, animal enclosures. For example, Ben’s dad told him not to knock on the glass to wake the sleeping orangutans, and asked his son how he would feel if someone knocked to wake him up while he was sleeping.

Aaron's mom told him that they could not go in by the otters, because that would not be safe for people or otters.

The two home activities included general ideas for talking points (see appendix), but parents chose to enact these in their own way. In Home Activity 1, some caregivers modeled taking care of the animal their child had made, by demonstrating how to "feed" them cotton balls, or put them in their paper bag "cave" to rest.

Felix's mom engaged in a kind of anthropomorphism to model taking care of an animal, pretending to speak in the voice of his Komodo dragon in Home Activity 1: Mom: "He was like "I was so tired I just ate all that food, do I have a nice place to rest?... He's like "I'm going to rest in my burrow." He's going to rest in his burrow, can you put him in his home?

During Home Activity 1, Felix's mother talked with him about his difficult feelings around hearing that Komodo dragons eat birds, helping him label his emotions:

"Mom: He eats reptiles and birds. He eats birds.

Felix: No. I don't want him to.

Mom: Is that sad?

Felix: Yeah.

Mom: Yeah, in nature-

Felix: Don't eat birds. Don't eat birds. I love you.

Mom: ... You love him?

Felix: Mm-hmm."

Parents Noticing More Because of Activities/ Conversations

Other things parents noticed

Parents talked about the zoo coming up in various activities and conversations at home. Some of these incidents were modest. Ben's dad mentioned that the zoo had come up at home while reading some books about animals. As mentioned above, Aaron and his parents talked about zoo animals while playing with duplo blocks. Chloe's mother mentioned that they had been talking about Komodo dragons and bugs (particularly earthworms) more at home.

While interacting with their children in the activities, parents mentioned being surprised by various smaller observations that demonstrated a more evolved understanding, higher level of competence, or different interests than the parent expected. Dylan's dad noted that he was impressed that Dylan had observed that the bear from Home Activity 1 was a polar bear, because he was white before being colored in. Aaron's mother noted that she was surprised by how well Aaron could complete certain parts of the activities, such as accordion-folding paper, independently: "when he did it, I was just like, "Oh, okay. I need to give him the benefit of the doubt, he can do these things."

for Home Activity 2 that she was surprised by Aaron's understanding of longer sentences and complex concepts:

"It always surprises me how much more he understands of what I'm saying than I think he will. And I try to do short ... Just a few words with him so that he can pick things up easier. But it's always surprising even when I don't do that, how much he actually picks up of what I'm talking to him about."

Ben's dad noted that after participating in the activities in this study, his son was now generally more interested in doing animal activities at home:

"the keyword "activity," I think registered to his mind for whatever reason. I rarely use the word "activity," but now he'll ask for [an] activity after the snake. "Oh, I want to do activity

again." I'm like, "What are you talking about? There is no activity." And he's like, "I want activity." And then he's like, "We made a snake, now I want to make a chicken." And I have to just Google, "Okay, how do you..." Just cut and stick, make a chicken template, like build a kid activity, a cartoon chicken, you cut the beak, you've cut the eyes and then the tail, whatever, and put them together. But he will ask for activity every now and then."

Dylan and Van's parents both noted that they had noticed how much their child engaged in fantasy while at the zoo.

Chloe's mom said that the book activity helped her understand more of Chloe's understanding of how zoo animals were cared for: "I think I understood her empathy with the animals better when we talked about the book to see her concerns and what she thought of how animals were taken care of at the zoo."

All parents said the thing they appreciated most was having dedicated one-on-one time with their child. In particular, Ben's Dad said they typically do everything as a family, with both parents, and that it was a nice change to have focused time with just the two of them.

Among other benefits, parents reflected that they could notice more about their individual child's thoughts and experiences when it was just the two of them.

Changes in Empathy

Aaron's mother noted a recent shift in how Aaron viewed animals at the zoo: "He was looking and interested… I've noticed how much more interested he is at actually looking and, "Oh, this thing is doing something. It's actually moving and eating, and these are things I do."

She associated part of that change to spending more time with their pet dog at home. According to Aaron's mom: "Well, he goes back and forth a lot but with our pug, Frodo, we've been really trying to work with him on being gentle, that, "Frodo feels things too, and if you're

too rough with him, it scares him. That can scare him and he doesn't want to be around you and he's not going to want to play with you." He's starting to understand, "Oh, I pet him gently and then he wants to be around me."

And also with playing, that when Frodo's done, that he's done and that's okay. I'm not sure if it has to do with that as well that we're trying to show him that, "Hey, Frodo has feelings too."

Parents in this study noted that it was interesting to see which animals, or other features of the zoo, drew their child's attention when they were allowed to lead the way in these visits, and it was often not what they expected. Chloe and Felix were both very interested in Bug World, which surprised both of their mothers. Many children were very interested in the Komodo dragon on their first zoo visit, even before some of them made a Komodo dragon as part of Home Activity 1. As noted above, Eli's mother was surprised at how focused he was on families while they were in the zoo, and his interest in certain details at the zoo, like the bandaid on the komodo dragon's tail.

Chloe's parent noticed that she had begun taking care of her stuffed animals at home:

"I have noticed she has talked about what animals like... Almost like taking care of her animals versus just having friendly conversations, talking about what her animals need, kind of like what the activities were about, which I don't think she'd done before."

Aaron's mom was very surprised and impressed that Aaron was able to respond to the prompt asking about her favorite animal by naming an animal that she loves:

"Even asking like, "Oh, what do you think mom's favorite animal at the zoo is?" I asked him and then I said, "What's mama's favorite? What's mama's favorite?" It's just crazy to me that something that ... Last year who couldn't really talk, that now I'm actually having conversations

with him about things that he's remembering or how he interprets it….And what was crazy too is I actually do really like goats, he was not wrong. And I tell him that, whenever we go to Point Defiance and feed the goats, I always tell him, "Oh, mommy loves goats. Mommy loves the goats." He wasn't wrong."

Aaron's mother noted "I love hearing what he remembers and what his little stories are and what's important to him from what he remembers of his days"

Adults and Complicated Feelings about Zoo empathy

When asked for their personal thoughts on zoos and empathy, the majority of the adult participants had negative perceptions of zoos overall, even though they had positive things to say about visiting zoos with their children.

One mom spoke extensively in both interviews about their conflicted feelings around zoos. To her, teaching her child empathy for zoo animals presents a moral quandary.

They acknowledge that their child, and most other zoo visitors as well, would probably not have the opportunity to see many of these animals because of considerations such as distance, expense, and safety. While acknowledging the accessibility they provide to animals, this parent also grapples with the ethical concerns of keeping intelligent creatures confined. They feel conflicted about the idea of animals being on display for human entertainment, particularly when observing behaviors that suggest boredom or distress.

With animals like orangutans bearing such striking resemblance to humans, it's easier for her child to recognize our shared traits than to empathize with, for instance, their pet dog. Yet, this closeness between orangutans and humans also burdens the parent with the ethical dilemma of witnessing intelligent beings so like humans held in captivity.

In particular, this parent highlighted the ethical dilemma brought on by a hands-on area of the orangutan exhibit, with realistic bronze models of orangutans face and hands on display for touching:

> “I hate when I can see their hands because they look… they're just a bigger version of our hands pretty much, which is insane… And even I think the siamangs have that too, where they have the tinier hands. Whenever I can see their hands, that always makes me feel a little ... It hurts me a little bit just because I'm like, "Okay, it feels like we have people in there."
> “Although it makes me sad, at the same time I do appreciate that they put that there because he [her child] would never ... It's not like you can go up and hold an orangutan's hand and be like, "Hey, dude. How's this?"

Another mom wondered about animals' comfort in the cold, particularly because she herself was noticing the effects of the cold on one of her zoo visit days, and generally if the animals were happy or sad. She noticed that they seemed to be sleeping a lot, and wondered what that meant about their emotional state: “Sometimes I wonder if they're cold or if they enjoy themselves. They're just sleeping a lot. I think I do think about that quite a bit. “

Yet another mom also shared that they also had very conflicted feelings about zoos. She acknowledged that zoos do important work, however she thought that comparing their limited space the animals have access to in the zoo with the presumably larger space they would have in the wild. This parent particularly mentioned zoo signs that discussed how fast certain animals could go, and how much space they could cover, and that made her reflect on the limited space the animals actually had access to in the zoo. She acknowledged that seeing the zookeepers feed and interact with animals showed her that they were being cared for, but it was still different, with a negative connotation, than the animals being in the wild.

> “It was a bit heartbreaking to see these wild animals in captivity, and especially the space, it really made me stop and think about that… But then, we would talk about how the zookeeper gave the penguins fish and it felt like they were being taken care of, but it's just such a different... You're in the zoo.”

Another dad also had mixed feelings about zoos, stemming from their affinity for animals, identifying as an "animal person." The parent reflects on zoos from two perspectives: one highlighting the safety and care provided, and the other recognizing the unnatural conditions. On one hand, this parent recognizes the unnatural environment of zoos, where animals are removed from their natural habitats and subjected to constant human interaction and noise, including from nearby airports. This parent mentioned thinking that some of the animals seemed more lethargic, and this made him think that they might be feeling emotionally depressed.
On the other hand, he acknowledges some benefits to zoos, noting that they offer safety from predators, which could be appealing from the perspective of non-predatory species, and provide animals with care.

"So yeah, that's what was going through my head was the two different lenses of the safety of the zoo mixed with the entrapment of it."

Two parents did express neutral and mildly positive feelings, respectively, about zoos: One parent shared that they were aware of the controversy around zoos, and keeping animals in captivity more generally, however they personally did not have a strong opinion of zoos either way.
Another shared that they also did not have a strong opinion of the ethics of zoos. On a more positive note, this parent also shared that they saw the zoo as being different from a for-profit entity, and that animals at a zoo in the United States receive excellent care compared to other places. Overall, parent sentiment towards zoos was largely negative, with acknowledgement that zoos can be beneficial spaces for children.

Discussion

The findings of this study contribute to the field of informal learning particularly for ILE spaces with living collections, such as zoos, ,and early learning by supporting an understanding of: 1) how children might build a greater understanding of empathy for more-than-human others through reminiscing with caregivers about ILE experiences, and 2) how caregivers understand the development of their young children's empathy in a zoo context.

This study provides a unique contribution to the literature due to 1) its focus on children aged 2-3, an age group often underrepresented in research on empathy development and informal learning environments such as zoos, 2) its focus on qualitative data, and 3) by looking at the experiences of both adult caregivers and children.`

A key finding related to research question 1 includes the observation that reminiscing in an activity context encourages some children to connect their experiences at the zoo to those outside of the zoo.

Key findings related to research question 2 include observations that:

1) Reminiscing conversations and activities give caregivers a chance to understand more about what their children are thinking, and capable of understanding, about empathy.
2) Caregivers understand some facets of their children's empathy development in a zoo context, such as increased awareness of animals as sentient beings, and acting out caring for animals.
3) Other facets of developing empathy, such as pretend play (pretending to be an animal, rather than taking care of an animal) and anthropomorphizing, are not always viewed as such by caregivers.
4) Caregivers themselves have a largely mixed or negative view about the zoo and empathy regarding zoo animals, but they value it as a place to take their children.

This chapter will discuss each theme from the results in turn, relating them to the literature reviewed. This is then followed by recommendations for practice and research, followed by a review of the limitations of this research.

Themes:

1) Value of reminiscing during activities for children

A) Building Empathy Through Parental Scaffolding

A key finding from this study is that reminiscing in an activity context specifically encourages some children to connect their experiences at the zoo to those outside of the zoo. This finding is primarily connected to Theme 1, which focuses on parental scaffolding that starts from within the zoo.

In this study, parents primarily scaffolded by engaging in modeling, or showing the child how to do something by doing it themselves (Eshach, 2011), such as speaking with a quiet voice and telling their child explicitly that we (parent and child) cannot be too loud or we might scare the animals.

This aligns with the Seattle Aquarium's (2015) recommendation, which includes modeling as a best practice for zoos and aquariums aiming to develop empathy in visitors. Because ILEs typically have limited time with their visitors, educating parents and caregivers on how to appropriately model empathetic behavior to their children is endorsed as the best way for these environments to support empathy development for children (Seattle Aquarium, 2015).

As discussed previously in this paper, family learning in ILEs is a social practice, with new experiences connected to a family's cultural background, interests, and memories (Bang & Medin, 2010; Falk et al., 1998; Ellenbogen et al., 2004; LeTourneau et al., 2020; Zimmerman et al., 2010). Regardless of their content knowledge on topics of animal species, emotions, or anything else, parents are experts on their own child (Callanan et al., 2017).

Parents within this study used that knowledge to connect their child's understanding to different observations in the zoo and while completing the activities. For example, Eli's mom

scaffolded their understanding of the cow getting medicine by relating it to his experience receiving medicine from his caregivers. Similarly, all of the parents within this study made some comparison between the foods animals were eating in the zoo (various fruits and vegetables) and food they also ate at home as a family.

Parent scaffolding allows children to link physical feelings and expressions to specific emotions (Vadeboncouer & Collie, 2013). An example from this study is when Felixexpresses that he doesn't want Komodo dragons to eat birds, and his mother asking him if it makes him sad. Research suggests that when parents direct their children's attention to the emotions of those around them, it enhances the children's sensitivity to the needs of others (Spinard & Gal, 2018). Parents within this study made comments to their children at the zoo that included inferences about the needs and/or emotional state of animals, such statements that an animal is running around, it must be excited. Young children begin to link their own physical experiences with statements parents make to label these experiences. Parents also make such connections for how we can infer what other people and animals, both real and fictional, might be feeling (Vadeboncoeur & Collie, 2013; p. 212).

This sheds light on research question 1 by looking at specific set of conversation practices by parents that may help their children co-construct a greater understanding of empathy.

2) Value of reminiscing conversations and activities for caregivers

Theme 2 focused on caregivers' understanding regarding some facets of their children's empathy development in a zoo context, and demonstrates that reminiscing conversations and activities

gives caregivers a chance to understand more about what their children are thinking, and capable of understanding, about empathy.

Joint reminiscing is not only beneficial for the child, but the parent too. Caregivers may learn more about their children's interests during ILE visits, information that the caregiver can build on in post-visit interactions. (Luke et al., 2019). Home activity 2 helped Chloe's mother understand more about her desire to take care of her animals, and how that was shaped by seeing the zookeepers. Caregivers were encouraged to join in their child's reflections as part of this activity. Giving caregivers an opportunity to reflect on their ILE visit can be a powerful tool to allow them to further develop or adjust their understanding of the experience (Haden et al. 2014; McInnes & Elpidoforou, 2018) and it may make it more memorable (Fivush et al., 2006).

Other studies have similarly found that reminiscing about experiences in informal learning settings can extend children's understanding of a subject or an idea beyond the immediate context. For example, research in museum learning indicates that reflective discussions can help children apply what they learn to different settings (Brown & Kane, 1988; Goldstone and Sakamoto, 2003; Jant, Haden, Uttal, & Babcock, 2014).

3) Caregivers understand some facets of their children's empathy development in a zoo context

Parents have varying understandings and approaches to their children's empathy, generally and in relation to reminiscing conversations. There can be many variables that affect an individual's empathy levels (Preston & de Waal, 2002). How parents speak with their children about empathy and emotions seemed to impact the empathy development of some participants. Within the findings, Theme 3 focused on aspects that adults appear to understand about their children's empathy development in a zoo context, such as increased awareness of animals as sentient beings, and acting out caring forgiving care to animals. Notably, Aaron, the youngest

participant, demonstrated a high level of empathy towards animals and his mother. For example, his evolving understanding of animals as beings with agency. Also, being able to talk with his mother about favorite animal, and naming an animal that she loves, instead of an animal that is a favorite of his.

There is ample support from the research literature on the value of child-caregiver co constructed narratives. Narratives expose children to diverse emotional experiences and perspectives to foster cognitive and emotional development, and enable children to better understand their own and others' internal psychological states (Fivush et al. 2006; McAdams & McLean 2013; Nelson, 2005; Vadeboncoeur & Collie, 2013). Aaron's mother shared that she and her husband regularly engage in elaborative reminiscing (Salmon & Reese, 2016) with their child, outside the context of this study, including asking a lot of questions to help him construct narratives of his experiences.

Aaron's parent's value sharing narratives together, and expressed that she appreciated hearing his narrative accounts of his daily experiences. Prior to enrolling in this study, Aaron's parents already engaged in narrative reminiscing conversations with him, including reminiscing conversations specifically about emotional events. These kinds of conversations with parents begin to teach young children how they make meaning from personal events (Reese et al., 2010). As discussed in the literature review, the kind of personal narrative discourse skills Aaron would be building through these conversations are part of a complex interrelationship along with episodic memory (EM), theory of mind, and executive functions (Brien et al. 2021), all of which are connected to empathy development. The research literature also indicates that variations in maternal emotion-coaching style, along with emotion regulation, may help explain varying levels of young children's empathy (Ornaghi et al., 2020). Again, co constructing these narratives of

emotional experiences, and frequent conversations with his parents at home about the feelings his pet dog has, could be very beneficial for Aaron.

The experience of every dyad, in the zoo and at home, was shaped by their personal context and experience (Bang & Medin, 2010; Beaumont, 2010; Bronfenbrenner, 1979; Bronfenbrenner, 2007; Downey et al., 2010; Gaskins, 2008; LeTourneau et al., 2020; Puchner et al., 2001; Ross et al, 2003; Swartz & Crowley, 2004; Wood & Wolf, 2010). Aaron and his mother had by far the most experience visiting zoos, both WPZ and others. They were also the only dyad recruited from WPZ's structured program, Little Waddlers.

4) Caregivers may not understand other facets of developing empathy in a zoo context

As discussed in the literature review, empathy is a complex construct, without one single "correct" definition. Perhaps it is not surprising then, that certain behaviors seen in the zoo that would be recognized as empathy by the Woodland Park Zoo and ACE Network were not necessarily viewed as empathy by parents in this study, namely play and anthropomorphism. Anthropomorphizing and imaginary play were two common ways that children in this study expressed empathy for animals. Both involve the creative process of imagining and projecting internal states (Severson & Woodard, 2018). However, as shown in theme 3 of this study, adults may not always view these behaviors as empathy, or being related to empathy development. This provides additional insights into Research Question 2.

Value of Imaginative Play

As discussed in the literature review, empathy is a complex construct, without one single "correct" definition. Perhaps it is not surprising then, that certain behaviors seen in the zoo that would be recognized as empathy by the "Empathy towards Animals: Observational Assessment

Framework" (Measuring Empathy: Collaborative Assessment Project, 2019). were not necessarily viewed as empathy by parents in this study. Imaginary play was a common way that children participating in this study engaged with empathy at the zoo and at home.

However, while the literature supports that imaginary play is an important indicator and builder of empathy, the literature also supports that parents need the ILE to clarify the connections between play and any sort of learning (Letourneau, et al. 2017). That was broadly supported by these findings. Dylan's dad indicated that he thought Dylan was very empathetic overall, but he felt that he had not been able to make an empathetic connection with the animals at the zoo. However, Dylan did engage in anthropomorphizing and extensive imaginative play (as part of an animal family) while at the zoo, both signs of empathy. Both role play and anthropomorphism involve the creative process of imagining and projecting internal states (Severson & Woodard, 2018). Imagination is a key part of empathy, allowing one to see another's perspective (Jensen, 2016). Since empathy entails actively imagining another's perspective (Jensen, 2016), being inclined towards pretend play can be an important indicator of empathy (Brown et al. 2015).

Similarly, in the final interview, Eli's mother observed that Eli did not seem to really display empathy towards the animals. Instead, Eli made fantastical remarks, such as suggesting that the komodo dragon was sad "because a T-Rex ate his baby" and referencing ninja turtles. Despite his seemingly fantastical comments, these observations suggest a concern for the animals' well-being, albeit expressed in an unconventional manner. Here Eli is also demonstrating imagination, an important part of empathy (Jensen, 2016).

Engaging in play can lead to meaningful parent-child conversations. Although the book activity in this research talked far more explicitly about animals, care, and empathy, the majority

of participants (everyone except Chloe and her mom) said they felt like they had more meaningful conversations during Home Activity 1 because the child was more engaged by the more play-based activity.

As discussed in the Findings, toys can be a valuable tool for imaginary play. Relevant to this study's focus on animals and empathy, Aaron's mom mentioned he played zoo with his duplo blocks, and he used a blue duplo block to simulate water for his bear in Home Activity 1. Chloe's mom described how she had been taking care of her stuffed animals since the zoo visits, and talking about what they need. Engaging in doll play can offer children the chance to practice social interactions, fostering the development of emotions such as empathy (Hashmi et al., 2020). Multiple children were very enthusiastic about interacting with statues at the zoo, including riding on them, giving them hugs, or comparing the group of animals depicted to their own family members. Wilson and colleagues (2022) built on the doll play work by Hashmi et al. (2020) to suggest that realistic animal statues, such as those found in zoos, could function in a similar way to dolls in these social interactions.

Value of Anthropomorphism

Anthropomorphism was a significant way that the children in this study demonstrated empathy for animals. This is in line with the literature on children and animals (Backscheider, Shatz, & Gelman, 1993; Gelman et al., 2022; Jipson & Gelman, 2007; Jipson et al., 2023; Severson & Woodard, 2018). Like play (discussed above) this anthropomorphising involves the creative process of imagining and projecting internal states (Severson & Woodard, 2018). However, the degree of anthropomorphism demonstrated by children differed, as did the degree to which parents recognised it as empathy.

It is worth noting that Eli's strong connection to his family appears to play a significant role in his interactions at the zoo. While all children in the study anthropomorphized to some extent, Eli talked the most about animals having families. This reflects his deep bond with his own family and highlights how his personal experiences influence his perception of animals and their social structures. While Eli's empathy might not have been evident in conventional ways, his detailed observations and emphasis on animal families suggest a unique expression of empathy and a strong influence of his familial connections. His zoo experience underscores the diverse ways children can relate to and understand the world around them.

Western society has a mixed, largely negative, perception of anthropomorphism (Bang, et al., 2018; Belcourt, 2014; Holmberg, 2022; Hovorka, 2017; Latour, 1993; TallBear, 2011; Young et al., 2018). Parents engaged in some instances of anthropomorphism themselves to help their children better connect with the zoo animals, but they generally did not recognize their children's anthropomorphizing as related to empathy development. This may specifically reflect the mixed feelings majority North American culture has towards anthropomorphization and children's learning (Kallery and Psillos, 2004).

There are some specific exceptions, where the parent did recognize their child's anthropomorphizing as empathy. For instance, Felix singing a lullaby to the warthogs as a kind of empathy, Aaron looking for food from the fridge for his bear in Activity 1, and Chloe thinking about animals needing toys, blankets, and a caretaker, like she would. It could be that these instances of anthropomorphizing were recognized as forms of empathy by caregivers because they explicitly involved caregiving for the animal.

5) Caregivers personal views about the zoo and empathy

A key finding of this study is that the majority of the adult participants had negative perceptions of zoos overall, even though they had positive things to say about visiting zoos with their children. This connects to research question 2, how caregivers understand the development of their young children's empathy in a zoo context, by offering insight on how caregivers are thinking about their own perspective on empathy and the zoo while actively co-constructing empathy with their child.

Each of the parents within this study is negotiating their own perspectives around the zoo and empathy as they are trying to support their child's zoo visit experience. While they are in the zoo with their child, they are making choices about what to share, or not share, about their own feelings about empathy and the zoo, and how their own feelings of empathy for animals lead them to evaluate the zoo as an ethically positive or negative place. Parents can perceive certain facets of the zoo experience as being particularly beneficial for their child's empathy development, while also struggling personally with their own empathic distress in response to these facets.

As introduced earlier in this paper, in the past decades there has been a major push for empathy education as a kind of panacea for many societal ills (Lobb, 2017). But while empathy has many benefits (Batson, 1991; Batson, 2009; Eisenberg et al., 2006) it also has its critics (Bloom, 2017a; Bloom 2017b; Kasperbauer, 2014; Prinz 2011). Empathy is thus acknowledged by the literature as a complex construct. While there are many good things about empathy, there are also more difficult and complicated feelings that come along with empathy (Andreychik & Migliaccio, 2015; Bandura, 1999; Singer & Klimecki, 2014). Notably, moral disengagement is a protective response if feelings of empathy are too intense (Dewar, 2013; Bandura, 1999).

Development of this full spectrum of empathy should not be discouraged, development of a full spectrum of complicated emotions is part of normal development. However, empathy as a concept should not be simplified to something one-dimensional and wholly positive.

Before officially enrolling her child in this study, Aaron's mother expressed a concern that being a part of this study would make him sad about the animals living in the zoo. I reassured her that anything like that was not part of the design of this study, by which I meant highlighting any potential distress of the animals or ethical questions around animals in captivity. I made a note of her question, but I did not give much thought to it until conducting the data analysis, and looking more at the complex feelings the parents in this study expressed around empathy and the ethics of keeping animals in zoos.

However, even if this study was not designed to highlight animal distress, and even if distress did not occur in the span of this study, learning to have empathy for animals in a zoo will most likely lead to some form of negative emotions. The flip side of the knowledge that we as humans are capable of caring for animals and helping them have positive feelings, like our own, is that we are capable of harming animals and causing them negative feelings, similar to our own.

Regardless, zoos should be aware that empathy is a complex feeling. Because of their very different levels of empathy development, at times the empathetic needs of young children and their adult caregivers may be at odds in the zoo. There are spaces in the zoo, such as by the orangutans, where "critical anthropomorphism" may be beneficial for the empathy development of young children, while simultaneously causing some degree of empathetic distress to their adult caregivers (Burnet, 2024).

This sheds light on research question 2, how caregivers understand the development of their young children's empathy in a zoo context, by offering insight on how caregivers are thinking about their own perspective on empathy and the zoo while actively co-constructing empathy with their child.

Implications for Practice

Results from this study indicate recommendations for future practice:
-Rethink messaging around empathy education in the zoo: Make it clear what empathy development can look like for children. It can include play, it can include anthropomorphism. The zoo does have some information on this in the empathy section of their website, but this isn't necessarily something that the average zoo visitor will find, you have to deliberately be looking for it.

-When parents feel knowledgeable about exhibit content in ILEs, they are more likely to interact with their children (Bates, 2018; Bourque, Houseal, Welsh, & Wenger 2014). In this case, the "content" in question is less of the standard biological facts often found in zoo signage, and more on providing information on how animals actually may be feeling vs how humans would be inclined to perceive their emotions. As discussed in the literature review, WPZ does include some wording specifically around emphasizing differences versus anthropomorphism in their signage by particular species (for example, the gorillas). However, relying on interpretative signage may not be the best tactic, particularly for reaching the early childhood and family audiences. (Geerdts et al., 2015; Luke et al., 2019). As discussed by Jensen (2014b) above, zoo visits that rely on unguided interpretive materials are not optimal for children's zoo learning. In part, it is very difficult for caregivers to utilize materials while simultaneously supervising and facilitating the visit for their children. All adults in this study either shared that they were not

able to look at any zoo signage at all while visiting with their child, or that their sign reading was greatly limited versus what they would have read if they had not been there with their young children. If signage is utilized to share empathy information with this audience, it must be specific, with concise information that is easy for caregivers to put into action (Degotardi et al., 2019; Jant et al., 2014; Letourneau et al., 2017; Song et al., 2017).

-Experiences labeled ”family learning” in ILEs are often centered on the experiences of the child (Wolf & Wood 2012). Being mindful that the empathetic needs of young children and their adult caregivers may not always be in line, the zoo could think about how to make more information directed to caregivers to dispel misconceptions and prevent errors of empathy (Goldman, 2011) or empathy that is not constructive (Wilson et al., 2022). This could include a QR code to scan with signage information specifically aimed at adults, and/or a brief summary of research adults could view before or after the actual zoo visit, because, as noted, sign reading was greatly limited versus what they would have read if they had not been there with their young children.

-Establishing joint attention is important for meaningful learning conversations between dyads, including increased learning talk through which caregivers make connections between the exhibit content and the dyad’s shared prior experience outside of the ILE space (Degotardi et al., 2019; Povis and Crowley, 2015). Thus, zoos should additionally consider providing activities designed to encourage joint reflection among caregivers and young children, perhaps even activities they can iterate upon. For example, a simple journal families can use and add to on each zoo visit, or can complete activities at home, and come back to Zoomazium to have them stamped.

-To dispel misconceptions around animal behavior, zoos should reconsider the interpretation of critical anthropomorphism to better reach caregivers and young children. This could include training staff and volunteers (including keepers and docents) on some concise talking points, or printing some simple facts on stickers, coloring sheets, or activity books to give out to children.
-To offset the negative side effects of empathy, the research also advocates for emotional regulation. The development of emotional regulation skills can have a protective effect against the negative effects of affective empathy (MacDonald & Price, 2019). Zoos could consider how they could partner with early childhood education providers and other relevant community partners to promote the development of emotional regulation alongside empathy.

-Zoos can additionally offer guidance to help adults appropriately scaffold for optimal empathy development. Many parents may lack the ability to provide effective SEL scaffolding, particularly in addressing social-emotional skills that they may not be used to discussing explicitly with their children (Slovak et al., 2016). Slovak et al. (2016) emphasize the importance of scaffolding parental involvement and support by providing example questions, suggestions for role-play, and ongoing reinforcement techniques to help parents learn how to scaffold learning for their children. Providing caregivers with some basic information about building empathy for animals and elaborative conversations could allow children to remember more of what the zoo wants them to know on this subject(Benjamin et al. 2010).

As discussed in the literature review, ILEs can use trained staff members to model for caregivers how to engage with their young children (Downey et al. 2010; Lifschitz-Grant, 2018). For example, staff members can model ways that caregivers can scaffold conversations with their young children (Leftwich & Haywood, 2016). caregivers do not see floor staff as particularly

helpful for understanding more about their children's learning, but further research is needed to see to understand why this perception exists, and what can be modified to shift it (Luke et al., 2019)

Limitations and Recommendations for Future Research

As discussed in the literature review, there are scholars who challenge the concept of zoos as positive spaces for humans to develop empathy for more-than-human others, because of the artificial environment and the way that visitors are separated from and objectifying animals (Berger 1991; Kahn and Kellert 2002; Zamir, 2007). Some dyads visited the Farm World area of WPZ. The literature takes issue with farms as spaces to develop true empathy for animals, because farms promote anthropocentrism by prioritizing production over emotional and ethical connections with farm animals (Lipp & Vidal, 2023). A further concern is that farm depictions aimed at children are inaccurately positive regarding the care and living condition of farm animals (Stanton, 2021). Farms can actually be places of emphatic distress and disconnect, some students of agriculture may emotionally and morally disconnect and disengage from farm animals to cope with ethical discomfort and emotional distress related to animal welfare and production goals (Lipp & Vidal 2023).

This is a small-scale qualitative study, which closely examined the experiences of six dyads. As such, sample size and variation were exchanged for longitudinal and in-depth data collection. These results provide rich insights but are not generalizable. Although I aimed for some reflection of a typical sample where possible (mothers and fathers, some diversity in caregiver ethnic/cultural background) the selection focus on a convenience sample and the small sample size meant that I would not be adequately reflecting the diversity of families in the Seattle area, to say nothing of families in general. All dyads in this study were parent-child,

family structures can vary widely and be culturally specific (Rogoff, Mistry, Goncu, & Mosier, 1991; Gutiérrez & Rogoff 2003), so it would be beneficial to include adults with other caregiving relationships.

Besides reflecting more diversity in families, future, larger studies should consider more gender and age variation in child participants. There was only one female child participating in this study. The research literature generally indicates significantly higher social and empathetic responsivity in female vs male children, from infancy onwards (Rochat, 2023). Also, findings from Tam (2013) indicate that females have stronger dispositional empathy with nature (DEN). However, beyond biological differences, the impact of gender roles in different cultural contexts on these varying empathy levels should also be considered (Chen et al. 2014).

This study aimed to expand the literature on empathy and zoos by including young children. Because of the small sample size, the focus was on children between the ages of 36 and 48 months old (with two of the child participants being younger than this). Because socioemotional understanding is changing so much in the early years, having a broader sample of children across ages 2-5 would be a valuable contribution to the literature.

For a study grounded in sociocultural theory, it is important to be aware of the larger context and systems that participants are a part of, including their natural environment (Bronfenbrenner, 1979; Bronfenbrenner, 2007; Sameroff, 2010). Each of the participating dyads resided in a North American urban context, the Seattle metropolitan area. None of the participants had live experience with any of these zoo animals outside of the context of captivity. The children had some second-hand knowledge that animals of these species lived in the wild, gained from viewing photographs in zoo exhibits, and reading picture books or watching tv

shows at home. It would be valuable to have future zoo empathy research include the perspectives of families who have also seen these animals in their native, wild habitat.

Another important limit that should be considered is that asking visitors about their experience can potentially influence the experiences the researcher is asking about (Palys, 1997). The design of the current study meant that some data (interviews) reflected only the perspective of the parent, but children bring their own individual perspective into ILEs as well. Anderson et al. (2002) found that what children remembered from the museum, and level of recall, differed widely amongst individual children.

Ben's dad expressed that he was not really that excited about the zoo after the visits, that it did not really leave much of a lasting impression. However, he clarified that his son had a similar attitude after visiting other special places, such as Legoland. He was excited to be there, but then did not really talk about it afterwards. However, there are a few things which belie this observation, related to a visit the family took to the San Diego Zoo a few weeks after their last WPZ visit, and before the final interview.

The first is related to photos. His dad shared that he thought he needed to take more photos in the future, because while at the San Diego Zoo his son had seen a particular animal species, and asked to see a picture of that same animal from WPZ, but he didn't have the photos. However, not only did his son remember the WPZ visit enough to ask to see photos of those animals, the animals he asked to see pictures of were animals his dad had asked him to pose with for photos.

This father had also indicated before the San Diego trip that the child was not very engaged by Home Activity 2, the snake book. However, he later shared in the second interview that " I think he enjoyed a lot more than what I thought in a sense. Specifically I think the second

activity is a little bit too advanced for him, but he's excited about it. He takes his snake, shows it to his mom later on, and then he makes it more like a sticker book. So we have a Christmas sticker, and each of those pages, he wants to stick a sticker and he builds his snake sticker book. So it's just kind of interesting to see that activity evolve. I mean, not necessarily the way that initially we talked about. Right? But he is excited about a snake, to make it into a sticker book." The child even asked his parents to pack the snake book to take on the trip to San Diego. In sum, while families are the experts on their own children, even attentive parents and adult caregivers will not be able to fully understand their child's unique perspective of their ILE experiences.

This paper began to explore the implications of caregivers' personal views on zoos and empathy. Exactly how caregivers choose to balance their own conflicted feelings towards the zoo while providing their child with a positive zoo experience is something that could be explored with more intentionality and specificity in future research designs.

Conclusion

This study looked at empathy for more-than-human others in a zoo setting. Research related to question 1 revealed that reminiscing in an activity context encourages some children to connect their zoo experiences to those outside the zoo. For question 2, key findings show that reminiscing conversations allow caregivers to gain insights into their children's thoughts and understanding of empathy. Caregivers observed that their children developed empathy in the zoo context, such as recognizing animals as sentient beings and acting out caring for them. However, they did not always recognize other empathy-related behaviors, like pretend play and anthropomorphizing, as facets of empathy. While caregivers had mixed or negative views about the zoo's role in fostering empathy towards animals, they still valued it as a place to take their children.

In the Findings, I discuss “Changes in Empathy.” It is not possible to say definitively if there were any changes in empathy (for zoo empathy or more generally) solely from participation in this study, that is not the intended purpose of this research. Rather, this study sought to take a nuanced look at the complex subject of developing empathy in zoos with an audience that has been, to date, overlooked in the literature. The experiences of participants emphasize the complexity of empathy as a concept, and the diverse ways children can relate to and understand the world around them.

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