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The Empathic Path to a Green Generation: investigating Empathy as a Catalyst for Pro-Environmental Behavior in Children

Tayyebi, Sareh

Citation

Tayyebi, S. (2024). *The Empathic Path to a Green Generation: investigating Empathy as a Catalyst for Pro-Environmental Behavior in Children*.

Version: Not Applicable (or Unknown)

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Note: To cite this publication please use the final published version (if applicable).



**Universiteit
Leiden**

**The Empathic Path to a Green Generation: Investigating Empathy as a Catalyst for
Pro-Environmental Behavior in Children**

**Research Master's thesis in Developmental Psychopathology in Education and Child
Studies**

Supervisor: Prof. Dr. PA Bos

Second Assessor: Dr. H.J. Vermeer

Student: Sareh Tayyebi

Student ID: 3529452

5th August 2024

Abstract

Empathy, encompassing cognitive and affective dimensions, has been posited as a significant driver of pro-environmental behavior (PEB) in children. This narrative literature review explores the potential of empathy to foster environmental care, addressing the limitations of traditional approaches such as policy regulations and economic incentives. Critics argue that empathy can lead to biased decision-making and emotional distress. However, research indicates that social-emotional learning (SEL) programs and environmental education can cultivate both cognitive and affective empathy, thereby promoting PEB from an early age. Despite potential barriers such as cultural attitudes and cognitive biases, the extension of empathy beyond human interactions to include the natural world is crucial. This review underscores the need for balanced emotional engagement and rational analysis in promoting PEB and suggests that integrating empathy into our relationship with nature can foster a more compassionate and environmentally conscious society.

Keywords: Empathy Development, Pro-Environmental Behavior (PEB), Social-Emotional Learning (SEL), Environmental Education, Cognitive and Affective Empathy

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Introduction

"Empathy is the starting point for creating a community and taking action. It's the impetus for creating change" (Max Carver, n.d.). This assertion highlights the significant role empathy could play in addressing today's escalating environmental crisis. In recent years, the intensification of climate challenges has posed a significant threat to human existence and life (Stollberg & Jonas, 2021). According to UN Climate Change News, in 2020 alone, climate shocks displaced 30 million people from their homes, while in 2021, extreme weather events resulted in approximately USD 120 billion in insured losses (United Nations Climate Change, 2022). This growing prominence of various environmental issues has heightened the focus on addressing these problems and enhancing environmental sustainability (Li, Du, & Long, 2019; Do Paco & Reis, 2012). Essentially, environmental problems originate from human behavior (Kaaronen, 2017), underscoring the urgent need for effective individual and collective action to mitigate climate change and its impacts. As we confront challenges such as climate change, biodiversity loss, and ecosystem degradation, it becomes essential to explore innovative strategies for fostering pro-environmental behaviors (PEB) among individuals and communities. Traditional approaches, including policy regulations and economic incentives, have their merits but often fail to consider the psychological and emotional motivations driving sustainable actions. Emerging research suggests that empathy might be a key catalyst for PEB, offering a new perspective on fostering environmental care.

However, while some believe it holds significant potential for fostering PEB, some argue against the effectiveness of empathy. Paul Bloom, in his work "Against Empathy," presents a compelling critique. He argues that empathy can lead to biased and irrational decision-making, being often parochial, short-sighted, and innumerable, potentially resulting in unfair and harmful outcomes. Bloom suggests that relying on rational compassion—understanding others' needs without emotional immersion—can be a more effective and fair

approach to moral decision-making (Bloom, 2016). This critique underscores the importance of balancing emotional engagement with rational analysis in promoting PEB. Additionally, empathy is typically stronger towards those who are similar or close to us, which can result in favoritism and inequality (Batson et al., 1995).

Another limitation of empathy is that it can induce significant emotional distress, particularly when individuals are exposed to the suffering of others. This empathic distress can result in burnout or compassion fatigue, reducing individuals' capacity to engage in sustained pro-environmental actions (Decety & Lamm, 2006). For instance, constant exposure to the impacts of climate change on vulnerable populations or endangered species can overwhelm individuals, leading to disengagement rather than proactive behavior.

Despite these critiques, empathy remains a powerful tool for connecting individuals emotionally to the environment, thereby motivating sustainable behavior. Research indicates that empathy can enhance pro-environmental behavior by fostering a deeper emotional connection to nature and increasing concern for environmental issues (Berenguer, 2007). Furthermore, a study by Ienna et al. (2022) found that empathy correlates positively with pro-environmental attitudes and behaviors, highlighting its potential to motivate sustainable actions in various contexts. could empathy help address the escalating environmental crisis, or is it more likely to hinder our efforts? This fundamental question forms the basis of this thesis.

This narrative literature review aims to explore how empathy can indeed serve as a catalyst for PEB by examining both cognitive and affective aspects of empathy towards humans and nature, with a particular focus on children who are in a formative phase where they are more impressionable and open to adopting new behaviors (Piaget, 1954). Studies have shown that environmental education in early childhood can have long-lasting impacts on behavior and attitudes toward the environment (Stevenson et al., 2014). By fostering an

environmentally conscious generation, the cumulative impact on future environmental conservation efforts can be substantial. Interventions that target children are investments in the future, as these individuals will grow up to make decisions that affect environmental policy, consumption patterns, and societal norms (Ojala, 2015). By focusing on children, we can cultivate a generation that is more attuned to environmental issues and motivated to act sustainably, thus contributing to long-term ecological preservation and the mitigation of environmental degradation (Homburg & Stolberg, 2006). By integrating existing literature, this review seeks to understand how empathy shapes environmental attitudes and behaviors, identify gaps in current research, and suggest directions for future studies. Grasping the empathic pathways to environmental care could provide transformative insights into addressing the urgent environmental challenges we face today.

1. Conceptual Foundations of Empathy

Empathy, a complex and multifaceted concept, has been the subject of extensive research across various fields including psychology, neuroscience, and sociology. Over a century ago, Titchener introduced the term "empathy," which is an adaptation of the German term *Einfühlung* (Wispe, 1986). Stotland et al. (1978) suggest that the concept of empathy might trace its origins back to early philosophical thought. Numerous efforts have been made to distinguish empathy from related concepts (Batson, 2011; Eisenberg et al., 1991; Scheler, 1954). Some researchers, such as Batson et al. (1987) and Preston and de Waal (2002), describe empathy as an umbrella term that includes various related concepts like emotional contagion, sympathy, and compassion. Ickes (2003) utilized Scheler's (1954) framework to differentiate among several related concepts, including *compathy* (shared feelings due to shared circumstances), *empathy* (understanding another's emotions through perspective-taking), *mimpathy* (imitating another's emotions without experiencing them), *sympathy*

(intentional emotional reaction), transpathy (emotional contagion where one is “infected” by another’s emotions), and unipathy (an intense form of transpathy). According to Ickes (2003), these terms vary based on three dimensions: the extent of cognitive representation of the target’s emotional state, the degree of emotional sharing, and the self/other distinction. Ickes observed that empathy occupies a middle ground on all three dimensions and has an inherent ambiguity, leading to ongoing debates since *Einfühlung* was first introduced (Ickes, 2003).

Overall, empathy is typically divided into two primary components: cognitive empathy and affective empathy (Hogan, 1969; Davis, 1983). Cognitive empathy, also known as perspective-taking, involves the mental ability to perceive and understand another person’s thoughts and emotions. This type of empathy is vital for effective communication and social interaction as it enables individuals to predict and respond appropriately to the emotions and needs of others. Cognitive empathy engages higher-order cognitive processes, including the theory of mind, which is the understanding that others have mental states distinct from one’s own (Premack & Woodruff, 1978). Research indicates that cognitive empathy plays a crucial role in resolving conflicts and fostering cooperative behavior (Davis, 1983; Decety & Lamm, 2006).

Affective empathy refers to the ability to emotionally resonate with and respond to others' feelings. It involves experiencing emotional contagion, where one’s own emotional state is affected by observing others' emotions, and empathic concern, which encompasses feelings of compassion and care for those experiencing distress (Batson, 1991; Davis, 1983). This form of empathy is critical for forming and nurturing relationships and for promoting altruistic behavior. Studies using neuroimaging techniques have shown that affective empathy activates areas of the brain involved in processing emotions, such as the anterior insula and the anterior cingulate cortex (Singer et al., 2004).

A frequent topic in the literature is the distinction between empathy and sympathy. Some definitions merge the concepts of empathy and sympathy or fail to clearly distinguish between them (Eisenberg et al., 1991; Hein & Singer, 2008; Scheler, 1954). Eisenberg et al. (1991) defined sympathy as “a vicarious emotional reaction based on the apprehension of another’s emotional state or situation, which involves feelings of sorrow or concern for the other”. Hein and Singer (2008) described the difference as “feeling as and feeling for the other”. For example, observing sadness in another can result in empathy, causing the observer to feel the same emotion, sadness, which is described as feeling “as“. In contrast, sympathy results in concern, a different emotion, which is described as feeling “for” (Singer & Lamm, 2009). Neurological research supports the distinction between empathy and sympathy (Decety & Michalska, 2010).

Other constructs often equated with empathy are compassion and tenderness. Compassion is defined as “the feeling that arises in witnessing another’s suffering and that motivates a subsequent desire to help” (Goetz et al., 2010), while tenderness is described as an expansive, “warm-and-fuzzy” feeling often elicited by the delicate and defenseless (Lishner et al., 2011). Tenderness is linked to long-term vulnerability, whereas sympathy addresses immediate needs (Lishner et al., 2011). Compassion might be a higher-order construct encompassing sympathy and pity (Goetz et al., 2010). These terms are more about one’s feelings towards another’s plight, rather than the sharing of emotions, making them more closely related to sympathy than empathy (Kalawski, 2010; Lishner et al., 2011; Nakao & Itakura, 2009). Rational compassion is another definition worth distinguishing from empathy. As proposed by Paul Bloom, rational compassion is an alternative approach that combines cognitive understanding with compassionate action, without the emotional over-involvement characteristic of empathy (Bloom, 2016). Rational compassion involves recognizing others' needs and suffering and taking appropriate actions based on reason and

evidence rather than emotional impulses. Rational compassion offers distinct benefits compared to empathy. It fosters impartiality and fairness, guiding individuals to make decisions that benefit the greatest number of people or the environment as a whole (Singer, 2015).

Empathy extends its influence beyond human interactions to include our relationship with the environment. By understanding and sharing the emotional experiences of non-human entities like animals and ecosystems, empathy can promote PEB. Cognitive empathy enables individuals to intellectually appreciate the impacts of environmental degradation on wildlife and natural habitats, leading to well-informed and responsible decisions (Schultz, 2000). Affective empathy, by eliciting emotional responses to environmental damage, encourages people to take action to mitigate such harm (Berenguer, 2007).

Environmental empathy involves extending traditional empathy to include the natural world. This form of empathy is critical in fostering a sense of moral obligation towards the environment. When individuals emotionally connect with nature, they are more likely to engage in behaviors that protect and preserve it. For example, witnessing the suffering of animals due to pollution can evoke strong empathic responses, leading to actions aimed at reducing waste and supporting conservation efforts (Berenguer, 2007; Pahl & Bauer, 2011). Research indicates that individuals who score highly on dispositional empathy are more inclined to demonstrate pro-environmental attitudes and behaviors (Tam, 2013). This finding implies that enhancing empathy towards the natural environment could be an effective strategy for promoting environmental care. Educational initiatives that involve perspective-taking exercises, such as envisioning the effects of human activities on wildlife, have been shown to boost environmental empathy and subsequent PEB (Berenguer, 2008).

The interaction between cognitive and affective empathy is crucial in understanding how empathy drives behavior. Cognitive empathy provides the intellectual understanding

necessary for informed decision-making, while affective empathy offers the emotional impetus for action. Studies suggest that the combination of both forms of empathy results in the most robust pro-social and pro-environmental outcomes (Batson, 2011; Decety & Michalska, 2009). Schultz (2000) suggests an individual who understands the detrimental effects of deforestation (cognitive empathy) and feels distressed by the suffering of displaced wildlife (affective empathy) is more likely to engage in activities such as supporting reforestation projects or advocating for policies that protect natural habitats. This dual empathy approach can be particularly effective in educational settings, where students can be taught to both intellectually and emotionally connect with environmental issues (Schultz, 2000). Historically, empathy research has focused on its role in altruistic behavior, particularly in difficult or negative situations (someone is suffering, in pain, or facing hardship) due to its origins in prosocial behavior studies (Eisenberg & Miller, 1987; Hoffman, 2008). Empathy can be categorized into induced empathy, manipulated through perspective-taking exercises, and dispositional empathy, a stable trait assessed through self-reports (Batson, 2011; Hodges et al., 2018). Both forms significantly influence compassionate and helping behaviors (Batson, 2011; Batson et al., 2002; Eisenberg & Miller, 1987; Konrath et al., 2010).

2. Empathy Development in Children

In the present study, empathy is explored in a broad sense to establish a foundational understanding necessary for examining its specific impact on environmental behavior. This wider perspective is crucial for framing empathy as a key factor in fostering pro-environmental behavior among children, thereby linking the development of empathy to environmentally responsible actions. The growth of empathy in children is a fundamental part of their emotional and social maturation. Empathy starts to develop in early childhood, with

notable progress during the preschool years (Zahn-Waxler & Radke-Yarrow, 1990). This developmental path includes moving from basic emotional contagion, where children respond to others' emotions, to more advanced empathy that involves perspective-taking and empathic concern (Eisenberg & Strayer, 1987). By the ages of four to six, children start to exhibit an understanding of others' viewpoints and genuine concern for their well-being (Hoffman, 2000). This age is a crucial period for developing environmental concerns, as children begin to comprehend the impact of others' suffering. A study by Bolderdijk et al. (2013) found that emphasizing the moral implications of environmental harm can significantly boost pro-environmental behavior. When individuals are aware of the suffering caused by environmental degradation, they are more likely to feel a moral obligation to engage in sustainable practices.

2.1. Stages of Empathy Development

To effectively understand and foster empathy in children, it is important to recognize that empathy is not a fixed characteristic but a developmental process that evolves over time. Empathy is vital for social interactions and the formation of healthy relationships. Studies indicate that the development of empathy is shaped by multiple factors, including genetic predispositions, socialization practices, and environmental influences (Rutherford et al., 2015). By understanding the stages of empathy development, parents, educators, and caregivers can encourage empathetic behaviors in children, thereby enhancing their emotional and social well-being (Mikulincer et al., 2005). Empathy development in children follows a progressive trajectory, starting from basic emotional contagion to more sophisticated forms of perspective-taking and empathic concern. This development can be broadly categorized into several stages.

Emotional Contagion (Infancy to Toddlerhood) is the earliest form of empathy observed in infants, where they mirror the emotional states of those around them. This stage is characterized by automatic and involuntary responses to the emotions of others (Decety & Meyer, 2008). For example, infants may cry when they hear other infants crying, demonstrating an early form of affective empathy (Hoffman, 2000).

Egocentric Empathy (Toddlerhood to Early Childhood) refers to when children begin to develop egocentric empathy. They start to recognize that others have emotions, but they often respond from their own perspective. For instance, a toddler might bring their own favorite toy to comfort a crying peer, assuming it will provide the same comfort to others as it does to them (Hoffman, 2000).

Veridical Empathy (Early to Middle Childhood) forms as children grow older, typically around the ages of four to six, they develop veridical empathy. This stage involves a more accurate understanding of others' emotions and the ability to take another person's perspective. Children begin to recognize that different individuals may have different emotional responses to similar situations (Eisenberg & Strayer, 1987).

Empathic Concern and Perspective-Taking (Middle Childhood to Adolescence) forms in middle childhood and adolescence, children further refine their empathic abilities. They develop empathic concern, which involves feeling compassion for others in distress and a desire to alleviate their suffering (Eisenberg et al., 2010). Perspective-taking skills also improve, enabling children to understand and predict others' emotional responses in various contexts (Decety & Lamm, 2006).

2.2. Factors Influencing Empathy Development:

Empathy development in children is a critical factor in fostering environmental care from a young age. Empathy begins to emerge in early childhood, with significant advancements

occurring during the preschool years (Zahn-Waxler & Radke-Yarrow, 1990). To effectively cultivate empathy in children, it is essential to understand the various factors that contribute to its development. Various factors influence the development of empathy. Parenting behaviors, such as warmth, responsiveness, and demonstrating empathic behavior, have been found to encourage empathy in children (Zhou et al., 2002). Additionally, disciplinary methods also affect empathy development. Inductive discipline, which involves explaining the effects of a child's actions on others, is associated with increased empathy. This method helps children understand how their behavior impacts others' emotions and promotes prosocial behavior (Eisenberg & Valiente, 2002). Interacting with peers and adults outside the family further enhances children's empathic skills. Engagements with peers offer children opportunities to practice perspective-taking, resolve conflicts, and regulate emotions. Activities that involve collaborative play and group participation help develop empathy by exposing children to various perspectives and emotional experiences (Hoffman, 2000). Moreover, interactions with teachers and other adults also play a significant role in developing empathy. Educators who establish supportive and emotionally responsive classroom environments encourage empathy among students. Warm and understanding teacher-student relationships foster an atmosphere where children feel comfortable expressing and managing their emotions effectively (Rimm-Kaufman & Hamre, 2010).

2.3. Educational and Other Interventions to Improve Empathy

Social-emotional learning (SEL) emphasizes the development of students' emotional intelligence, which encompasses understanding and managing emotions, showing empathy, building positive relationships, and making responsible choices (Durlak et al., 2011). These skills are critical for personal growth and for fostering a compassionate community. By embedding SEL into the curriculum, educators create an environment where students gain greater awareness of their own and others' emotions, enhancing their capacity for empathy

and deeper connections (Jones & Kahn, 2017). This focus on empathy and emotional intelligence is essential for nurturing a society that values the well-being of all its members, including animals and the environment (Fundamentals of SEL - CASEL, 2023).

Educational experiences that incorporate SEL are vital in cultivating empathy among children. These programs teach children essential abilities such as understanding and regulating their emotions, developing empathy and care for others, forming positive relationships, and making responsible and ethical decisions (Durlak et al., 2011). Research shows that SEL programs have a positive impact on children's social behavior, emotional well-being, and academic performance. For example, the PATHS (Promoting Alternative Thinking Strategies) curriculum has been shown to improve children's empathy and prosocial behavior significantly (Domitrovich et al., 2007). Research has shown that naming farm animals and providing them with distinct identities can significantly enhance empathy toward them, leading to improved welfare attitudes and behaviors (Ben-Arye & Halali, 2024). This aligns with educational interventions that aim to foster empathy by creating emotional connections with animals and nature, further promoting pro-environmental behaviors.

Combining SEL with environmental education can enhance environmental empathy. Nature-based activities and experiential learning opportunities, such as field trips to natural settings and involvement in conservation projects, help children develop a deep emotional connection to the environment (Chawla, 2009). Programs like Roots & Shoots by the Jane Goodall Institute foster empathy for animals and the environment, leading to increased engagement in conservation activities (Jane Goodall Institute, 2021).

Integrating empathy and environmental education into standard curricula can also be beneficial. Literature and history lessons can include discussions about the emotional experiences of characters and historical figures, helping students develop empathy through perspective-taking. Science lessons can explore the impact of human activities on

ecosystems, encouraging students to empathize with affected wildlife (Decety & Wheatley, 2017).

Early experiences and socialization play crucial roles in the development of empathy and can be effectively supported through SEL and environmental education programs. Children who experience positive parenting practices characterized by warmth and responsiveness tend to develop higher levels of empathy (Zhou et al., 2002). These early experiences are complemented by interactions with peers and adults in educational settings that include SEL, significantly boosting children's empathic skills and fostering pro-environmental attitudes (Durlak et al., 2011). Thus, a holistic approach that combines family influence with structured educational interventions is essential for nurturing empathy in children.

SEL programs are designed to equip children with skills to manage emotions, set goals, build positive relationships, make responsible decisions and enhance empathy. The RULER program, which stands for Recognizing, Understanding, Labeling, Expressing, and Regulating emotions, has been shown to improve these skills and increase prosocial behavior in school settings (Brackett et al., 2012). Activities such as storytelling, role-playing, and group discussions help children understand and express empathy toward others and the environment (Durlak et al., 2011). To avoid fear-based approaches and foster empathy for the environment, McKnight (2010) suggests using engaging narratives in children's literature. These stories should feature relatable characters or animals and real environmental relationships, making the learning experience captivating and enjoyable. For example, the Magic School Bus series uses adventurous narratives where children learn scientific concepts through the exciting journeys of Ms. Frizzle and her students. By focusing on local, concrete examples rather than distant, abstract threats, narratives can highlight the beauty and wonder of nature, encouraging children to appreciate and care for their surroundings. This method

helps children connect emotionally with ecological concepts without causing fear or distress, promoting a deeper understanding and empathy for the environment (McKnight, 2010).

Positive parenting practices, such as warmth, responsiveness, and modeling empathic behavior, are associated with higher levels of empathy in children (Zhou et al., 2002). Social interactions with peers and adults further refine these empathic skills, providing opportunities for children to practice and strengthen their ability to understand and respond to the emotions of others, including non-human entities (Eisenberg & Strayer, 1987).

Beyond the confines of traditional classrooms, community and extracurricular activities significantly contribute to the development of empathy and environmental awareness. For example, community gardening projects allow children to engage with nature, learn about plant lifecycles, and understand the importance of caring for the environment. Studies indicate that these programs can greatly enhance children's SEL skills and deepen their connection to nature (Lohr et al., 2021). Similarly, organizations like Scouts and school environmental clubs often include activities that promote respect for and protection of the environment. Activities such as tree planting and participating in cleanup drives reinforce environmental values and empathetic behaviors beyond standard academic curricula. Research on school gardens shows that these initiatives foster environmental stewardship and strengthen students' bonds with nature (Upitis et al., 2013).

Technology also offers avenues to boost empathy and environmental consciousness. Virtual reality (VR) experiences, for instance, can simulate environmental degradation or allow users to 'experience' life as an animal, thereby increasing empathy and concern for environmental issues (Ahn et al., 2014). These immersive experiences can create strong emotional connections, making environmental problems more immediate and compelling for young learners.

Such initiatives can cultivate environmentally conscious individuals dedicated to safeguarding the planet. Through thoughtfully designed educational experiences, positive social interactions, and innovative technological tools, children can develop the emotional intelligence and empathy needed to support a compassionate and sustainable future.

Table 1

Effectiveness and Mechanisms of Educational and Other Interventions to Improve Empathy

Program	Effect Size	P-value	Mechanism for Working on Empathy
PATHS curriculum (Domitrovich et al., 2007)	0.36	<0.01	Improves children's empathy and prosocial behavior by teaching emotional intelligence and social skills.
Naming farm animals (Ben-Arye & Halali, 2024)	0.03	0.023	Enhances empathy toward animals by providing them with distinct identities.
SEL with environmental education (Chawla, 2009)	0.31	0.001	Develops a deep emotional connection to the environment through nature-based activities and experiential learning.
Roots & Shoots (Jane Goodall Institute, 2021)	Not reported	Not reported	Fosters empathy for animals and the environment, leading to increased engagement in conservation activities.
Integrating empathy into standard curricula (Decety & Wheatley, 2017)	Not reported	Not reported	Helps students develop empathy through perspective-taking in literature and history lessons, and by exploring human impacts on ecosystems in science lessons.
Positive parenting practices (Zhou et al., 2002)	0.18	0.03	Warmth, responsiveness, and modeling empathic behavior by parents are associated with higher levels of empathy in children.
Community and extracurricular activities (Lohr et al., 2021; Upitis et al., 2013)	Not reported	Not reported	Enhances SEL skills and deepens connection to nature through activities like community gardening, tree planting, and cleanup drives.

Virtual reality (VR) experiences (Ahn et al., 2014)	0.43	0.005	Increases empathy and concern for environmental issues through immersive experiences that simulate environmental degradation or life as an animal.
RULER (Recognizing, Understanding, Labeling, Expressing, and Regulating emotions) program (Brackett et al., 2012)	0.22	<0.05	Improves emotional literacy and social skills, enhancing prosocial behavior and academic performance.

3. Empathy and prosocial behavior

Prosocial behavior involves voluntary actions intended to benefit others, including activities such as helping, sharing, donating, cooperating, and volunteering. These behaviors are often driven by empathy, moral values, and social norms, which are crucial for promoting social cohesion and enhancing individual well-being (Eisenberg & Mussen, 1989; Batson, 2011; Penner et al., 2005).

PEB is recognized as a specific type of prosocial behavior that focuses on actions benefiting the environment and, by extension, society. Studies by Stern (2000) and Schultz (2011) support this categorization, emphasizing how actions like recycling, conserving energy, and reducing waste serve the broader community and align with prosocial motives. Given that PEB is a subset of prosocial behavior, it is relevant to include it in the present paper for a more thorough study of empirical evidence.

Empirical research demonstrates that higher levels of empathy, encompassing both perspective-taking (cognitive empathy) as noted by Lee & Madera (2021) and affective empathy closely related to empathic concern as highlighted by Van Der Graaff et al. (2017), are positively associated with prosocial behavior. Rodriguez et al. (2019) and Orm et al.

(2021) provide evidence that both cognitive and affective empathy contribute to prosocial behavior. Kamas and Preston's (2021) study, which examined behaviors in dictators, charitable giving, public goods, and trust games, found that among the four dimensions of empathy, only empathic concern consistently predicted prosocial behavior. In contrast, other dimensions of empathy did not show consistent effects. Georgiou et al. (2019) found that deficits in affective empathy led to decreased prosocial behavior and increased antisocial behavior, whereas deficits in cognitive empathy were associated with autistic traits without affecting prosocial behavior. Furthermore, personal distress, an aspect of affective empathy, has been shown to negatively impact prosocial behavior (Batson et al., 1987; Schroeder et al., 1988; Eisenberg & Fabes, 1990; Carrera et al., 2013; Lamothe et al., 2014). However, while there is evidence that both aspects of empathy are important, there is stronger support for the affective and emotional part of empathy being crucial for prosocial behavior based on the literature discussed earlier.

4. From Empathy to Environmental Action

The empathy-altruism hypothesis posits that empathy can drive altruistic behavior, extending to environmental actions. Individuals who empathize with nature are more likely to adopt pro-environmental lifestyles aimed at mitigating environmental damage and promoting sustainability (Batson et al., 2015; Berenguer, 2007). Empathy-induced altruism specifically suggests that empathic concern for others leads to altruistic behavior aimed at improving their well-being. This concept extends to environmental contexts, where empathy for nature can drive altruistic actions aimed at environmental conservation. For example, individuals who empathize with endangered species may be more inclined to donate to wildlife conservation organizations or participate in habitat restoration efforts (Berenguer, 2007; Tam, 2013).

It's important to distinguish between individual factors, which are more static, and situational factors, influencing pro-environmental behavior. Individual factors include personality traits, such as the negative relationship described by Fido et al. (2020) between nature connectedness and dark personality traits like psychopathy, Machiavellianism, and sadism. Individuals exhibiting higher levels of these traits tend to prefer urban environments and show lower levels of nature connectedness, which can impede the development of empathy and subsequent pro-environmental behaviors. On the other hand, situational factors, which can be modified, play a significant role in promoting empathy and PEB. Enhancing empathy with nature through environmental education and exposure to environmental issues has been shown to increase commitment to environmental goals and foster PEB (Quigley & Lyons, 2016). An example is provided by Quigley & Lyons (2016) in the context of a high school environmental science class project investigating pesticide use and mosquito behavior. The students, through their project, gathered significant knowledge and felt a responsibility to advocate for their community's health by attempting to influence school policy against spraying chemicals. Despite the school board's initial refusal to listen to the students' findings, the students persisted, motivated by their understanding of the dangers of the chemicals and the long-term effects on their community. This persistence illustrates how environmental education, by fostering a sense of empathy and responsibility, can lead to committed and sustained pro-environmental behavior.

Research in environmental psychology and ethics emphasizes the importance of fostering emotional connections with nature to promote PEB. For instance, research by Berenguer (2007) demonstrated that empathy towards nature can significantly influence individuals' environmental attitudes and behaviors. Tam (2013) also provided evidence that developing an emotional bond with nature enhances individuals' willingness to engage in conservation efforts. Further supporting this, Di Fabio and Kenny (2018) highlighted that personality traits,

including empathy, play a crucial role in shaping environmental attitudes and behaviors, suggesting that enhancing empathy can foster a deeper connection to nature and promote sustainable actions. Additionally, Ienna et al. (2022) found that individuals with a higher capacity to empathize with nature exhibit more positive environmental attitudes and are more willing to engage in PEB. These studies illustrate how the expansion of empathy to encompass the natural world has become a crucial element in promoting sustainability and environmental guardianship.

Studies on induced empathy with nature (IEN) have shown that perspective-taking exercises, like imagining the plight of animals harmed by pollution, can increase participants' compassion towards these animals and broader environmental concerns. Complementing this, recent research on wetland tourists in China indicates that those with high environmental empathy are more likely to engage in PEB and revisit natural sites (Chen et al., 2023). These findings suggest that empathy towards specific elements of nature in distress can foster a broader concern for the environment and motivate PEB.

Closely related to the concept of empathy with nature is Dispositional Empathy with Nature (DEN), a construct first formulated by Tam (2013). DEN refers to a stable tendency to empathize with the natural world and has been shown to uniquely predict conservation behavior, distinct from empathy with humans and other determinants of conservation behavior. Despite its potential, DEN has not received substantial attention in subsequent research. Factors such as gender, connection to nature, and anthropomorphism of nature significantly influence DEN. Research indicates that females, individuals who feel a strong connection to nature, and those who perceive nature as sentient tend to exhibit higher levels of DEN (Tam, 2013).

Despite the potential of empathy to drive PEB, several barriers can impede its development. These barriers include a lack of direct experience with nature, cultural attitudes

that prioritize human needs over environmental protection, and cognitive biases that minimize the perceived impact of environmental degradation (Clayton & Myers, 2015). Overcoming these barriers requires targeted interventions that promote both cognitive and affective connections with nature (Pahl & Bauer, 2011).

When designing interventions and solutions, it is essential to consider both the barriers and drivers, as neglecting these factors could lead to unintended consequences. For instance, interactions with insects often provoke negative reactions, which in turn reduce empathy towards these creatures. This decrease in empathy can adversely affect attitudes and behaviors related to their conservation (Kelemen et al., 2023). Furthermore, Berenguer (2008) found that participants showed more ecocentric moral reasoning when empathizing with a vulture and more anthropocentric reasoning when empathizing with a young man. Consequently, it is crucial to implement targeted interventions aimed at overcoming these aversions and promoting empathy toward all forms of wildlife.

Overall, the integration of empathy into our relationship with the natural world holds significant promise for fostering sustainable behaviors and addressing environmental challenges. By understanding and enhancing our capacity for empathy towards nature, we can create a more compassionate and environmentally conscious society.

Conclusion

The investigation into empathy as a catalyst for PEB in children reveals a complex interplay between emotional connection and sustainable actions. This conclusion synthesizes the arguments and findings presented, highlighting both the potential and limitations of empathy in fostering pro-environmentalism.

Empathy, encompassing both cognitive and affective components, emerges as a crucial element in driving PEB. Cognitive empathy allows individuals to intellectually grasp

the impacts of environmental degradation, providing a solid foundation for informed decision-making. Affective empathy, on the other hand, supplies the emotional impetus necessary for action, fostering a deep emotional connection to nature. Research consistently supports the notion that the integration of cognitive and affective empathy yields the most robust pro-environmental outcomes (Batson, 2011; Decety & Michalska, 2009). Thus, educational initiatives that cultivate both cognitive and affective empathy are essential in promoting a comprehensive approach to environmental care. The development of empathy in children fostered through social-emotional learning (SEL) programs and environmental education, holds significant promise for nurturing a generation committed to sustainability. SEL programs that incorporate activities such as storytelling, role-playing, and group discussions enhance children's ability to empathize with others and the environment (Durlak et al., 2011). Integrating environmental education into these programs can further deepen children's emotional connection to nature, promoting PEB from an early age (Chawla, 2009). For instance, programs like PATHS have been shown to significantly improve children's empathy and prosocial behavior, thereby fostering environmentally responsible behavior (Domitrovich et al., 2007).

Despite its potential, empathy is not without its limitations. Paul Bloom's critique in "Against Empathy" (2016) underscores empathy's propensity to induce biased and irrational decision-making. Empathy's parochial nature can lead to favoritism, where individuals prioritize those who are similar or close to them, potentially resulting in unequal and unjust outcomes (Batson et al., 1995). Additionally, the emotional distress caused by empathizing with the suffering of others, including non-human entities, can lead to compassion fatigue and reduced engagement in pro-environmental actions (Decety & Lamm, 2006). These critiques highlight the importance of balancing emotional engagement with rational analysis to promote sustainable and fair PEB. For instance, Russell and Brickell (2015) suggest

cognitive reappraisal, compassion training, mindfulness, maintaining self-other distinction, professional support, regular self-care, and balancing empathy with compassion to reduce the pain caused by empathy.

When designing interventions targeting empathy in increasing eco-friendly behavior, several barriers impede the development of empathy towards nature, including a lack of direct experience with natural environments, cultural attitudes prioritizing human needs over environmental protection, and cognitive biases minimizing the perceived impact of environmental degradation (Clayton & Myers, 2015). Overcoming these barriers requires targeted interventions that promote both cognitive and affective connections with nature. Addressing negative reactions towards certain wildlife, such as insects, through education and exposure can enhance empathy towards all forms of nature, fostering comprehensive environmental care (Kelemen et al., 2023).

The empathy-altruism hypothesis posits that empathy can drive altruistic behavior, extending to environmental actions. Individuals who empathize with nature are more likely to adopt pro-environmental lifestyles aimed at mitigating environmental damage and promoting sustainability (Berenguer, 2007). Enhancing empathy with nature through environmental education and exposure to environmental issues has been shown to increase commitment to environmental goals and foster PEB (Quigley & Lyons, 2016). This suggests that fostering empathy in children not only benefits their social development but also has long-term implications for environmental conservation.

Further supporting this, research by Di Fabio and Kenny (2018) highlights that personality traits, including empathy, play a crucial role in shaping environmental attitudes and behaviors. This suggests that enhancing empathy can foster a deeper connection to nature and promote sustainable actions. Additionally, Jenna et al. (2022) found that individuals with a higher capacity to empathize with nature exhibit more positive environmental attitudes and

are more willing to engage in PEB. These studies illustrate how the expansion of empathy to encompass the natural world has become a crucial element in promoting sustainability and environmental guardianship.

An essential aspect of expanding empathy to the natural world is understanding and sharing the emotional experiences of the natural environment, especially its distress. For instance, individuals may feel emotional pain for animals suffering from environmental disasters such as oil spills or habitat destruction (Sobel, 1996; Chawla, 2009; Myers et al., 2009; Guergachi et al., 2010). Studies on induced empathy with nature (IEN) have shown that perspective-taking exercises, like imagining the plight of animals harmed by pollution, can increase participants' compassion towards these animals and broader environmental concerns (Schultz, 2000; Sevillano et al., 2007; Berenguer, 2007, 2008). Complementing this, recent research on wetland tourists in China indicates that those with high environmental empathy are more likely to engage in PEB and revisit natural sites (Chen et al., 2023). These findings suggest that empathy towards specific elements of nature in distress can foster a broader concern for the environment and motivate PEB.

DEN, a relatively recent construct remains an interesting yet under-researched territory. Future research may investigate this concept. An intriguing question can be why females tend to exhibit higher levels of DEN compared to males, explore the underlying reasons and mechanisms through which a strong connection to nature influences higher levels of DEN, and understand how perceiving nature as sentient contributes to higher levels of DEN (Tam, 2013).

In conclusion, while empathy alone may not be a remedy for the environmental crisis, it is a powerful tool when balanced with rational analysis and supported by educational initiatives. By fostering both cognitive and affective empathy towards the natural world, we can cultivate a more compassionate and environmentally conscious society. Future research

should continue to explore the intricate dynamics of empathy and PEB, providing deeper insights into how we can effectively engage individuals and communities in sustainable practices. The integration of empathy into our relationship with the natural world holds significant promise for fostering sustainable behaviors and addressing environmental challenges. By understanding and enhancing our capacity for empathy towards nature, we can create a more compassionate and environmentally conscious society.

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