

Exploring the Development of an Environmental Identity Using an Autoethnographic Approach

Cari Ritzenthaler, Bowling Green State University, carir@bgsu.edu

Abstract: Gaining a better understanding of human behavior change is vital to encouraging individuals to adopt an environmentally sustainable lifestyle and to the long-term goal of preserving nature. To explore how life experiences lead to the adoption of environmentally sustainable behaviors, this author turned to autoethnography. Through this reflective method, the author examines their development of environmental identity and their experiences with nature, as they relate to major concepts within the field of conservation psychology, such as ecological literacy, Theory of Planned Behavior, and connection to nature. Leading concepts concerning environmental identity in the conservation psychology literature suggest a very specific pathway for developing environmental identity, and thus pro-environmental behaviors, including experience in nature from a young age, the presence of an environmental mentor, and access to environmental literature. However, the author reveals that there may be other pathways to development of environmental identity, which include virtual environmental mentors (*e.g.*, nature TV show hosts), environmental media (*e.g.*, magazines, documentaries, and internet sources), and other methods of driving emotional connection to nature (*e.g.*, sense of place). Alongside the author, the reader will have the opportunity to consider their environmental experiences and factors influencing their environmental identity, in relation to these major concepts within conservation psychology.

Keywords: autoethnography, ecological literacy, theory of planned behavior, conservation psychology, connection to nature

Cari Ritzenthaler is a PhD candidate at Bowling Green State University and an environmental educator. Cari's extensive experience teaching students of all ages about nature, and how to manage nature sustainably, is fueled by her passion to conserve the environment around her. She hopes that her research may be used to empower other environmental educators to develop more effective environmental education events that encourage attendees to adopt and maintain a more environmentally sustainable lifestyle.

INTRODUCTION

For the past decade, I have been immersed in the academic world of biological sciences. Early on in this journey, I became interested in environmental education as a way to connect others to the environment and potentially reduce environmental issues. While the communication gap between scientists and the broader United States' public continues to grow (Goldenberg, 2021; Huber *et al.*, 2019; Peters, 2013), I found myself wondering how can I communicate more effectively with those who mistrust science? How can I encourage others to care about solving environmental problems? This line of thought fuels my doctoral studies, and through them, I read time and time again about the importance of storytelling (Alda, 2018; Cormick, 2019; Kimmerer, 2013). Using narrative-based approaches is vital to effective environmental education so that it influences environmentally positive change in individuals. As such, one narrative strategy I have found compelling is life writing, which involves reflecting on and sharing of one's life journey. By sharing experiences through life writing, readers may learn from the author's decisions or be encouraged to reflect on their experiences (Ellis & Adams, 2014). Life or narrative writing could be an effective way to reach a broader audience and share stories about connecting to nature, caring about the environment, and encouraging readers to seek out an environmental journey of their own.

In this article, I use life writing, through the method of autoethnography, to explore the experiences I had while developing my environmental identity. I examine my journey within the context of prevailing concepts in environmental and sustainability education that attempt to describe the factors behind ecological literacy, connection to nature, and pro-environmental behavior adoption. Overall, I intend to 1) share a story that others might connect with, and 2) contextualize my research goals in understanding how and why people develop environmentally protective behaviors.

THE METHOD: AUTOETHNOGRAPHY

Autoethnography is a qualitative method of research involving an analysis of one's lived experiences (Ellis *et al.*, 2011; Ellis & Adams, 2014; Ellis & Bochner, 2000). Autoethnographic research is often used to share one's experience with something difficult, like working in academia, and is aimed at helping others through the same process (Gabor, 2020; Pelias, 2000). But it has also been used to explore such things as one's affinity for herpetology, environmental attitudes in church communities, and the natural history of environmentalism (Haluza-DeLay, 2008; Manolas *et al.*, 2013; Markwell, 2019). As a method, autoethnography falls between ethnographic and autobiographical practices, and as such tends to be avoided in the sciences due to its perceived lack of rigor, small sample size, and perceived biased data (Ellis & Adams, 2014; Ellis & Bochner, 2000), but the method is valuable to develop a human connection between

scientist and reader, explore the human experience through a subjective lens, and presents new perspectives of the world (Doty, 2010; Ellis *et al.*, 2011; Wall, 2006). Additionally, similar to medical case studies, autoethnography offers a unique and in-depth exploration of one individual's experience, which may offer insights that would be missed when survey data are averaged among a large group. For example, in-depth individual reflection on life experiences can highlight unique experiences that can add to existing theories and increase understanding of how concepts function in the real world. Autoethnography has the potential to be a tool used by environmental and sustainability educators to identify the wide breadth of experiences one can offer to influence the environmental mindedness and actions of others. Such an understanding can then be used to inform and direct future research into larger groups of individuals who all come from different backgrounds with different environmental experiences. The goal is to better understand the most effective approaches to environmental education and pro-environmental behavior change.

Throughout this research, I discuss environment and nature in context of the natural, ecological world. However, I also recognize there are many different perceptions of nature. In this work, I will consider nature to function on a continuum of human interaction to wildness. For example, one end of said nature continuum may be heavily managed nature (*e.g.*, backyards, zoological parks, *etc.*), whereas the other end of the continuum may be a wilderness preservation without human inference (*e.g.*, wilderness preserves, *etc.*).

Within my work, I will be using autoethnographic research to examine the development of my environmental identity and subsequent adoption of pro-environmental behaviors. I was drawn to autoethnography because it is a personal narrative life-writing approach that allows for an intensely in-depth study of any topic. However, rather than pure reflective techniques, I use existing environmental and sustainable concepts to guide my reflection process. My intention through this autoethnography is to explore theories and hypotheses put forth by the environmental and sustainability literature, through the lens of my experiences. It is important to note that my experiences contain examples of pro-environmental behaviors that are complex in their benefits and detriments, but at the beginning of my ecological journey, I knew very little about those complexities, as I had not yet learned enough about sustainability and environmental sciences. I realize now that every sustainable action and decision must be considered carefully. However, because I am reflecting on experiences before I gained extensive environmental knowledge, I discuss the pro-environmental behaviors and environmental messaging I received during the beginning of my journey. It is not my intention to celebrate one pro-environmental behavior over another or encourage readers to adopt specific pro-environmental behaviors from reading my experience.

Ultimately, in examining my experience, I hope to better understand the transformation involved in the adoption of environmental behaviors and the relationship between environmental

concepts and human experiences, so that I may apply this knowledge to future areas of research such as design, implementation, and assessment of the effectiveness of environmental education efforts. Through this, I offer a template for other researchers to pursue the same reflective process. My final intention for this study is to share my connection to the environment with others so they might understand there is more than one path to becoming environmentally minded. I hope that broadening the requirements listed by some environmental identity concepts will lead to a wider variety of environmentally based education strategies with increased success in influencing environmental mindedness in participants. While specific methods within the autoethnographic literature vary, my methods include (1) reflecting on environmental experiences through my life to identify critical experience that were highly influential to my environmental identity, and (2) applying prevalent theories and hypotheses from the literature (*i.e.*, ecological literacy, connection to nature, sense of place, Theory of Planned Behavior) to my experiences.

THE BEGINNING

While many environmental issues exist, one that has been very prevalent in my life and academic journey has been climate change. I can't remember the first time I learned about climate change. But I do remember the first time I realized that my day-to-day choices could decrease my environmental impact. In 2010, I was in my third year of high school and a commercial for the all-electric Nissan Leaf aired on television. A man was driving home in his electric Nissan, and at the same time, a polar bear was traveling from the arctic circle across many habitats. At the end, the man parked and got out of his car only to come face to face with the polar bear. The polar bear stands up on rear legs and gives the man a hug, essentially thanking him for driving an electric vehicle. I was enthralled with this commercial, and perhaps to the delight of Nissan's marketing team, I started guarding my piggy bank with the intention to save up for this specific electric car. For no reason other than my memory of this commercial, it remains my dream car. This is the moment I started thinking about my day-to-day actions and how they may harm the environment. However, I recognize that I am likely amongst a minority of people who were impacted by this car commercial in such an emotional way, as at the end of the day, its intention was to sell a car and not impact the pro-environmental behaviors of viewers. In fact, given my understanding of other literature in the field of conservation psychology (Ajzen, 1991; Clayton & Myers, 2015; Orr, 1992; Schultz, 2002), in order for this simple commercial to affect me as it did, I needed to have multiple other positive environmental experiences leading me to care about the environment enough to adopt pro-environmental behaviors. What follows is an exploration into those other environmental experiences that I identified as critical to the environmental identity I hold today.

DEVELOPING ECOLOGICAL LITERACY

In my biology department, I often hear my peers claim the hours and hours spent outdoors as kids with their families is the reason for their environmental career path. I am slightly embarrassed to admit that I am not a “child of the woods.” I did not have any experiences with pristine national parks, camping excursion, or hiking trips as a child. Yet, some claim this early childhood interaction with nature is vital to establishing an understanding of nature. In fact, most environmental writing specifically calls for experiences with nature at a young age, while information about developing an environmental identity as a young adult is very limited (Clayton, 2017; Manolas *et al.*, 2013; Orr, 1992). Within the topic of environmental identity is the concept of ecological literacy, the first component of environmental identity being discussed in this article. An ecologically literate person should understand environmental issues and have an awareness of the human impact that causing or solving such environmental issues (Klein & Rauchwerk, 2016; Orr, 1992). The development of “ecological literacy,” a term first described by David Orr in 1992, requires that an individual must have the following: 1) experience with nature at an early age, 2) guidance by an environmentally minded mentor, and 3) access to influential environmental literature (Orr, 1992). Through reflection on my experiences, I conclude that I do not meet these required elements, yet by the definition of ecological literacy, I would consider myself literate.

I spent very little of my early childhood in nature, perhaps because my mom was a busy emergency room nurse and a single parent. My brother and I did play outdoors as kids, but in maintained spaces, such as jungle gyms and fenced backyards. Immersion in nature was not something my mom was aware we could do as a family. She did not know that nature trails were an option for us, even though we frequently visited a playground at a park that had maintained, walkable trails through forested areas. As a single mother, she did not have the time to invest in finding new experiences to have with two young children, and I do not blame her in the least. Her rural hometown had little to offer in terms of wilderness areas, apart from a few climbable trees, so she had very little experiences with nature herself. As a young child, the closest I got to nature was playing in a dirt mound twice while my grandma was babysitting. My mother was furious because she tried hard to keep me from getting dirty. She recalled those moments ironically when I told her I would be researching soil invertebrates during my master’s degree. Regardless, my mom always encouraged my young interest in animals in other ways. We went to the zoo often, a more manageable and comfortable nature experience, but an effective experience, nonetheless. We also watched educational animal shows, like *Zooboofoo*, together, and she bought me a subscription to *Zoobooks* to learn even more about wildlife. So, even without hours of trail time in pristine wilderness, my passion for nature was cultivated, cared for, and gradually grew.

Furthermore, given my lack of childhood experience with nature, I did not have a formal

environmentally minded mentor. However, I do feel as though I had a few indirect environmental role models, through the magic of television. After all, what is the definition of a mentor? A trusted counselor and guide, according to the Merriam-Webster Dictionary (“Mentor,” n.d.). By this definition, could those environmentalist TV show hosts count? Given my experience, I suggest it might. I continue to greatly admire the work of the Kratt brothers, of the children’s TV program *Zoboomafoo*, and Steve Irwin, of the TV program *The Crocodile Hunter Diaries*, for their environmental work. In different ways, these shows taught me about wildlife, habitats, and conservation. Though I never interacted with these people directly, they showed me nature through their experiences and shared with me how important it is. Through Steve Irwin, in particular, I witnessed what love for the environment looked like. The unbridled passion he presented on television still sticks out in my mind when I think of him, and I am still moved by it when I watch reruns of *The Crocodile Hunter Diaries*. I know that my enthusiasm for nature comes from watching these shows, thus I confidently claim the Kratt brothers and Steve Irwin as my environmental mentors. They are experienced, trusted, and they indirectly guided my perception of nature. And perhaps most importantly, I know I would not hold the same perceptions or passions without spending hours watching their shows.

In the final ecological literacy requirement, Orr suggests that one must read influential books in environmental literature that “explain, heighten, and say what we have deeply felt but not said so well” (Orr, 1992). I suspect literature that could be described this way would be different from person to person. However, I am not sure that my beloved *Zoobooks* could qualify as influential literature. I had a very difficult time reading for school or pleasure when I was young. In fact, only in the last few years have I found enjoyment in reading and began to seek out environmentally focused books. However, given the last part of this requirement described by Orr, that these books “say what we have felt but not had the words for previously,” I can think of a few books I have recently read that greatly inspired me. A few books that have made me feel like my heart was pouring out along with the authors while I read their words, such as *Braiding Sweetgrass* and *The Soul of an Octopus*. While I enjoyed those books greatly, I think it’s also important to consider other forms of media, as we find ourselves in the digital age. Eco-media is readily available to all online and can influence the actions of people (Goodman, 2020; López, 2020; Thevenin, 2020). Movies and documentaries filled this same role for me before I started reading environmental books. Films and environmental literature can tell similar stories, but films benefit from an added visual component that does not leave understanding up to the imagination. I have felt inspiration, longing, and purpose from films, such as *Racing Extinction*, *Wall-e*, *Planet Earth*, and *Blue Planet*, more than I have from some books.

It is notable that Orr’s second and third ecological literacy requirements do not contain a time limit like the first requirement does. This could suggest that mentorship and reading is required throughout one’s life to maintain ecological literacy in addition to ample experience in

nature at a young age. I suspect this is true, just as one must continue to read more difficult books to build reading literacy, one must also expand knowledge of and experience in nature to increase ecological literacy. After all, nature is constantly changing through environmental processes, such as succession, erosion, nutrient cycling, or through detrimental human actions, thus literature on the topic will also be in flux. I still find it difficult to fit myself within the broad requirements of ecological literacy put forth by Orr. I am an individual that grew up with the internet and accessible media, like television. Given this, I propose some edits to the ecological literacy requirements to make them more relatable to today's educational situation. I suggest that individuals interested in becoming ecologically literate should consistently seek out (1) experiences in nature at any age, (2) guidance from lives and passions of environmental experts, and (3) ways to learn from the experiences, thoughts, and knowledge of others, perhaps through literature, film, or other media. By expanding such requirements, environmental educators may be able to reach more individuals through various different methods and media. Thus, increasing the ecological literacy of individuals that otherwise may have been previously passed over.

CONNECTING TO NATURE

While learning about nature throughout one's life is important, individuals must also feel an emotional connection to nature in order to act in pro-environmental ways. Humans often act inherently illogically, driven by emotion, only to later rationalize the decision through reasoning (Clayton & Myers, 2015; Cormick, 2019). Positive emotions surrounding the environment are often driven by positive experiences in nature, potentially corresponding to requirement one on the ecological literacy list mentioned before. To explore emotion further, connection to nature is described as the feelings of love, care, and inclusion with nature (Schultz, 2002). Literature exploring the root cause of connection to nature is scarcer and dependent on one's definition of nature along the continuum. We might consider a moment making eye contact with an elephant at the zoo capable of increasing feelings of connection (Hacker & Miller, 2016), or an outdoor educational experience calling children to care for the local environment (Larson *et al.*, 2019; Whitburn *et al.*, 2019). Given its emotional component, there is no right or wrong perception of connection to nature, but it does seem to be a vital component toward environmental care and protection, which will be necessary to combat climate change.

My connection with nature seems complex compared to the seemingly simple, life-long love for nature expressed anecdotally by some of my colleagues. I experience both love and fear in nature. Though, fear defined as discomfort rather than terror, which likely comes from my lack of experience in nature and a few negative experiences in nature as well (*e.g.*, experiences with getting lost and aggressive wildlife). Or maybe my discomfort is fueled by stereotypes of nature-based experience held by those around me (*e.g.*, "how can you swim in the ocean when there are sharks out there?"). Regardless, in the midst of this fear and the development of my ecological

literacy, I do consider myself successfully connected to nature today. While there are many ways to develop a connection to nature, I have identified a few key experiences that I believe have become the pillars with which my environmental identity is upheld.

I often say that the ocean was my first environmental love. As I got older, we took many family vacations to the ocean, specifically to Florida. I enjoyed playing in the waves, but my interest in the ocean was grown exponentially when we vacationed on a cruise one year instead. I was ecstatic about the idea that we would be surrounded by hundreds of fish while on a ship. In reflecting on this moment, I don't remember why I was so thrilled about fish, specifically, on this cruise, especially because it was not my first experience with the ocean. We took many vacations to the seashore but being on the cruise meant witnessing much deeper water. Perhaps my young brain extrapolated the tiny fish tank my great uncle kept with fish and seahorses to the massively deep ocean water. Related to that little saltwater fish tank, another important experience I had on this specific vacation was visiting the Atlantis hotel. We didn't stay the night there, but we did have the opportunity to explore the aquarium and for the first time I saw hundreds of gallons of water, sharks, and thousands of fish in a large ecosystem style tank. My interest in and care for the ocean blossomed from there.

A few years later, my family vacationed in Cape Cod, and I saw a very different ocean from the warm Florida beaches we typically vacationed on. Cape Cod's Ocean was cold and full of giants. We went on a whale watching cruise and witnessed multiple humpback whales feeding, breaching, and slapping the water with their fins. I was captivated by the humpback whales and the big, cold ocean. We, as people, on a boat were the size of ants compared to the gargantuan size of the whales. It is hard to notice when you are far away, watching them breach. But the whale watching boat took us closer to where the whales were feeding and that is when I noticed how small I truly was. When humpback whales feed, they swim in circles around groups of krill while releasing air, thus creating what many call a bubble net (Hain *et al.*, 1982). Witnessing natural behaviors from wild animals was a game changer for me because all of my previous experience with animals I loved came from highly managed zoos and aquariums. Not to minimize the impact of those experiences but seeing these giant whales drove my curiosity into the wild side of nature. Especially when one whale possibly mistook the bubbles created from the boat's propeller as another bubble net, moving directly under our boat, and all of us on the vessel saw, up close, how much bigger whales were compared to us. I will never forget the fascination and excitement I felt in that moment. These key experiences, fueled by my past experiences with more indirect or managed nature (*i.e.*, television documentaries, zoos, and aquariums, *etc.*), spearheaded my interest in exploring nature further.

SENSE OF PLACE

While all of the experiences I had with nature, such as watching documentaries and

visiting zoos, were important to the beginning stages of my environmental identity, I did not feel truly connected to nature until I began to establish my sense of place along Lake Erie's shores, where I grew up. The definition of sense of place in the literature is broad and dependent on many factors (Butz & Eyles, 1997; Nelsen, 2016; Orr, 2013; Studnicka, 2016). I am considering sense of place in relation to an ecological, geographic location. The concept of sense of place suggests that individuals feel belonging or love for the natural areas they find themselves within (Orr, 2013; Sanders, 2010; Sanger, 1997). To me, having a sense of place means that I feel like I am a part of the Lake Erie habitat, and I am moved to care for the area as such. But, as I mentioned before, I took my childhood near Lake Erie for granted. I know I spent time on the lake when I was young because my dad owned a boat, but the only real memory I have on that boat is being scared of a fish I had reeled in. It's also likely that I spent time on the beaches of Lake Erie, but don't have memories of that either. Therefore, I did not understand my privilege to spend so much time in sight of a Great Lake until I left for college in Bowling Green, about an hour away from home. Locked in the flat farmland of Northwest Ohio I found myself missing the water. Soon after the semester started, I was visiting home and a friend introduced me to a local park. Sheldon's Marsh has a paved trail down to the lake and several more natural trails stemming off from the pavement. When one walks down the paved trail, they walk through a forest, then a marsh, and eventually end at the lake shore. At the time of this first visit, there were also large rocks and an old break wall one could carefully climb out on and sit, with a small stand of trees at your back and a seemingly endless Great Lake in front of you. Sitting in this specific location is the closest I have ever gotten to feeling comfortable in nature. Perhaps because it's a calmer and a seemingly clean view of Lake Erie, as opposed to the smelly, littered lake I typically saw downtown. Or maybe I feel that way because it seems like a more immersive experience, hidden from the view of other people. Regardless, sitting on that break wall with my feet dangling inches above the water line, I came to appreciate the beauty and importance of Lake Erie. Sadly, the break wall has crumbled significantly since, and it is much more dangerous to venture out to this spot, but finding it was absolutely vital to establishing my sense of place. This was my first natural park visit, and certainly not my last, but none since have felt as special as Sheldon's Marsh.

Three years later, western Lake Erie residents faced a crisis that highlighted the fact that our lake is in trouble. In 2014, a harmful algal bloom exploded in the western basin of Lake Erie leaving half a million people in the Toledo area without drinking water (Ames *et al.*, 2019; Gill *et al.*, 2018). While at this point in my journey I had learned at great length about negative human impact on nature and had begun to adopt several pro-environmental behaviors, this environmental crisis hit home. I knew Lake Erie as a habitat had been degraded for many years, but I also knew it was cleaned up significantly through the Clean Water Act (Egan, 2017). It seemed that suddenly, people were attributing agricultural practices to Lake Erie's dead zone as

if the public had known this could happen all along. Living through this in such close proximity to Toledo was a key experience that changed conservation for me. Until this moment, I had been learning about ecosystems across the globe and conservation of endangered species in far off lands. The Toledo Water Crisis called out and said, “hey Lake Erie needs your help too!” Now the pro-environmental behaviors I learned about in environmental science classes served a more immediate role because my ecosystem was the one in trouble, not a rainforest in South America or a polar bear in the Arctic Circle, but the lake that had always been in my backyard.

My experiences connecting to nature within the geographic area I reside, or developing a sense of place, is well in line with the concept of place-based education found in many sustainability education curriculums. Place-based education can provide students the opportunity to be involved with the local events that impact their lives directly (Sanger, 1997). Within the environmental context, this may look like students learning about local habitats, visiting a local park with those habitats, and perhaps participating in an event to restore some of those habitats. Environmental place-based education has the ability to immerse students in the unique nature that surrounds them, encourages students take an active role in their community, and can give them a sense of ownership and belonging (Hensley, 2013, 2015). I genuinely believe if I had more experiences with environmental place-based education, I would have developed my environmental identity and pro-environmental behaviors much sooner than I did without those opportunities.

IMPLICATIONS OF ECOLOGICAL LITERACY AND CONNECTION TO NATURE: PRO-ENVIRONMENTAL BEHAVIORS

Literature suggests that ecologically literate individuals have knowledge of environmental issues and awareness of human’s role in these issues. However, like many others within the field of conservation psychology, I argue that knowledge is only half the battle when it comes to the adoption of environmentally protective behaviors (Baird *et al.*, 2020; Manolas *et al.*, 2013; Whitburn *et al.*, 2019, 2020). This seems to be especially true when considering behaviors that aim to combat climate change, a huge environmental problem with complicated solutions, and unfortunately, for which many of the actions that will lessen one’s carbon footprint are inconvenient or expensive. For example, simply understanding that solar power is better for the environment and will contribute less to carbon emissions is not enough to make every person modify their homes to function on solar, because solar panels are initially expensive to install, and it may be out of the social norm in one’s neighborhood. Emotions are what really influence people’s behaviors. If we reconsider the solar panels with knowledge of their environmental and long-term financial benefit, combined with an underlying connection to nature, or perhaps an experience with a devastating climate change caused disaster, the home modification may seem more valuable and approachable to the homeowner. It is also worth noting that some pro-

environmental behaviors, such as using solar panels or driving electric vehicles, also have unintended environmental consequences that an individual may have to weigh during their decision-making process. While all pro-environmental behaviors have pros and cons, it is widely still considered environmentally beneficial when individuals participate in any number of such actions.

Many theories explore how and why humans change behaviors, especially when considering behaviors that positively impact health (*e.g.*, quitting smoking, increasing exercise, etc.). However, health-based change studies often consider the direct impacts to the individual, whereas, when considering pro-environmental behaviors, the benefit is often less directly and immediately experienced by the individual. For example, returning to our solar panels, the benefit of renewable energy will be seen with savings on utilities to the home eventually, but the main benefit will be a reduction in carbon emissions. This becomes more complicated when considering the impact of an individual when the rest of the neighborhood, or city, or nation, remain heavy carbon emitters. One prevalent theory considers perceived lack of impact an individual may have on broad environmental issues: the Theory of Planned Behavior. The Theory of Planned Behavior considers an individual's attitudes, surrounding social norms, and perception of behavioral control when confronted with the adoption of a new behavior (Ajzen, 1991). Thus, the Theory of Planned Behavior suggests that when deciding to participate in a pro-environmental behavior, we unconsciously consider our environmental attitudes, the social norms from our community, and whether we, as individuals, can make a difference with that specific action. Importantly, however, these factors can also change over time with new experiences, knowledge, and social awareness. For example, as I learned more about the impact that raising animals for meat has on the environment, my attitude towards eating meat changed to be more negative and thus behaviors surrounding my food choices became more plant based. Similarly, when communities experience an environmental disaster, the social norms surrounding related human behaviors may change. For example, people often tell me about how they remembered a time when it was acceptable to throw entire bags of fast-food waste out the window, yet it is looked down on now. More recently, many communities are eliminating plastic straws after a horrific video of one stuck in the nose of a sea turtle became popular on social media a few years ago, driving calls for restaurants to ban plastic straw use. Change in attitudes and behaviors with the influence of new information is healthy for a society. Some might even suggest this process is vital to the social evolution of humans.

For me, my pro-environmental behaviors were developed overtime alongside my environmental identity. My household began recycling around 2006, when our trash company made it simple by allowing us to put all recyclables in one bin for pick up alongside our trash. This was not something I requested my family to participate in at the time, but something my parents decided on their own accord. I knew the old saying "reduce, reuse, recycle," but I

wouldn't learn the specificity of their order of importance for many years yet. During much of my high school years, I thought that recycling was all I could do for the environment. Perhaps this was because my levels of perceived behavioral control were low. I thought I could not help ecosystems as an individual. This pessimistic view only strengthened its hold on me when I began reading for my senior exit project during my last year of high school in 2011. My project focused on climate change and its detrimental effects on the arctic and polar bears, specifically. Driven by the Nissan Leaf commercial, which aired the year before, and my newly established concern for the melting ice caps, I learned about the greenhouse effect and renewable energy. I cared so deeply about this topic, and I never worked harder on any project in high school before this one. I wrote a research paper longer than many of my peers, and I created a presentation that I was very proud of. Unfortunately, when I presented this project to my grading committee, the lead member, who was assigned to be my advisor throughout the entire project, fell asleep in the middle of what I thought was an informative and important presentation. While I still passed and was able to graduate, that frustration of being so thoroughly ignored and disrespected while talking about something so vital fueled me through college. I wanted to learn more about human impacts on the environment and I wanted to share it more effectively with others, to avoid another situation like my senior exit presentation, but also to make a difference in the way people think about the environment. Thus began my long journey in biology, environmental education, and science communication, all thanks to that sleepy math teacher who couldn't be bothered to listen to my presentation.

During my undergraduate degree, I pursued classes that focused on environmental science, policy, and renewable energy alongside my core biology and ecology classes. I went into my degree program thinking that we can only protect nature through big, world-wide changes. Now, I still think those huge societal level changes are important, but I recognize the power in the small behaviors that add up over time. With more knowledge gained of pro-environmental options and the passion to conserve nature, my perception of behavioral control increased. However, it is important to recognize that many other barriers exist between individuals and pro-environmental behaviors. Not every person that wants to, can act in pro-environmental ways. Personally, I would love to drive an electric car and use renewable energy in my household, but my financial status and reliance on apartment living generally prevents me from doing so. Even some simple pro-environmental behaviors can be impossible depending on where one lives. For example, my local recycling center does not accept all plastic containers or paper boxes, so I have to be conscious about what I can and cannot recycle. The existence of barriers to individual pro-environmental behavior reminds us that change needs to happen on larger societal levels as well to encourage larger companies and governments to be more environmentally conscious.

I propose that with intention devoted to cultivating sense of place through various methods of environmental education experiences, educators may be able to have a larger impact

on transforming individuals to act in more environmentally protective behaviors. However, in line with the components of Theory of Planned Behavior, knowledge of environmental issues and solutions also plays a large role in changing the behaviors of individuals. Thus, in designing an impactful environmental education event focused on changing individual's behaviors, one should consider including elements designed to impact the emotional connection to nature, knowledge of access to environmental solutions, and empowerment to make a difference within the nature restoration process.

CONCLUSION

In beginning my research examining how environmental education impacts the adoption of pro-environmental behaviors, I found myself faced with a number of theories and hypotheses (*i.e.*, ecological literacy, connection to nature, and Theory of Planned Behavior) suggesting reasons that individuals may change. In reflecting on these concepts as they apply to my own experiences, I found disconnect between the environmental identity I had developed and what the literature indicated where experiential requirements. Through the method of autoethnography, I developed a template to analyze my environmental journey within the context of these academic concepts. I found that there is more than one path to developing an environmental identity and subsequently adopting pro-environmental behaviors. Experiences in nature can be small, and well managed by humans, yet still leave a lasting impact on an individual and their connection with nature (McEwan *et al.*, 2020; Oates, 2003). A broader definition of environmental mentor and the role of digital media should be considered in the development of ecological literacy (Arendt & Matthes, 2016; Ho *et al.*, 2018). In addition, developing an emotional connection to nature should include place-based education to encourage individuals to develop a sense of place and care for the environment directly around them, as well globally (Jarreau *et al.*, 2017; Orr, 2013). Finally, my work supports the idea that it is important to focus environmental education approaches on increasing emotional connection in addition to empowering individuals to be part of an environmental solution (Whitburn *et al.*, 2019, 2020). Such empowerment may be political activism to increase access to pro-environmental community programs, or more simply, encouraging environmental education event attendees to discuss their newfound environmental knowledge with others in their social circle. Access to nature throughout one's life can be highly variable, but that does not prevent an individual from having a life well connected to nature.

Ultimately, I would like to express the immense benefit of autoethnography and life writing as a method to immerse oneself within environmental behavior research and to develop a better understanding of the application of prevalent theories (*i.e.*, ecological literacy, connection to nature, sense of place, and Theory of Planned Behavior). Such a reflective experience has greatly deepened my knowledge of the Theory of Planned Behavior, connection to nature,

ecological literacy, and sense of place as applied to the individual. Additionally, it has helped me develop the ability to consider the range of influences within potential environmental education research subjects, by better understanding my own environmental identity. By understanding one's relationship to hypotheses supported by the environmental education literature, one may also build a stronger conceptual framework for future studies within the field or environmental education research (Miles *et al.*, 2018). Life writing could benefit all science disciplines, as it allows the researcher to develop better reflexivity, awareness of unconscious bias, and in depth thought of one's field of work (Cormick, 2019; Ellis & Bochner, 2000; Wall, 2006). Through this autoethnographic approach, I have offered a template for analyzing one's own experiences with environmental identity development. In the future, if other individuals in the field of environmental or sustainability education development also utilize the method of autoethnography, we may see overarching trends that could propel future discussions, hypotheses, and theories about best practices in their field, and improvement of pro-environmental behavior communication.

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