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Urban park design + love for nature: Interventions for visitor experiences and social networking

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ABSTRACT

Affect or emotion for nature can prime environmentally friendly attitudes and behaviors, but for one's love of nature to grow she must physically experience and communicate about nature with others. This study aimed to identify urban park designs that could increase affect for nature in park visitors by stimulating their desire to communicate about and experience nature. Participants included 33 visitors at four urban parks in a mid-sized US city who were interviewed on location. Social network theory (SNT) served as the methodological framework for interpreting why, how, and with whom visitors' communicated their nature experiences, as well as the design elements that led to increased love for nature. Analysis of the interviews confirmed findings from similar studies, while contributing new insight to how visitors' use mobile technology to communicate about nature and build bonds with their social network. The conclusion offers ways for scholars and practitioners to improve urban park design so as to increase visitors' affect, communication about, and action for nature.

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Research by Kollmuss and Agyeman (2002) and others have helped scholars and practitioners devise and test interventions (i.e. marketing campaigns and technologies) that bridge gaps between environmentally friendly attitudes, knowledge, and behavior. However, less attention has been given to understanding the types of interventions that can prime or make people more receptive to attitude, knowledge and behavior change interventions. Due to the large number of mediating variables in the construction of attitudes, knowledge, and behavior, it is difficult for scholars to make definitive claims as to the relationship between them (Heimlich and Ardoin 2008; Kollmuss and Agyeman 2002; Steg and Vlek 2009). Nonetheless, a group of scholars have identified a strong correlation between affect and increased receptivity to pro-environmental messages and behavioral prompts (Kals, Schumacher, and Montada 1999).

In this study, affect is defined as the feeling or emotion, unique from cognition, which is elicited by interactions with the natural environment (Ulrich 1983). Many debate as to which comes first, affect or cognition, but most scholars agree that affect plays a crucial role in human behavior by influencing how we think and what we do (i.e. Forgas, Wyland, and Laham 2012; Vining and Ebreo 2002; Zajonc 2001). Scholars have found the emotions of affinity, love, empathy, sympathy, anxiety, anger, and sadness influence pro-environmental behaviors (i.e. Allen and Ferrand 1999; Cialdini et al. 1997; Gosling and Williams 2010; Kals, Schumacher, and Montada 1999), while a lack of affect can cause indifference (Szagun and Pavlov 1995). Kals, Schumacher, and Montada (1999) argue that affect can create psychological dissonance, which encourages people to act sustainably even if they think it will have little effect.

Similarly, researching the lineage of what causes affect for nature is difficult due to the many variables involved, yet a handful of scholars have found a correlation between increasing levels of affect for nature and the amount of time people spend experiencing nature and whether or not they communicate their values and enjoyment of their experiences with family and friends (Ballantyne, Packer, and Sutherland 2011; Kals, Schumacher, and Montada 1999). Numerous literatures explore the relationship between nature experiences and affect, such as exposure to nature for improving psychological and physical well-being (i.e. Cohen 1994; Sullivan, Kuo, and Depooter 2004; Ulrich 1993). Similarly, numerous studies in environmental communication have shown the influence of communication to develop and amplify affect for nature related to cultural values, social behavior, and community action (Brulle 2010; Cox 2013; Milstein 2009). Even with supportive bodies of research, few interventions exist that explicitly help scholars and practitioners explore how both nature experiences and communication can increase love for nature.

To define intervention elements for building affect, this study examines the physical, technological, and communicative elements urban park visitors use. The elements identified in this study offer insight to creating better parks and events. Application of these interventions may also provide a way to explore relationships among affect, environmental attitudes, knowledge, and behavior as discussed above. As a starting point for this exploratory study, the author chose urban parks as the research site over wilderness due to accessibility and increasing demand by a growing urban population (United Nations 2014). The research sites were located in Raleigh, North Carolina, USA, which is a mid-sized American municipality that hosts diverse populations, industry, and types of parks.

Although social network theory (SNT) is typically used as a birds-eye-view of large networks, it was chosen for use in this study because it can also give a micro-view on how and why individuals communicate about and interact with nature (Borgatti, Everett, and Johnson 2013). Environmental scholars have used the theory to gain micro-views on communication processes impacting electricity consumption, diffusion of environmental business practices, and stakeholder-associated risks in complex green building projects (respectively: Peschiera and Taylor 2012; Tate, Ellram, and Gölgeci 2013; Yang and Zou 2014). The author applied SNT to an analysis of 33 interviews with park visitors to reveal the relationships behind communication, nature experiences, and affect for nature. The discussion and conclusion offer readers suggestions for interventions in urban park design and ideas for future research.

Literature review

A rich body of literature exists in the areas of nature experiences and environmental communication, as well as the impact experience and communication have on building affect and shaping perceptions of the world. The most well-known theory is the biophilia hypothesis (Wilson 1995), which states humans have a hereditary predisposition to experience nature along a spectrum of emotions that influence how we learn and think about nature and our place within it. When humans experience a specific landscape, our predisposition leads us to either feel an affective sense of pleasure (if the landscape suits our biological needs) or displeasure (if it challenges our biological needs) (Appleton 1975; Ulrich 1983). The biophilia hypothesis has served as an impetus for numerous experiments with landscape design, many of which reveal links between affect and exploration or avoidance of landscapes (Jacobs 2011), as well as the implementation of conservation practices (Kaplan and Kaplan 1989; Ulrich 1983).

When scholars explored affect for nature, they found individuals can feel empathy, emotional attachment, and motivation to care for a natural place that directly impacts their health or the health of their family (Clayton and Myers 2009). Clayton and Myers (2009) explain that responses to the landscape not only come from biological needs, as stated in the biophilia hypothesis, but responses also come from perceptions of similarity. Specifically, human-nature experiences lead to 'similarity, relatedness, or analogy between oneself and other elements of the ecosystem, to the extent that a person might react to threats to nature as if they were threats to themselves' (Clayton and Myers 2009, 61). If love for nature is generated as an extension of self, then human experiences of nature create a 'connection

between self and world' in which we 'feel' the other's joy or suffering (Sewall 1995, 2003). Therefore, receptiveness to environmental information and behavior can stem from both biological responses and an individual's desire to honor his love and sensual connection to the earth (Sewall 1995, 2003). Since nature experiences can lead to biological and/or self-identified affect, along with subsequent inclinations toward engagement with the natural world (Davis and Atkins 2009), this study attempts to capture both possibilities and their relationship to the built environment.

Another factor considered in this study is the influence of increased time outdoors, which facilitates the development of emotional attachment to and meaning creation for nature (Kellert 2005; Seamon 2013). Along these lines, Sewall (1995) found a lack of time in nature correlates with mistreatment of nature, as well as psychological and physiological harm to self. While other findings reveal the more time in nature one spends, the more her psychological well-being, motivation to behave pro-environmentally, and communication about nature will increase (Ballantyne, Fien, and Packer 2001; Dutcher et al. 2007; Nisbet, Zelenski, and Murphy 2011; Schultz 2000). This study aims to tie together the aforementioned research on landscape affect and time outdoors by incorporating the influence of communication on the development of affective states and love for nature.

The process of communicating one's nature experiences plays a role in affective development because it is the means through which an individual can deconstruct and find meaning behind his interactions with nature (Bonnes and Bonaiuto 2003). Meaning making occurs as people experience a landscape and communicate to define the experience's significance (Bott, Cantrill, and Myers 2003). Communication involves translation of one's nature experience into a linguistic or visual form that can be transmitted to others if desired. The process of translation and communication is of importance to this study because it requires an individual to move affect into cognition, which allows for integration with one's attitudes, knowledge, and behavior. When individuals communicate their nature experience to their social network, they can juxtapose personal meanings with those circulating in their community (Jacobs 2011). Networks of people generate social meaning and value for nature through a process of pointing and naming parts of nature as unique and important (Bott, Cantrill, and Myers 2003; Milstein 2011). Communication within social networks can influence and amplify environmental opinions, perceptions, and behaviors of those within the network (Flynn and Goldsmith 1994; Vining and Ebreo 2002; Weenig 1993). Therefore, the generation of affect for nature occurs not only through an individual's experience of nature, but also through her negotiation of meaning for nature within her social network.

Scholars (Bonnes and Bonaiuto 2003; Saunders, Brook, and Myers 2006) have found that communication and meaning making within social networks is important for building coherent group response to environmental problems. For example, Ballantyne, Packer, and Sutherland (2011) found when participants communicated about their nature experiences with others; the process amplified affective feelings and contributed to the social support of sustainable practices. Responses to environmental problems, like those seen in Ballantyne's study, can vary due to differences in social networks, such as socioeconomics, ethnicity, and age, as well as the strength of relationships within the network (Pitt and Zube 1987; Pol 2003). Additionally, scholars have found variations in communication patterns concerning sustainability depending on age, gender, and time spent outdoors (respectively: Pew 2012; Stevenson et al. 2013; Zelezny, Chua, and Aldrich 2000).

Since the aforementioned factors point to the relationship among visitors' experiences with, communication of, and actions for nature, the author chose SNT as a theoretical framework that would allow for examination of these relationships (Marin and Wellman 2011). The author used SNT to analyze micro networks; an application of the theory that reveals the reasons behind and content of communication between individuals in small social networks (Wasserman and Faust 1994). To conduct a micro analysis of participant's communication, Borgatti, Everett, and Johnson (2013) recommend identifying who participants most often communicate with (*relational roles*), as well as why, what, and how information is communicated (*relational events*). *Relational events* are defined by *interaction types*, such as talking in person, phone, or emailing and *information flows*, such as the content and reason for communicating (Borgatti, Everett, and Johnson 2013). To account for *characteristics* unique to each participant, Borgatti et al. encourage the collection of individual experiences and physical attributes (i.e. age and gender).

Table 1. Description of parks and their visitors.

	Moore Square	Nash Square	Court of North Carolina	Lake Johnson
Location	Downtown, three blocks from Nash Square, near businesses, tourist attractions, bus terminals	Downtown, three blocks from Moore Square, near businesses, courthouse, tourist attractions	Two miles from downtown, part of the North Carolina State University campus	Borders the city limits, south of North Carolina State University
Description	Benches, paved path, acorn sculpture	Benches, paved path, firefighter sculpture	Benches, paved path	Benches, paved and wood-chip trails, picnic shelters, lake, fishing, boating
Size	1 square block	1 square block	1 square block	450 acres
Visitors	Business professionals, tourists, transients	Business professionals, tourists, court visitors	Students, staff, faculty from the university	Students, recreationist, families

Through analysis of participants’ relational roles, events, and participant characteristics, it is possible for the author to unravel the types of interventions that can trigger engagement with urban nature and communication of those nature experiences to others. The findings of this study extend recommendations from restorative environmental design, which offer ways to use nature to elicit happiness and attachment to place (Kaplan, Kaplan, and Ryan 1998; Kellert 2005), by offering dimensions of and interventions for communication, affect, and nature experiences. Thus, the following research questions are addressed:

- RQ1, *Relational roles*: Who do participants share urban nature experiences with?
RQ2, *Relational events, interactions*: How do participants share their urban nature experiences?
RQ3, *Relational events, flows*: What do participants share of their urban nature experiences and why?
RQ4, *Node characteristics*:
- (a) What brings participants to urban nature?
 - (b) What are participants’ perceptions of that experience?
 - (c) What affect do participants relate to that experience?
 - (d) How do participants perceive affect for nature impacting their behavior?

Methods

To emphasize the exploratory nature of this study, the author did not limit findings by choosing a location on any extreme (e.g. size, demographics, economics), especially since Pitt and Zube (1987) identified deviations in nature engagements can occur across socioeconomic status, ethnicity, and age. Therefore, the author chose a mid-sized city with a diverse population, urban landscapes, and economics; the city of Raleigh, North Carolina, USA. Raleigh has about 400,000 inhabitants and, due to its location among universities, technological industries, agriculture, and state politics, a demographically diverse population. The research sites represent the diversity of Raleigh’s parks and citizens (Table 1).

The author approached visitors at the research sites without limiting the sample to specific demographic factors or familiarity with the park to find evidence that proved or disproved previous findings. Participants self-selected into the study by being at least 18 years or older, having at least 10 minutes for the interview, and agreeing to participate in the study by signing an IRB consent form (study approved by North Carolina State University IRB #3429). The author interviewed a total of 33 people at Moore Square ($n = 6$), Nash Square ($n = 5$), Court of North Carolina ($n = 8$), and Lake Johnson ($n = 14$). Only two people approached refused to participate in the interview stating they did not have time for it.

Since previous research has shown age, gender, and time spent outdoors can influence communication styles and environmental attitudes, the author collected these demographics. The participant sample included 48.5% men ($n = 16$) and 51.5% women ($n = 17$) between the ages of 18 and 65 (mean 34). Age categories included 18–30 year olds at 58% ($n = 19$), 31–50 at 24% ($n = 8$), and 51–65 at 18% ($n = 6$). Most participants spent 1–8 h outdoors (39%; $n = 13$), then 10–15 h (24%; $n = 8$), 30 or more hours (18%; $n = 6$), 20–25 h (15.5%; $n = 5$) and time varied based on weather for one participant.

Table 2. Interview questions.

-
- (1) Why did you decide to come here today?
 - (2) Can you describe your experience here?
 - (3) Can you name an emotion related to your experience?
 - (4) Do your emotions about nature affect how you live your life?
 - (5) Have you or will you share this experience with someone? If yes...
 - (a) Who?
 - (b) How?
 - (c) Why?
 - (6) How old are you?
 - (7) How much time do you usually spend in nature per week?
 - (8) Do you have any questions for me?
-

Table 3. RQ1 results.

Social actor	Responses
Friends	42%; $n = 16$
Future self	29%; $n = 11$
Family members	21%; $n = 8$
Strangers	8%; $n = 3$

Interviews (Table 2) took approximately 5–10 minutes and were conducted by either walking or sitting with participants so as to capture real-time nature experience (Harris and Guillemin 2012). The author used measures on communicative behaviors (Marsden 2005) and emotions (Nisbet, Zelenski, and Murphy 2009) to write the interview questions. The author conducted interviews until participants' responses were redundant and no longer revealed new perspectives on the topic; at which point sample saturation appeared to be reached (Strauss and Corbin 1990).

The author transcribed, coded, and entered data into MAXQDA. Following Yang and Zou's (2014) social network model, the first round of coding identified what Borgatti, Everett, and Johnson (2013) called *relational roles*; essentially, whether each participant communicated their nature experience to someone else and, if he or she did, who that person was. The second round of coding identified what Borgatti, Everett, and Johnson (2013) called *information flows* by utilizing thematic analysis to reveal why participants choose to communicate to specific people in their network. The third round of coding further refined *information flows* by using thematic analysis to examine what participants communicated to their social network. The final round of coding was a cross-comparison to identify the types of interventions for future research. After coding was complete, the author accounted for participants' *characteristics* (e.g. age, gender, and time spent outdoors) in relationship to their responses.

Results

RQ1 relational roles

Who do participants share urban nature experiences with? Table 3 shows the most important social actors in participants' communication of nature experiences, mainly friends and his or her future self. One participant stated he shared his experience with friends, 'because I want them to share this feeling of relaxation.' Another participant said he, 'took pictures of the statues and the sunset ... just for me. I look at them when I'm between meetings or at home.'

RQ2 relational events

How do participants share their urban nature experiences? Table 4 shows the media participants felt most comfortable communicating their nature experiences through, mainly speaking and digital media (mostly Instagram and Facebook). One participant explained,

I Instagram a lot of nature pictures. I Tweet about what I'm doing, like if I'm going on a run around Lake Johnson. Mostly I'm trying to share the experience with people so they can experience what I did or invite people into that experience ... telling them to join me. I like visual communication better, like sending pictures. I Snapchatted ... took a picture of myself here ... people were jealous.

RQ3 flows in relational events

What do participants share of their urban nature experiences and why? Participants verbally shared (Table 5) their affective state and/or their activity with the goal of (Table 6) bonding with and influencing their social network to physically experience nature. A participant said,

We often tell people our neighborhood is a bit boring – going up and down the street ... They should go to Lake Johnson because it's lovely ... I have spread the word. We bumped into some other people that we know walking around ... so obviously ... the message has traveled.

Participants digitally shared (Table 7) images they felt encompassed the uniqueness of their nature experience with the purpose of transferring their affective state (Table 8) as exemplified by this quote,

Table 4. RQ2 results.

Form of communication	Responses
Verbal and digital images	60%; <i>n</i> = 20
Digital images	27%; <i>n</i> = 9
Verbal	12%; <i>n</i> = 4

Table 5. RQ3 results, verbal sharing.

Content	Responses
Affect experienced	35%; <i>n</i> = 6
Activity performed	35%; <i>n</i> = 6
Call to join	18%; <i>n</i> = 3
Unique occurrence	12%; <i>n</i> = 2

Table 6. RQ3 results, verbal purpose.

Purpose	Responses
Get others to nature	44%; <i>n</i> = 7
Bond with others	38%; <i>n</i> = 6
Share affect	12%; <i>n</i> = 2
Loses meaning digitally	6%; <i>n</i> = 1

Table 7. RQ3 results, digital sharing.

Content	Responses
Capture a unique experience	50%; <i>n</i> = 10
Friend, family, pet in nature	20%; <i>n</i> = 4
Inanimate nature (trees, water, sky)	15%; <i>n</i> = 3
Wildlife	15%; <i>n</i> = 3

Table 8. RQ3 results, digital purpose.

Purpose	Responses
Share affect	63%; <i>n</i> = 10
Get others to nature	25%; <i>n</i> = 4
Bond with others	12%; <i>n</i> = 2

I posted pictures of sunsets at Lake Johnson on Twitter so all my followers could see it ... my family sees it ... that's more importantly who I care about seeing it...my family. Just that beautiful experience ... when I can transmit that emotion to someone else it's rewarding.

The aforementioned excerpts show both verbal and digital flows of social networking serve as testament to the strong desire for participants to linguistically and/or visually communicate their experience and affect to influence the behaviors and affective states of their social network.

RQ4 node characteristics

(A) *What brings participants to urban nature?* Participants had a purpose, either to engage in an activity and/or an experience ($n = 32$ of 33; Table 9); the outlier said his presence was random. Responses revealed an inexplicable connection between reasons participants went to parks and the content they communicated to others. For example one participant stated,

I love watching the seasons change. The first time we came was in the winter ... there was a slight frost and it was just really very pretty and a nice brazen walk. In the fall looking across the water ... with it being lovely and peaceful and the colors reflected in the water ... every season has its charms.

This quote directly reflects the types of imagery shared by participants as discussed in RQ3. Furthermore, the *types of things participants perceived on their visit* (RQ4B, Table 10) and the *affect felt* (RQ4C, Table 11), mirrored what participants aimed to communicate to their social networks. Finally, 30 out of 33 participants commented on how their *affect for nature impacted their behavior* (RQ4D). Most participants (83%; $n = 25$) said they were drawn back to nature to reach former affective states, while others (20%; $n = 6$) said love for nature prompted them to engage in environmental stewardship.

Table 9. RQ4A results.

Purposes	Responses
Activity	44%; $n = 24$
Relaxing	44%; $n = 12$
Exercising	15%; $n = 4$
Playing with a pet	15%; $n = 4$
Praying, reading, smoking, listening to music, working, play with child, or 'killing time'	around 4% each; $n = 1$ each, total of 7
Experience	41%; $n = 22$
Aesthetics (see trees, water)	41%; $n = 11$
Quietness (no interruptions)	33%; $n = 9$
Atmosphere (feeling shade, breeze)	26%; $n = 7$
Experience and activity	15%; $n = 8$

Table 10. RQ4B results.

Perceptions	Responses
Visual	37%; $n = 32$
Nature	75%; $n = 24$
Vegetation	50%; $n = 12$
Water	30%; $n = 7$
Animals	20%; $n = 5$
Manmade objects (sculptures, buildings)	12.5%; $n = 4$
People	12.5%; $n = 4$
Sound	23%; $n = 20$
Nature (insects, birds)	70%; $n = 14$
Manmade (busses, ipod)	30%; $n = 6$
Feeling	24%; $n = 21$
Nature (breeze, shade)	81%; $n = 17$
Location (comfortable bench)	19%; $n = 4$
Smell	16%; $n = 14$
Nature (vegetation, lake)	100%; $n = 14$

Table 11. RQ4C results.

Feeling	Responses
Peace	54%; $n = 26$
Happiness	23%; $n = 11$
Freedom	13%; $n = 6$
Alive	10%; $n = 5$

Gender, age, and time out doors were compared with participant responses to identify mediating effects. An Independent Samples *T*-test revealed a significant difference for females ($M = 2.06$, $SD = 0.55$) and males ($M = 1.44$, $SD = 0.81$); $t(26) = 2.54$, $p = 0.017$), suggesting that females were more likely to perceive and mention their experiences in urban nature affecting their attitudes and behavior than males. A one-way between subjects ANOVA revealed that age $p < 0.05$ [$F(2, 30) = 1.76$, $p = 0.188$] and time spent outdoors $p < 0.05$ [$F(3, 29) = 1.43$, $p = 0.252$] did not have significant effect on whether nature experience increased participants' pro-environmental attitude or behavior.

Discussion

This study set out to identify the elements contributing to the complex relationships among urban park visitors' experiences of nature, affect, and communication. Some elements identified in this study correlate closely with factors found in other studies. Similar to Jacobs and Buijs' (2011) place meaning, participants interviewed in Raleigh went to urban nature for a specific activity, such as relaxing or exercising, and to experience nature through sight, sound, and feeling. Raleigh participants preferred nature over manufactured features, as found in other studies (e.g. Kaplan and Kaplan 1989; Kellert 2005; Nickerson 2013). Participants explained the relationship between nature experiences and affect through the following statements (also found in similar studies): emotion regulation (Korpela et al. 2001), feelings of inner peace (Long et al. 2003), ability to cope with daily stresses (Mitchell et al. 1991), increased optimism (Kellert 2005), and reduced mental fatigue (Kaplan and Kaplan 1989). Findings also supported previous research showing females were significantly more likely to mention their experiences in urban nature affecting their attitudes and behavior than males (Zelezny, Chua, and Aldrich 2000); however, this did not hold true for participant age or time spent outdoors (Pew 2012; Stevenson et al. 2013).

This study added depth to Mitchell et al.'s (1991) attachment-orientation research by showing Raleigh visitors brought people to nature (physically and digitally) to bond and share affective feelings. The connection between affect and bonding found among Raleigh participants appeared to provide emotional stability for their social networks, which could lead to coherent action for environmental problems (also found by Bonnes and Bonaiuto 2003; Saunders, Brook, and Myers 2006). In line with Curtin's (2009, 2010) findings, results of this study showed how awe, wonder, and memorability were prompted by unique and close wildlife encounters that participants shared with others. The results of this study showed minimal support for Clayton and Myers (2009) findings of visitors having empathy for nature or motivation to care for it; yet, Raleigh participants showed a strong emotional attachment to nature. The emotional attachment described by Raleigh participants led them to consistently seek out nature experiences in their daily lives and to occasionally engage in stewardship behavior.

Not only does this study confirm previous findings and hypotheses, but it also provides insight into the affective, experiential, and communicative components of urban park visits. When the components are brought together, they provide grounding for the design of interventions that can assist in the exploration of these relationships, as well as their use as priming agents for pro-environmental interventions. The following interventions are derived directly from participant responses and vary in installation and maintenance cost.

Interventions derived from participant *node characteristics* (Tables 9–11) can draw visitors to urban parks and provide memorable sensorial experiences through use of hammocks under trees, water features, and native plant and animal habitats. Shaded hammocks incite affect through their ability to



Figure 1. Governors Island Park in New York City offers hammocks, but close proximity and lack of trees misses visitors' desire for shade and solitude. Photo credit Bergelin 2014.



Figure 2. The water feature at Mears Park, St. Paul, Minnesota offers multiple water experiences with space for relaxing. Photo credit Hendricks 2008.

comfort visitors physically and, when they are away from busy paths, offer solitude, thus supporting the visitors emotional needs too (Figure 1). An intermingling water feature (Figure 2) provides consistent views and sounds of water while carving spaces for quiet reflection in the landscape. Finally, native habitats offer diverse sensorial experiences for visitors, including wildlife and blooming plants (see Charlotte Rhoades Garden and Butterfly Park, Southwest Harbor, Maine). To entice visitors for exercise, go beyond standard trails, outdoor gyms, and dog parks with unique combinations, such as a human/canine outdoor gyms (see Daily Mail Reporter 2013 in references section).

The *relational flows* (Tables 5–9) of participants showed the importance of designing parks to elicit affect and exercise, as well as offering unique experiences visitors can share (Table 4) with friends and family via social media (Table 3) such as: (1) native habitats offering wildlife and seasonally changing flora; (2) squirrel obstacle course (Brown 2014 in references section); (3) a chalk wall or interactive sculpture (see Port Orchard Marina Park, Bremerton, Washington and Cadboro-Gyro Park, Victoria, British Columbia); (4) community events exhibiting native wildlife. The aforementioned interventions are starting points through which practitioners and scholars can further question and observe how experience, affect, and communication impact visitors' lives and propensity to behave in environmentally friendly ways.

Conclusion

This study provided new material for exploring the complex relationship between affect, nature experience, and communication; especially because of its unique micro-scale application of SNT. Some limitations of the study include the small sample size and use of one city for all interviews. Many opportunities exist for exploring these findings further, such as: conducting studies in other geographic locations; examining ethnic, socio-economic, and education differences; experimenting with interventions; documenting longitudinal effects; and recording factors impeding nature interaction and communication.

This study shows relationships between individuals and nature go beyond the inborn need for nature as Kellert's (2005) biophilia proposes; to the need for communicating with others to build rich and complex affect among people and nature. One participant aptly noted,

I think my iphone distracted me because I took a picture and sent it now, instead of later – instead of sitting here soaking it in. But then again, when I share this experience with people who matter it makes it feel more real.

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Disclosure statement

No potential conflict of interest was reported by the author.

Notes on contributor

Eli Typhina is a PhD candidate in the Communication, Rhetoric, and Digital Media Program at North Carolina State University. Her research focuses on ways to prompt environmentally friendly behavior, emotion, and cognition through the design of physical and digital environments. She uses qualitative and quantitative research methods to examine how the interactions among human systems, technology, and the environment lead to positive and negative outcomes. She has published in the scholarly journals of *Applied Environmental Education and Communication* and the *International Journal of E-Services and Mobile Technology*. She consults with organizations interested in applying empirical research methods to prompt sustainable behavior through behavior change campaigns, curriculum development, technology design, and inter-organizational sustainability initiatives. She has taught upper division courses at North Carolina State University on environmental communication, organizational culture shifts, and the impacts of science, technology, and society. Her current research examines the ways mobile phones and applications can lead to environmentally friendly behavior in both individuals and society.

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