

Barriers to Nature Engagement for Youth of Color

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Abstract

Nature engagement provides cognitive, physical, psychological, and social benefits. However, there are racially inequitable patterns of participation at nature sites, parks, and other green spaces in the U.S. Among youth of color (YOC), this nature deficit limits their ability to gain the same benefits of nature engagement as their white counterparts. To enhance understanding of the barriers to nature engagement by YOC, the present study examines intensive semi-structured interviews of local community leaders and leaders of nature-oriented organizations. Results reveal a complex matrix of external, socioeconomic, and psychological factors that limit YOC's green access, particularly accessibility, fear, and social exclusion. Findings support existing literature, while providing additional dimension and nuance that expose larger implications and support the call for increased focus on racial and ethnic diversity, equity, and inclusion within nature engagement.

Keywords: youth of color, parks, green space, environmental justice, nature engagement

Introduction

Research reveals that a series of structural and personal factors have resulted in a nature deficit among people of color, whereby they spend less time engaging with nature, on average, than their white counterparts (Rowland-Shea & Doshi, 2020; Borunda, 2020). Children and teenagers are likewise underrepresented in nature engagement, and their rates of participation have been decreasing for decades (Clemens, 2004; Karsten, 2005; Outdoor Foundation, 2020). Meanwhile, youth are spending more time engaging in sedentary indoor activities, including nearly seven hours a day on screen-based devices (Common Sense Media, 2019; Karsten, 2005). Richard Louv (2005) coined the phrase “nature deficit disorder” to describe the negative effects of disengagement with nature among young people, including diminished senses, attention difficulties, obesity, stunted social emotional development, and behavioral problems. At the intersection of these patterns, youth of color (YOC) are doubly and disproportionately excluded from safe, quality, health-promoting nature opportunities (Outdoor Foundation, 2020). Given the groundswell of literature in recent decades confirming the cognitive, psychological, physiological, and other health benefits of time spent in and around nature, inequitable access to and participation in nature-oriented activities presents an urgent social equity issue (Keniger et al., 2013).

This study aims to increase understanding of the factors that prevent U.S. YOC from engaging more with nature, with the ultimate goal of increasing participation and extending the associated benefits to this population. “Youth of color” are here defined as non-white young people between the ages of 5-24. We conducted semi-structured interviews with 18 prominent community and nature site leaders working in diverse communities in New York State, Maryland, Washington D.C., and Virginia. Results of the interviews, analyzed using NVivo analysis software, reveal a complex matrix of external, psychological, and socioeconomic barriers to greater use of parks, nature sites, and other green spaces among YOC. Nuanced findings regarding barriers to engagement advance understanding of this equity issue. Further, our discussion provides critical perspectives and points of consideration for city planners, park administrators, nature educators, decision-makers, and others eager to extend green access and its benefits to YOC.

Youth and the Outdoors

Young people today spend increasingly less time outdoors than previous generations. A time use study of over 2,900 children and teenagers (6-17) found they spent an average of 7.14 minutes a day recreating outdoors in the early 2000s, representing a 50% decrease since the early 1980s (Juster et al., 2004). A Outdoor Foundation (2020) report calls the declining participation of youth in outdoor recreation, a “warning signal,” noting that outings are declining for both children (6-17) and young adults (18-24), across genders. The study also found a glaring diversity gap. Among 18,000 participants, there was a 24% participation deficit among Black Americans, and 35% deficit among Hispanic Americans, as compared to their share of the U.S. population. These patterns of inequity remained consistent among youth, with rates of participation in outdoor recreation by Black youth reported as “much lower than any other group” (Outdoor Foundation, 2020, p. 12).

Meanwhile, the average child and adolescent in the U.S. spends seven hours or more on screens each day (Common Sense Media, 2019; Rideout et al., 2010). High rates of daily screen use among youth has been correlated with anxiety (Boers et al., 2019), violence (Boxer et al., 2009), loneliness (Yang, 2016; Bozogalın et al., 2013), and obesity (Jordan et al., 2008), along with stunted language development (Linebarger & Walker, 2005), and reduced academic performance (Hancox et al., 2005).

Barriers to Nature Engagement for Youth of Color

Racism, in all its dimensions, has resulted in a cascade of effects that deter nature engagement by youth of color. These include a lack of representation, discrimination, and stereotyping in natural settings and nature-oriented organizations, as well as inequitable access to green space, housing, transportation, employment, and educational opportunities (Boone et al., 2009; Wolch et al., 2013). Urban policies such as redlining, segregation, and disinvesting public spending from minority communities have impacted park quality and accessibility in these areas (Rigolon & Németh, 2018; Plumer & Popovich, 2020). Such racist urban policies and other dimensions of structural racism have led to rates of poverty among U.S. Black and Hispanic youth that are nearly three times higher than rates among U.S. white children (Pew Research Center, 2020). Furthermore, research suggests that U.S. park systems have historically excluded lower-class populations and people of color (Scott & Lee, 2018; Erickson et al., 2009; Byrne & Wolch, 2009; Rowland-Shea & Doshi, 2020). A prominent example of this lies in the historical and ongoing practices of dispossessing Indigenous populations of their land to create national parks (Byrne & Wolch, 2009; Rowland-Shea & Doshi, 2020). Aspects of the American public lands system, what Mels (2002) described as a curated “pristine wilderness,” are designed to primarily appeal to white upper-middle class sensibilities (pp. 137-138). Federal legislation from as late as the 1960s has supported the legal segregation and exclusion of people of color from public lands and various natural areas, including beaches, public pools, national parks, and other natural areas (Rowland-Shea & Doshi, 2020; Chokshi, 2018). Monetary constraints may also limit park access; rates of poverty among U.S. Black and Hispanic youth are nearly three times higher than rates among white children (Pew Research Center, 2020).

Stemming from these patterns, more nuanced barriers to nature engagement emerge. Accessibility to natural areas and sites has been shown to be limited by a lack of safe, convenient, and affordable transportation options for communities of color (Byrne, 2012; Xiao et al., 2016). Likewise, perceptions of social exclusion are a major deterrent, particularly lack of diverse representation in nature site users and leaders (Hong & Anderson, 2006); feeling unwelcome, feared, displaced, or unaccepted in natural areas (Pickney et al., 2018); and racial profiling by police (Gobster, 2002) or other park users (Maslin Nar, 2020; Holson, 2018). Another commonly cited barrier is fear, particularly fear of personal harm due to neighborhood crime (Echeverria et al., 2014), strangers, other teenagers, traffic, or drugs or firearms (Brockman et al., 2011). Youth of color may also be disinclined to visit park spaces, even if safe, welcoming, and convenient, if the parks do not

provide young people's preferred amenities and facilities (Oliphant et al., 2019; Suminski et al., 2012), or if youth lack essential knowledge or information about these spaces (Byrne, 2012; Hong & Anderson, 2006).

Benefits of Nature Engagement

Supporting YOC in spending more time in parks and other natural settings is an urgent equity issue, given the innumerable psychological, physiological, cognitive, and social benefits derived from nature engagement (Keniger et al., 2013). Time in and around nature has been shown to reduce stress, anxiety, and depression (Ulrich et al., 1991; Frumkin et al., 2017; Kondo et al., 2018; Bratman et al., 2019; Roberts et al., 2019). Nature engagement has also been correlated with reduced sympathetic and increased parasympathetic nervous activity (Brown et al., 2013; Gladwell, 2012), reduced blood pressure (Shanahan et al., 2016), and lower pulse rates (Park et al., 2013; Song et al., 2014). Evidence also points to a positive correlation between time spent in nature and increased synthesis of cells that boost immune functioning (Kuo, 2017).

While these benefits apply to all age groups, some research has specifically examined the impacts of time in nature on children and teenagers. Nature exposure in childhood has been found to boost self-esteem and confidence (Hinds & O'Malley, 2019), as well as improve reasoning and observational skills (Pyle, 2002), memory and attention (Schutte et al., 2015), personal and social capabilities (Chawla, 2015; Hinds et al., 2019), test scores, self-discipline, and cognition (Kuo et al., 2019; Seltenrich, 2015). Wells and Evans (2003) found that among elementary-aged youth, children with high levels of nearby nature were more resilient to life stressors than those with little nearby nature. A study of young children in low-income English neighborhoods found that those with more parks, gardens, and green space had fewer emotional problems than their counterparts (Flouri et al., 2014). In a study of over 900,000 participants, researchers in Denmark correlated low levels of green space in a child's residential neighborhood with a 55% higher risk of developing mental health problems later in life (Engemann et al., 2019). Among older children, spending time in parks is associated with feelings of freedom and escape from adult control (Beery & Lekies, 2019), which supports a critical developmental phase in which adolescents develop their personal identity, including personal values, beliefs, and goals (Erikson, 1968; Berg et al., 2020). Further, youth exposure to nature has cascading effects into adulthood, promoting an affinity for nature (Kals et al., 1999), as well as pro-environmental attitudes and behavior (Otto & Pensini, 2017).

Given the profound benefits of nature engagement, and negative impacts of nature deficit, patterns of low engagement among youth of color represent a pressing equity concern. The present study aims to uncover these barriers to aid those who work with, and for, YOC to understand how best to support young people in realizing the myriad benefits of time in nature. As such, results of this research are relevant to parents and caretakers, community leaders and mentors, educators, decision-makers, city planners, leaders of nature-oriented organizations and nonprofit organizations, as well as youth of color themselves.

Methods

To identify major impediments to YOC spending more time engaging with nature, we conducted intensive, semi-structured interviews with community leaders (n = 13) and nature site leaders (n = 5) that work with YOC in New York State, Maryland, Virginia, and Washington, D.C. (Table 1). Leaders of nature-oriented organizations were key to informing our understanding, as they organize, implement, and evaluate nature-oriented programming with youth. Community leaders who work directly with young people offer valuable perspectives as the leaders develop close relationships with youth by taking on the responsibilities of mentors, educators, and role models. Interviewees were recruited using a convenience sampling method, through Cornell Cooperative Extension, Virginia Cooperative Extension, and local 4-H Youth Programs. Each participant held a leadership position at the time of the interview. Half of the interviewees were persons of color. Personal information about interviewees was excluded to preserve anonymity, as requested by some participants.

Interviews lasted one to two hours, and were conducted in-person by one of two research technicians, between October 2018 and December of 2019. Interviewees were asked a series of questions about the quality, accessibility, and usage patterns of nature sites, parks, and other green spaces in the communities they serve. They were also asked to share their observations and perspectives regarding the young people of color they serve, specifically the frequency and type of interaction of YOC with nature, as well as barriers and challenges to engagement they may face.

We analyzed the interview data with NVivo 12 qualitative data analysis software. NVivo is commonly used to organize interview data into thematic categories (nodes) and identify patterns in interview data (e.g., Oliphant et al., 2019; Ibes et al., 2018; Brockman et al., 2011; Moore et al., 2010). Initial coding themes included the 22 categories (tags) for “barriers to nature engagement,” developed by the Children & Nature Network (C&NN; 2020). These tags were developed by C&NN to help users identify relevant literature from their extensive research database, including over 600 references for “barriers to nature.” These categories offered a meaningful starting point for our coding schema, while allowing for additional themes and configurations to emerge from the data. Among the 22 tags were: “accessibility issues,” “device/technology/media/screen time use,” “family restrictions/attitudes/beliefs,” and “fear of nature.”

To ensure inter-coder reliability, interviews were independently coded by two members of the research team, then collaboratively reviewed to refine, discuss, and resolve discrepancies (Patton, 2002). We assigned new codes to emergent themes following an inductive coding protocol (Groshong et al., 2018). The final codes represent the full scope of themes and points revealed by the interviews (Brandt et al., 2018). In four instances, interview content was coded under more than one code in NVivo. Such double-coding serves to increase rigor in qualitative data collection (Ranney et al., 2015).

Table 1. Participant affiliation, location, and community details

Participant #	Position*	Affiliation	Location	% YOC (ages 6-24) in community
1	CL	Cornell Cooperative Extension of Broome County	Binghamton, NY	41.98%
2	CL	Children, Youth and Families at Risk (CyFaR) Program		
3	CL	Police Athletic League of Buffalo	Buffalo, NY	66.94%
4	CL	Tapestry Charter School		
5	NSL	Ithaca Children's Garden	Ithaca, NY	34.12%
6	CL	School 8 in the Rochester City School District	Rochester, NY	78.40%
7	CL	Rochester Institute of Technology University-Community Partnership		
8	CL	Quad A for Kids		
9	NSL	Irvine Nature Center	Baltimore area, MD**	49.02%
10	NSL	Free Forest School: D.C. Chapter	Washington, D.C.	74.64%
11	CL	Summer Youth Employment Program at the Youth Opportunities Office	Virginia Beach, VA	45.02%
12	CL	Virginia Cooperative Extension - Family Nutrition Program		
13	CL	Virginia Cooperative Extension		
14	NSL	Wildrock	Charlottesville, VA***	47.30%
15	CL	Virginia Cooperative Extension	Richmond, VA	48.88%
16	CL	Lewis Ginter Botanical Garden		
17	NSL	Lewis Ginter Botanical Garden		
18	CL	Blue Sky Fund		

* Community leader (CL) or Nature Site leader (NSL)

** Irvine Nature Center is located in Owings Mill, Baltimore County, Maryland, but serves the city of Baltimore and counties within the greater Baltimore area. Baltimore City's non-white youth make up 81.4% of all youth ages 5-24.

*** Wildrock is located in Crozet, Virginia, but primarily serves the city of Charlottesville and the greater Charlottesville area.

Results

The following section reports both quantitative and qualitative results of our interview content analysis. The number and percent of interviewees that mentioned each barrier are included as a metric for weighing the pervasiveness of each barrier. Representative quotes are provided to aid in the comprehension and interpretation of results.

Barriers to Nature Engagement

The coding process revealed 14 distinct categories of barriers to nature engagement by youth of color, which were aggregated into three representative, overarching categories: external, psychological, and socioeconomic (Table 2). All 18 interviewees mentioned at least one barrier within each of the three overarching categories. This final classification scheme represents a consolidated and reorganized version of the 22 “barriers” tags listed in the Children & Nature Network Research Library.

Table 2. Barriers to nature engagement: Categories and frequency of interviewee mentions (n=18)

Barrier Category		Frequency	Percent
<i>External</i>		<i>18</i>	<i>100%</i>
	Accessibility	16	88.9%
	Insufficient Programming, Facilities, or Staff	12	66.7%
	Degraded Environment	8	44.4%
	Scheduling	6	33.3%
	Weather	5	27.8%
	Policies	3	16.7%
	Health Concerns	1	5.6%
<i>Psychological</i>		<i>18</i>	<i>100%</i>
	Fear	16	88.9%
	Preferences	13	72.2%
	Aversion to Nature	7	38.9%
<i>Socioeconomic</i>		<i>18</i>	<i>100%</i>
	Social Exclusion	15	83.3%
	Lack of Resources	13	72.2%
	Lack of Exposure	11	61.1%
	Priorities	7	38.9%

External Barriers

External barriers are tangible impediments to nature engagement by YOC. These include lack of accessibility, degraded environments, insufficient programming/ facilities/ staff, scheduling issues, policy, weather, and health concerns.

"Accessibility" was the most cited external barrier (88.9%), and one of the two most frequently cited barriers of the 14 (alongside "fear"). These factors physically hinder access to nature, and include transportation issues, lack of nearby nature spaces and sites, park restrictions (e.g., gates or park hours), and restrictive development patterns (e.g., housing, land development, highways). The majority of interviewees (88.9%) mentioned lack of accessible, reliable, affordable transportation as a key obstacle.

Transportation is probably the biggest takeaway. That was something that every single mom said was a barrier, that it would always be a barrier, even if they get the information, even if they know what we're doing, they're not going to come if they can't get there (Participant 5, 2019).

It's really frustrating when you talk to somebody and they're like, "oh we think this is a great program." "Well, will you pay for the bus?" "No, we don't pay for transportation" (Participant 9, 2019).

Bus routes are becoming harder and harder, so that's not really accessible transportation sometimes. Everything goes like a spoke and wheel, downtown to the transit center and back out again. So sometimes these kids are on the busses for a very long time (Participant 7, 2018).

Inequitable and unsafe patterns of urban development, including a lack of nearby quality park spaces and dangerous streets, were also cited as key barriers.

For the most part, communities of color are cordoned off by wealthy affluent neighborhoods that have ready access to the park system (Participant 16, 2018).

Residents really saw the biggest barrier for using the space was traffic calming. It's surrounded by really busy streets... really really congested, lots of fast-moving cars coming through that area. There are ways that you could calm traffic, slow traffic down so that it's not scary for kids and parents with those kids to get to the park (Participant 7, 2018).

The second most frequently mentioned external barrier was "insufficient programming, facilities, or staff" (66.7%). These limitations include a lack of funding for programming (e.g., camping, field trips), insufficient staff or facilities to support programming, or inadequate training and expertise among staff or educators to guide nature engagement.

If I had all the money in the world, I'd be serving every single kid, but I don't (Participant 9, 2019).

Kids in the school system are not being engaged in the outdoors through the curriculum. So teachers are not well versed in how to utilize the outdoors as a teaching tool (Participant 16, 2018).

We're trying to show them how they can use their schoolyard and help them to overcome barriers to taking their kids outside. That can range from "there's bugs out there" to "oh, I might lose control of my class" or "I don't know enough about the outdoors to take the kids out" (Participant 1, 2018).

Several interviewees (44.4%) felt park use was deterred by parks and green spaces as "degraded environments" due to uncleanness, litter, graffiti, broken glass, and other hazards. One participant stated, "there's shattered bottles, cigarette butts all over. I don't know if I've ever really seen kids playing in [the park]" (Participant 6, 2018).

Some respondents also cited local policy as a barrier, specifically regulatory, licensure, liability, permitting, and use limitations. One participant noted, "around green spaces there's a lot of vacant land, there's very poor policy around use of that land except for limited garden permits" (Participant 15, 2018). Also mentioned were complexities of "scheduling" time for nature activities, "weather" not being amenable to time outdoors, and "health concerns," specifically seasonal allergies.

Psychological Barriers

These barriers reflect the psychological states of a person (e.g., opinions, attitudes, emotions) that may hinder engagement with nature. These include fear (of injury, other people, wildlife), aversions to nature or natural elements, and preferences for non-nature oriented activities. The most cited overall barrier (tied with "accessibility"), and most mentioned psychological barrier to engagement of YOC in nature, was "fear" (88.9%). This includes fears stemming from an individual, parents, guardians, or caregivers about strangers, peers, and authority figures, and dangers to safety when engaging with nature. Fear of crime-related activities, racial profiling and harassment by law enforcement, or others, were also noted, particularly in the context of public parks.

When it comes to parks and that kind of thing, they and their families fear crime. "Is somebody going to be out there shooting? Am I going to find drug paraphernalia out there? [Are] there illegal activities going on?" Behaviors of others such as people with mental illnesses—"Are there homeless people in the park that may interact with my child?" (Participant 12, 2018).

Unfortunately, we live in a time where young people—young men of color in particular—have to be mindful of the fact that you aren't viewed quite the way others are viewed. There is more of a chance of you being questioned or being harassed, and that may deter you from even engaging in the space at all (Participant 8, 2018).

The police look at them and say, "Well what are you doing in this park that's seventy five percent or eighty percent white? Why are you in this

neighborhood? You must be selling drugs, you must be looking to do something or be somewhere where you shouldn't be" (Participant 2, 2018).

Fear of nature, directly, was also widely mentioned by interviewees. This includes fear of wildlife (e.g., insects, animals) and natural features (e.g., rough terrain). Interviewees described that urban youth may be fearful of wild animals due to lack of familiarity with nature, personal or secondhand accounts of adverse experiences in nature, or misperceptions of animal habitat and behavior.

When people from an urban environment come out here, it can be intimidating. There's "oh, my gosh, is there a bear out here?" Well of course there's not a bear out here, but they don't know that (Participant 9, 2019).

The final two psychological barriers revealed by the data include "preferences" (72.2%), and "aversion to nature" (38.9%). "Preferences" reflect a lack of preferred features, uses, or amenities in parks or natural areas, a lack of interest in nature-based activities, or preferences for other activities (e.g., athletics, device use, hobbies). Technology was frequently mentioned.

There's a generational shift with the rise of technology and it's shifting how young people engage with the outdoors. And it's palpable. Kids are just not going outside as much. I think they're more tuned into their social networks through their electronic devices rather than going out and kicking it and hanging out with each other outside (Participant 16, 2018).

Several interviewees reported that youth lack interest in visiting parks or nature sites, finding them "boring," and lacking facilities and amenities that would attract them. One participant noted, "parks are developed by adults... there's nothing for the girls in my neighborhood to go to the park for" (Participant 13, 2018).

We have a survey that happens through one of our projects here on campus called TIPS, where they interview community members about their view of the neighborhood, and often some of the concern is, not enough for the kids to do, not enough constructive things and play spaces for kids to be outside that feel safe (Participant 7, 2018).

The category "aversion to nature," reflects an aversion to flora and fauna, hot or cold weather, getting dirty, physical exertion, or the unknown.

Being away from some of their comforts: a bathroom, being able to take a shower, meals—some of those changes might seem a little less attractive to them. And I think the idea of carrying a heavy backpack and walking up a mountain—just the physicality of it—not all of the kids that come into our program are used to that sort of physical activity (Participant 18, 2018).

Socioeconomic Barriers

Socioeconomic barriers are situated at the intersection of social and economic factors. These include feelings of being socially excluded due to one's race or

ethnicity, a lack of resources to engage with nature (e.g., time, money, information, knowledge), a lack of exposure to nature, and competing priorities. The most mentioned socioeconomic barriers were social exclusion (83.3%), lack of resources (72.2%), lack of exposure (61.1%), and competing priorities (38.9%). Social exclusion reflects feelings of being unwelcomed, displaced, or unaccepted in nature spaces.

I think the primary impediments have to do with racism. Many spaces were not available to people of color in Charlottesville. Parks were segregated. I think the legacy of that is that people do not have a sense of belonging in some spaces even to this day. We still have parks with confederate statues that were put up to intimidate people of color (Participant 14, 2019).

They don't live in a community where they think about being in nature. "I don't kayak, we don't do that." So it's just perception of, "my family, we don't do that" (Participant 11, 2018).

Interviews also noted that a lack of representation may lead youth to feel that nature engagement is not for them. "Whenever we see representation, we see a lot more engagement with communities of color. The fact that the vast majority of our directors are white, I think, is a limitation of our organization" (Participant 10, 2019).

Language barriers were cited as another limitation.

A lot of the kids that I work with, they have to interpret for [their] parents, because their parents can't speak English. So if a Spanish speaker can't understand it, or can't read or write it, they have to rely on their child to read and write it for them, are they going to take their kids to the park? Probably not, because it's intimidating for them (Participant 12, 2018).

A "lack of resources" was cited as another critical barrier, because without these resources, youth are financially or physically unable to participate in nature-related programming or lack critical information about nature-related topics or nearby opportunities.

Many parents are reluctant to send their children to a field trip because they're going to get dirty. They might have only that pair of shoes, or that pair of pants, or that outfit (Participant 5, 2019).

When you stay over in the dorms at the New York State Fair, you have to bring a set of sheets, a pillow. Spend money. Those things are impossible. I remember this one young lady telling me that they didn't have sheets. They sleep on the couch and take turns who sleeps on the couch, who sleeps on the floor (Participant 2, 2018).

Lot of kids from the western part of this city don't have access to canoes. Like say for example if Munden Point had a rental, they could rent canoes and that sort of thing, I'm sure that they would (Participant 12, 2018).

Just having it there is not necessarily going to draw people, because they don't necessarily know that it's happening. So finding the ways to connect with members of that community (Participant 10, 2019).

Other interviewees mentioned that competing responsibilities often take priority over spending time in nature, such as caring for younger siblings or working part-time jobs.

A lot of the kids I work with are in charge of their younger siblings, so they are the sole providers after school for their siblings. And sometimes that interferes with whether or not they can come to a program (Participant 1, 2018).

A "lack of exposure" to nature and natural settings was another key barrier.

It's exposure. It's "what I grew up with." It's "what I was comfortable with." I think a lot of our kids would enjoy it more if they had that exposure and actually knew about it. If they get it from a young age I think it would be a very different situation. But not getting it, I think they just don't understand how fun it can be, how educational it can be (Participant 7, 2018).

Echoing this sentiment, another interviewee noted, "If you wait until you're in high school or middle school to try to expose [youth to nature], it's too late" (Participant 13, 2018).

Interviewees highlighted that among some YOC, spending time in nature is low on their list of priorities, particularly young people from a lower socioeconomic strata.

A lot of our family units are struggling day-to-day with just the basic necessities of food for their families, money, paying their bills, going to work, finding childcare, having those older siblings take care of the younger siblings, being evicted, not having money to pay their electric. And so all of those things that are stacked up against them, they are not looking to take their family hiking, or even access our local parks. It's not a priority (Participant 1, 2018).

Discussion

This study developed a nuanced and organized description of barriers to nature engagement by youth of color, as a first step towards overcoming these barriers and extending the benefits of nature exposure to this population. The results reveal a multifaceted, and interconnected mix of external, psychological, and socioeconomic barriers. The most frequently mentioned barriers were accessibility, fear, and social exclusion, followed by preferences, lack of resources, insufficient programming/facilities/staff, and lack of nature exposure. These findings are

supported by the existing literature, but provide added dimension and nuance that enhances our understanding of the barriers to nature engagement by youth of color.

Accessibility

Supporting our results, the literature highlights transportation as a key barrier to nature access by persons of color (Perry et al., 2015; Xiao et al., 2016). For example, those dependent on public transportation are inhibited from visiting parks due to the amount of time they must devote to travelling by bus, or the infrequency with which busses run (Byrne, 2012). Xiao and colleagues (2016) summarized three key barriers to use of transportation as comfort and safety, expense, and accessibility. Our results suggest obstacles to use include restrictive development patterns (housing, land development, highways), and a lack of sufficient, safe, accessible nearby natural areas and sites in communities of color.

Fear

Fear, one of the two top barriers found in our study, is also mentioned in the literature. In one study, Mexican youth in Chicago felt parks were unsafe and were least likely to visit parks that require crossing gang lines (Stodolska et al., 2012). In a study of 107 households in Newark, New Jersey, over half of the participants reported being fearful of simply venturing outside their homes, due to hearing gunshots and seeing drug deals in their neighborhood (Echeverria et al., 2014). Particularly among urban residents with little exposure to the natural world, it is common to feel fear and anxiety toward nature itself (Baran et al., 2013). Parents may also limit young people's time in parks or other green space, based on fears of strangers, other teenagers, traffic, or the presence of drugs or firearms (Brockman et al., 2011). Our findings also highlight the limiting fears of wildlife, the unknown in nature, and the potential for accidents. Results also reveal the role of caregivers, educators, and other mentors, who have the power to expand nature exposure by YOC, but may be limited by safety concerns and their own lack of familiarity with or discomfort in nature.

Social Exclusion

Results support literature that strongly suggest perceptions of social exclusion limit YOC nature engagement. Park visitation by Latinx community members has been shown to be deterred by the absence of bi-lingual signage (Byrne, 2012), a lack of diverse park staff and leadership (Hong & Anderson, 2006), and perceptions that white users are offended by their "recreational style"; namely, playing music, visiting in large groups, and being "boisterous." Racially charged encounters with other park-goers have particularly excluded and scrutinized Black Americans in outdoor spaces (Maslin Nar, 2020; Holson, 2018). Within mainstream depictions, researchers and activists argue there is a lack of visibility and recognition of people of color as park staff, environmental stewards/activists, or simply enjoying outdoor experiences (Rowland-Shea & Doshi, 2020; Taylor, 2014; Scott & Lee, 2018). Social exclusion against Black youth is particularly pervasive, due to self or parental awareness of how they are perceived and profiled by others. Examining three case studies, Pickney and colleagues (2018) demonstrate how socially excluding Black youth from these spaces has led to a loss of innocence, freedom, and life.

Interviewees highlighted that for some, police presence creates a feeling of safety, while others perceive the police as a potential threat (Wilder Bonner, 2014). Black American men are twice as likely to be victims of fatal shootings by the police, compared to white American men (Edwards et al., 2019; Wertz et al., 2020). Black Americans are most likely to perceive police in their parks or neighborhoods as intrusive, unnecessary, or aggressive (Gobster, 2002). The results of the present study contribute additional understanding to these findings by highlighting the influence of positive or negative cultural, familial, and peer attitudes towards nature on YOC nature engagement. It is also important to note here that barriers to nature engagement may intersect and interact with each other; for example, fear of being profiled by police or other park visitors and fear of crime in poor neighborhoods comprise both psychological and socioeconomic barriers.

Preferences

Supporting our results, Oliphant and colleagues (2019) found that people of color prefer a mix of active (e.g., ballfields, tennis courts) and passive (lawns, benches) park features. Yet, some research finds Black communities have fewer sports areas, parks, and green spaces than white communities (Powell et al., 2004), and in some communities, parks accessible to Black and Latinx communities are smaller with fewer amenities than those in more affluent, white neighborhoods (Weiss et al., 2011). Suminski and colleagues (2012) found that parks in racial/ethnic minority neighborhoods had lower quality features and amenities, even after controlling for park size and median income. A Baltimore, Maryland study found the higher the percentage of residents of color, the poorer the quality (e.g., condition, cleanliness) of local parks (Engelberg et al., 2016). Our results reveal additional dimensions of this category of barriers, namely a lack of interest in nature-based activities among some youth, or preferences for other activities, such as device use, hobbies, and sports.

Lack of Resources

Our findings also suggest a scarcity of resources to participate in nature-based activities (e.g., money, time, information) limits YOC nature engagement. Similarly, community leaders in Hong and Anderson's (2006) study stated that the biggest factor preventing young Latinx from visiting a local nature center was a lack of familiarity with it, given that they had never heard of or visited the site. A similar sentiment was expressed by Latinx regarding a nearby, but mostly unfamiliar, urban national park in Los Angeles (Byrne, 2012). Our findings also suggest that "time" is a major limiting factor, particularly given competing priorities (school, work, caring for siblings), and a lack of appealing, convenient, safe, and welcoming nature spaces and opportunities.

It is clear that organizations eager to support YOC in nature engagement are severely limited by a lack of funding for staff, programming, and facilities. Also limiting is the lack of experience, skill, and training among leadership, educators, and caregivers in guiding youth in nature-based activities.

Exposure

Our interviewees also stressed the importance of exposing youth to nature, as often and as young as possible, and warned of the pattern of reduced recess in schools and daycare centers. Nature experiences, particularly with other young people, family, and mentors, help build a foundation of comfort in and affinity for natural spaces (Kals et al., 1999), and help develop pro-environmental attitudes and environmental behavior that extend into adulthood (Cheng & Monroe, 2012; Collado et al., 2017; Asah et al., 2018; Evans et al., 2018).

Increasing Nature Engagement by Youth of Color

Supported by, and advancing the existing literature, the results of this study identify some of the most urgent, potent, and potentially fruitful points of consideration when it comes to supporting YOC in nature engagement. With respect to accessibility, interviewees highlighted the need for safe, efficient, convenient transportation to parks, nature sites, and nature-oriented programming. They also noted the need for green space in or near diverse neighborhoods, accessible by safe and comfortable streets, paths, and sidewalks. Accessibility solutions may include traffic calming measures, the development of new green spaces, or pop-up nature opportunities in communities of color. Smart urban development can also aid in increasing safety and access to green space. For example, New Urbanist developments emphasize walkable streets, mixed-use development, and accessible public space (CNU, 2021). Racist urban policies that have led to disinvestment in minority communities, segregation, and redlining must be explicitly addressed if urban planning and design solutions are to succeed in increasing access and a sense of belonging in green space by YOC. Legislation at the federal level is also essential, for example the Parks, Jobs, and Equity Act, designed to “support park development and delivery of recreation services, and in so doing, help create or preserve jobs, and provide economic stimulus in communities impacted by the COVID-19 pandemic” (Parks, Jobs, and Equity Act, 2021). To address the barriers of fear and social exclusion, interviewees noted the need to provide safe, clean, well-maintained nature spaces in communities of color, to which caregivers are comfortable bringing their children. There was also a call to address racial profiling (by police and other park users) and racism in all its dimensions, so youth of color feel safe, welcomed, and comfortable in nature spaces. Most importantly, any efforts must engage neighborhood residents to ensure initiatives are meeting their real, expressed needs.

Interviewees also highlighted the need to provide amenities and programming preferred and valued by youth of color, particularly to counter the lure of technology. YOC need certain resources to access and utilize nature spaces. This, again, underscores the need for quality, convenient transportation, but also information about nature opportunities, exposure to nature experiences (visits to nature sites, parks), and the necessary equipment to participate (e.g., kayaks, camping equipment, specialized clothing). Interviewees highlighted the need for increased funding for staff, programming, and facilities to support YOC in nature-oriented activities. The reach of these nature-oriented organizations is, across the board, limited by funding.

It was also noted that lack of exposure to nature limited subsequent engagement with nature by YOC. It was suggested that staff, educators, and caretakers could greatly increase nature exposure if given the proper training and experience guiding youth outdoors or in nature centers. Early nature exposure is key. Further, interviewees felt that frequent, positive nature experiences would encourage more of the same, with the potential to shift familial, neighborhood, and cultural behaviors and perceptions regarding “who” is welcome and “belongs” in natural sites, parks, and other green spaces.

Limitations and Future Research

The findings of this research are limited in several respects. The generalizability and precision of the results should be carefully interpreted given the relatively small sample size ($n = 18$), and the diversity of geographic, cultural, and urban contexts in which our interviewee participants work. Our inclusion of substantive interview quotes above sought to aid in the interpretation of the results and mitigate this limitation. In addition, the classification of reported barriers represents one of several possible organizational approaches. Further, not all barriers were mutually exclusive, so could have been classified in multiple ways. Nonetheless, we determined our approach to be the best for the results of this study, and a useful starting point for understanding the overarching themes, diversity, and pervasiveness of barriers to nature engagement by YOC. Collecting interview data directly from youth of color was beyond the scope of this work, but would represent a valuable complement to the results of this study. Future researchers may also consider mapping access to and use of nature sites by youth of color and expanding interview sites to cities in other U.S. regions.

Conclusion

With this study, we seek to begin a meaningful dialogue about YOC and the barriers that lead to their inequitable visitation of parks, green spaces, and nature sites. The implications of these barriers, and how they impact nature participation among YOC, are dire. Nature engagement has been shown to have numerous benefits to overall well-being: nurturing creativity, providing spaces for solitude and self-reflection, and reducing tension and stress levels (Louv, 2005; Frumkin et al., 2017; Kondo et al., 2018; Taverno Ross & Francis, 2016). Meanwhile a growing body of literature indicates that a persistent nature deficit among youth has negative implications for mental and physical health (Louv, 2005; Bratman et al., 2015; Brown et al., 2013; Gladwell, 2012). Reflecting on the three main themes that emerged from this research—external, psychological, and socioeconomic barriers—we can understand YOC barriers to nature engagement in a more nuanced manner, facilitating an understanding of the changes that are needed, from the individual to the structural. Implications that call for policy changes and societal shifts towards justice, diversity, equity, and inclusion can ameliorate the current state of nature deficiency not only among youth in communities of color, but for all youth.

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