

# CHILDREN, YOUTH ENVIRONMENTS

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# CHILDREN, YOUTH ENVIRONMENTS



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Cover image from the field report *Forest Fridays: Leveraging Land Manager-Educator Partnerships to Overcome Barriers for Outdoor Environmental Education* by Jack Burnett and Catrin Edgeley



We are delighted to announce that *Children Youth and Environments* has signed a new deal with University of Cincinnati Press (<https://ucincinnati.uc.edu>). Our backlist will continue to be available through JSTOR.

The University of Cincinnati Press is committed to publishing rigorous, peer-reviewed, leading scholarship accessibly to stimulate dialog between the academy, public intellectuals and lay practitioners. The Press works with authors and editors to erase disciplinary to address common problems in our global community. UC Press looks for projects across the humanities, social sciences and STEM fields focusing on social justice and community engagement.

Inside this issue, you will find diverse scholarly work that spans across the globe. First, Schoeppich and co-authors critically review 14 studies focusing on children's participation in playground creation to reveal gaps, inconsistencies and benefits associated with child participation. Next, we arrive in a small rural town in Upstate New York where Andrews investigated a 7-year-old girl's conceptions of what counts as science in an everyday context. Expanding our regional focus, we visit New York state as well as, Maryland, Virginia, and Washington D.C. where Ibes and co-authors conduct intensive semi-structured interviews of local community leaders and leaders of nature-oriented organizations to enhance understanding of the barriers to nature engagement by YOC. Crossing the globe, we arrive in Iran where Manouchehri and co-authors investigated schoolchildren's views of favorable and unfavorable attributes of their neighborhood environments. Heading South, we arrive in Porto Alegre in Brazil where Rosa and co-authors interviewed healthcare experts to identify interventions that would respond to children's needs, and architecture and mental health experts assessed their potential to improve children's PWB to reveal that the hospital environment may stimulate all components of PWB, especially environmental mastery, personal growth, and self-acceptance. At our final stop, we head back the United States where Pic and Han explored peer conflict among preschoolers during indoor and outdoor free play in a nature-based preschool to reveal that outdoor nature environment seems to provide children more meaningful conflict situations around play ideas rather than the mere possession of material. A position paper by Gecker and co-authors helps us with understanding youth civic engagement in the aftermath of a mass shooting in Parkland. The issue continues with three reports from the field. First, Burnett and Edgeley describe ways to overcome barriers to outdoor education. Next, Tarrío describes the interactions between children and pocket parks. Then, Gravil and co-authors describe the use of citizen science and technology to connect preschool classrooms at two university-based programs. We wrap this issue with two book reviews: Chawla's review of *The Necessity of Urban Green Space for Children's Optimal Development: A Discussion Paper* by Suchitra Sugar, and Maclure's review of *The Youngest Citizens: Children's Rights in Latin America*, by Amy Risley. Happy reading!

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# Children's Right to Participate in Playground Development: A Critical Review

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## **Abstract**

*Child-friendly cities include playgrounds that can promote healthy childhoods. Children have a right to participate in the planning, construction, evaluation and management of playgrounds intended for their use. This critical review examines 14 peer-reviewed studies published from 2004–2020 focusing on children's participation in playground creation. After a search across several multidisciplinary databases, we evaluated the selected studies using the LEGEND protocol. Themes derived from the reviewed studies included children's playground preferences and participatory experiences, as well as adult perceptions of youth involvement. Our analysis exposed gaps, inconsistencies and benefits associated with child participation. We offer recommendations for future engagement of children in playground development.*

**Keywords:** children's participation, landscape architecture, playgrounds, urban design

## **Introduction**

The well-being of children is one important indicator of a healthy habitat and a democratic society (Korean Committee for UNICEF, 2018). In democracies, the political process is intended to empower all citizens regardless of age or developmental level. Meaningful participation requires that power is shared between governmental leaders, policymakers, and those living in the community. In this context, child participation is defined as their active involvement in collaborative decision-making about issues that directly affect the everyday life of young people (Derr et al., 2018; Hart, 1992).

UNICEF projects that 70% of all children will be living in urban centers by the middle of this century. The Child Friendly Cities Initiative is a UNICEF-led program that supports municipal governments in realizing the rights of children at the local level, building on the foundation established by the UN Convention on the Rights of the Child (Korean Committee for UNICEF, 2018; UN General Assembly, 1989). This program encourages stakeholders including civil society organizations, the private sector, academia, government, media, and children themselves to establish a network with the goal of making their cities and communities more child-friendly.

There are a multitude of spaces that children inhabit, including those that were specifically designed to be used by children as well as more unconventional spaces that children feel afford them opportunities to play (Jack, 2010; Koller & Farley, 2019). One of the spaces that children frequent are playgrounds. Playgrounds are an essential element of any child-friendly community and the inclusion of children in playground design and development allows them to exercise their participatory rights as well as their right to play.

## **Purpose**

The primary purpose of this research was to engage in a critical review of literature focusing on children's participation during the playground development process. Systematic analysis of the findings from peer-reviewed studies yielded key themes related to the planning, construction, and evaluation of playgrounds. The following discussion explores children's participation in the creation of playgrounds, as well as gaps and inconsistencies in the research. It also provides recommendations for the future and advocates for ongoing collaboration between adults and children. This can help guide community leaders, educators, city planners, and landscape architects who wish to engage children in these processes.

## **Historical Perspectives on Playground Design**

In North America, playgrounds have been prominent features of children's outdoor spaces since the 1800s (Frost, 1992; Tai et al., 2006; Woolley et al., 2006). The first formal playground was constructed in Salem, Massachusetts in 1821; it was initially developed as an outdoor gymnasium to encourage physical activity, and imitated the design characteristics of indoor exercise areas. This type of outdoor gymnasium was discontinued due to lack of popularity, but it served as the foundation for a playground movement that grew exponentially over the next century, when rudimentary fixed play apparatuses began to emerge. They were usually built on publicly owned land allocated by the government specifically for this

purpose (Frost, 1992). Playground equipment included swings, slides, merry-go-rounds, and seesaws designed for children under the age of ten, and adults often supervised these spaces with the goal of limiting children's exposure to negative societal influences and keeping them off the streets (Woolley et al., 2006). The number of playgrounds expanded significantly until the First World War, when many of the materials used to create these structures were repurposed for the war effort.

Later, the end of the Second World War gave way to "the most innovative [period] in playground development since the turn of the century" (Frost, 1992, p. 125). New theme-based equipment, including spaceship sculptures and fantasy creatures, were integrated into outdoor environments. Adventure playgrounds also grew in popularity during the post-war period (Rorabaugh, 2019). The design of these spaces varied depending on the environment but often included loose parts and other natural materials. They provided open-ended opportunities for children to engage in social agency. These playgrounds have diminished significantly over the past few decades due to a plethora of factors including enhanced health and safety regulations, limited funding and increased focus on academic achievement (Rorabaugh, 2019).

Modern-day playgrounds have been characterized by the standardization of artificial features. "These spaces can be termed 'KFC' playgrounds consisting of a Kit of play equipment, being enclosed by a Fence and Carpeted in rubber surfacing: hence 'Kit, Fence and Carpet' playgrounds" (Woolley et al., 2006, p. 501). They are generally perceived as safe areas, but they have also been criticized for undermining the important elements of risky play, which some view as fundamental to healthy development (Sandseter, 2009).

### **Stages of Playground Development**

Contemporary playground development can be classified into four main stages: planning, construction, evaluation, and management (Table 1; Olsen, 2015). These stages have guided the work of professional community developers and city planners, and may be adapted depending on contextual factors including geographical location, government safety regulations, and the individuals involved in creating and managing these spaces.

**Table 1. Stages of playground development**

Stages of Playground Creation	Key Components of Playground Stages
Planning Stage	<ul style="list-style-type: none"> <li>• Stakeholders, building site, and community data are gathered</li> <li>• Overarching goals for the space are delineated</li> <li>• Conceptual ideas for the playground are generated and documented in visual format</li> </ul>
Construction Stage	<ul style="list-style-type: none"> <li>• Play equipment and other design features are installed in the environment</li> <li>• Assistance is obtained from professionals in regard to safety regulations</li> </ul>
Evaluation Stage	<ul style="list-style-type: none"> <li>• Ensure that equipment is installed properly</li> <li>• Project goals are reassessed</li> <li>• Feedback is obtained from playground users</li> </ul>
Management Stage	<ul style="list-style-type: none"> <li>• Park managers and playground users collaborate on sustainability</li> </ul>

### Theoretical Framework

Societal perceptions of children and childhood have changed dramatically in recent years. With the emergence of the sociology of childhood and a newfound focus on children's rights, childhood is now acknowledged as a complex and evolving process. Childhood is known to be influenced by a variety of contextual factors including culture, ethnicity, ability, gender, and socio-economic status; these factors are in constant flux and are influenced by the power dynamics between adults and children (James & James, 2004; UN General Assembly, 1989). The sociology of childhood frames children as competent individuals who are knowledgeable about their own experiences, and scholars working in this field argue that children should participate in decision-making processes, with regard to issues that concern their everyday life (James & James, 2004; Mayall, 2000). Meaningful collaborations between adults and children have the potential to benefit society and are aligned with children's rights (Hart, 1992; UN General Assembly, 1989). Integrating children within the dominant discourse enables them to engage as active citizens.

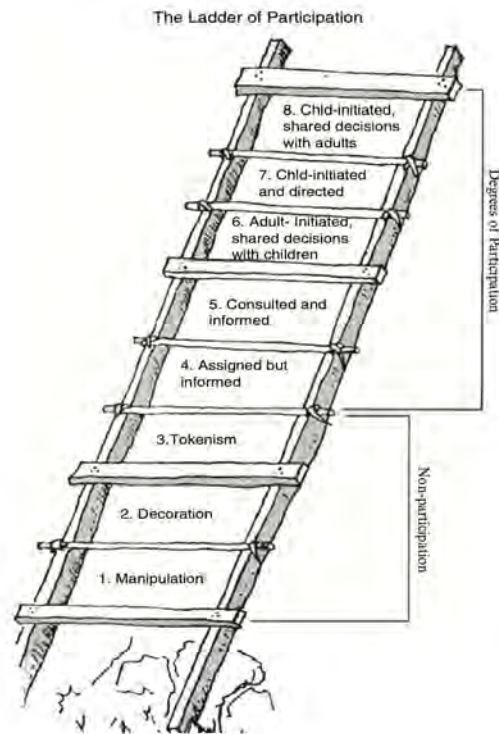
### Roger Hart's Ladder of Participation

In his seminal work, *Children's Participation: From Tokenism to Citizenship*, Roger Hart defined participation as "the process of sharing decisions which affect one's life and the life of the community in which one lives" (Hart, 1992, p. 5). Hart's Ladder of Young People's Participation enables assessment of the quality of child participation when working alongside adults. As shown in Figure 1, it is divided into eight separate stages, denoting various degrees of participation. The three lowest rungs, including manipulation, decoration and tokenism are classified as non-participation. These stages are characterized by a lack of access to information, as well as limited opportunities for children to generate their own perspectives. The next five rungs of the ladder are considered forms of genuine participation: children are able to gain a comprehensive understanding of issues, engage in active

consultation, and make informed decisions. The highest level of child participation, which Hart considered the optimal form, involves child-initiated decisions that are shared with adults.

In the following discussion, Hart's Ladder serves as a complementary tool that supports the theoretical framework and allows for comparisons of the quality of child participation across studies.

**Figure 1. Ladder of Participation (Hart, 2008)**



## Research Methods

### Critical Literature Review

A critical literature review involves the collection and analysis of original studies published on a specific topic. The scope of critical reviews is typically broad, which allows the researcher to explore the topic and select articles representative of the literature (Paré et al., 2015). These reviews can include quantitative, qualitative and mixed methods research, thereby capturing a variety of methodologies (Xiao & Watson, 2019). Critical reviews promote innovative ways of interpreting data and can expose misconceptions or inconsistencies in the literature. Based on emerging descriptive analyses or interpretations, they can provide guidance for future research (Grant & Booth, 2009). These features align with the research objectives of this project: to advocate for child participation rights, expose the realities of playground development, and generate recommendations for designing future playgrounds in collaboration with children.

### **Search Strategy**

We searched five databases for literature published within the past 16 years: GeoBase: geography, ecology and earth sciences; Scopus: health sciences, social sciences and physical sciences; PsycINFO: psychology; Education Resources Information Center [ERIC]: educational-based research; and the Avery Index to Architectural Periodicals: architectural design and landscape architecture.

We compiled a list of keywords with the assistance of a university librarian trained in search methodologies. Search terms included: *child\** (children), *user*, *student*, *co-researcher*, *community*, *design*, *planning*, *management*, *evaluation*, *assessment*, *development*, *construction*, *renovation*, *retrofit*, *renewal*, *participation*, *involvement*, *inclusion*, *perspective*, *opinion*, *attachment*, *playground*, *green space*, *landscaping*, *architecture*, *play space*, *community park* and *public park*.

### **Inclusion Criteria**

The primary question that guided our research was: What is the role of children within the playground development process? Our three sub-questions were: 1) What are children's preferences for playground design? 2) What factors may influence the quality of child participation during the creation of playgrounds? 3) What methods are used to engage children within these collaborative processes? These questions represent the main areas examined in the research. In particular, we focused on the subjective experiences of participants as reported through a range of methods (Table 2).

The initial search focused on original peer-reviewed studies published between January 2004 and August 2020. Relevant articles presented research involving qualitative, quantitative, and mixed methods; art-based research; and community-based participatory research. In accordance with the objectives of this critical review, we only included studies in analyses if they incorporated children (aged 2–12 years) in some capacity during the planning, construction, evaluation, or management of playground spaces.

Our study defined playgrounds as “settings that typically include equipment specifically designed and built for children. These environments are generally available to the public, and found in public parks, schools, and pre-schools” (Moore & Lynch, 2015, p. 332). They can be located in urban, suburban or rural communities. Because the focus here was on the playground development process, the completion of a playground was not required for a study to be included in our analyses.

### **Exclusion Criteria**

We excluded abstracts, conference papers, books, systematic reviews, and gray literature. Moreover, studies evaluating individual playground components such as surface materials, play equipment, and fencing were not eligible for inclusion in this study, nor were studies exploring government policy and legal requirements in relation to the installation of playground spaces, or studies that focused on how playground design affected children's play.

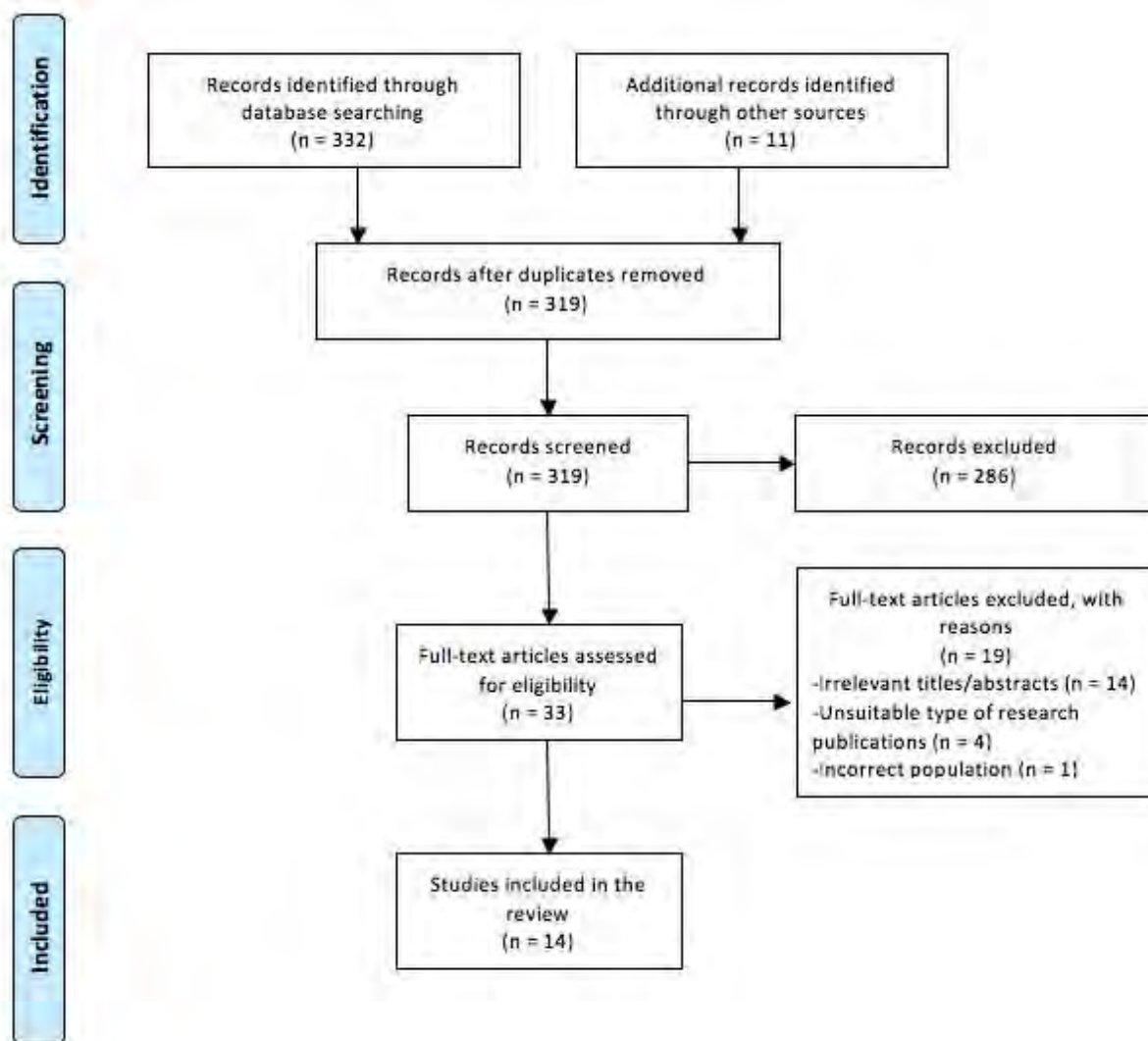
**Table 2. Inclusion Criteria**

Primary Research Question	<ul style="list-style-type: none"> <li>• What is the role of children within the playground development process?</li> </ul>
Sub-Questions	<ul style="list-style-type: none"> <li>• What are children's preferences for playground design?</li> <li>• What factors may influence the quality of child participation during the creation of playgrounds?</li> <li>• What methods are used to engage children within these collaborative processes?</li> </ul>
Population	<ul style="list-style-type: none"> <li>• Children (2-12 years old)</li> <li>• Any adults that worked in collaboration with the children</li> </ul>
Intervention	<ul style="list-style-type: none"> <li>• Study must have focused on children's participation during at least one stage of playground development</li> <li>• Project did not have to result in the actual creation of a playground</li> </ul>
Outcomes	<ul style="list-style-type: none"> <li>• Subjective experiences of participants (children and adults) as reported through a range of methods</li> </ul>
Study Design	<ul style="list-style-type: none"> <li>• Qualitative research</li> <li>• Quantitative research</li> <li>• Mixed methods research</li> <li>• Arts-based research</li> <li>• Community-based research</li> </ul>
Setting	<ul style="list-style-type: none"> <li>• Urban, suburban or rural communities</li> </ul>

**Data Extraction**

We searched the literature on a monthly basis from May 2019 to August 2020. In total, 332 studies emerged from electronic searches, with an additional 11 sources found through hand searching. We imported all citations into *Mendeley* software, which we used to identify and remove 24 duplicate studies (Francavilla, 2018). A final screening yielded 33 studies that were reviewed by the researchers and assessed for eligibility in accordance with inclusion criteria. The data extraction process, Preferred Reporting Item for Systematic Reviews and Meta-Analyses (PRISMA), is represented in Figure 2.

Figure 2. PRISMA Flow Diagram (Moher et al., 2009)



### Assessment Tools

Following evaluation of the 33 studies, we excluded 19 due to irrelevant titles/abstracts, unsuitable type of research publications, or incorrect population. We evaluated the remaining 14 studies using Let Evidence Guide Every New Decision (LEGEND), an instrument that was originally developed by professionals at Cincinnati Children's Hospital Medical Center (Clark et al., 2009). This tool was selected in collaboration with the Early Childhood Studies librarian at Ryerson University who had valuable knowledge and experience that was relevant to the process of conducting a critical literature review.

The primary purpose of LEGEND is to create "a set of tools to guide standardized quality processes using language friendly to multiple disciplines" (Clark et al., 2009, p. 1054). It has been applied in many systematic reviews (e.g., Giambra et al., 2014; Goldschneider et al., 2014; McGinagle et al., 2019). "LEGEND's algorithm

provides decision points to determine the study design of the article, allowing the user, through guided questions, to find the most appropriate evidence appraisal form by study design and domain" (Clark et al., 2009, p. 1057). The tool is used to assess the overall quality of an article: good quality, lesser quality, or not applicable or credible (Clark et al., 2009). Using this tool, we classified all 14 studies discussed below as good quality studies.

## **Findings and Discussion**

This section begins with an overview of the studies, specifically with regard to playground and participant characteristics. Next, we organize the findings that were generated from these studies into three main themes and analyze them in accordance with the theoretical framework.

### **Descriptions of the Studies**

#### ***Playground Characteristics***

Seven of the fourteen studies examined a playground that had been created at the time of publication (Khan et al., 2020; Kreutz et al., 2018; Malone, 2013; Norðdahl & Einarsdóttir, 2015; Özdemir, 2019; Pawlowski et al., 2019; Yates & Oates, 2019). These installations were located at schools (n=4) and public parks (n=3). Additionally, four studies were conducted with the intention of using the research findings for the development of a playground but at the time of publication, it was unclear if the physical playground structure had been built (Nah & Lee, 2016; Pearson & Howe, 2017; Polyzou et al., 2017; Menconi & Grohmann, 2018). All four of these playgrounds were intended to be constructed on school grounds (n=4), with the exception of one playground that was slated to be developed at a childcare center (n=1). The remaining three studies did not result in the completion of a playground (Bosco & Joassart-Marcelli, 2015; Lozanovska & Xu, 2013; Xu & Izadpanahi, 2016).

#### ***Participant Characteristics***

Studies engaged preschool and school-aged children aged 5–13 years. Five achieved a gender balance (Khan et al., 2020; Malone, 2013; Menconi & Grohmann, 2018; Norðdahl & Einarsdóttir, 2015; Pearson & Howe, 2017), and one had a significant gender divide (Pawlowski et al., 2019). With regard to the remaining studies, we assumed that children of all genders were included unless otherwise stated. Two studies indicated that children with disabilities might have been included but the degree of their participation was not explicit (Menconi & Grohmann, 2018; Pearson & Howe, 2017). There was also a lack of clarity regarding the races of child participants who were involved in the studies, but based on the locations of two studies, we assumed that most participants were people of color (Khan et al., 2020; Nah & Lee, 2016). Three studies included children living in low-income neighborhoods (Bosco & Joassart-Marcelli, 2015; Pawlowski et al., 2019; Yates & Oates, 2019). In conclusion, the majority of participants were wealthy, school-aged children, of any gender, who were typically developing and living in the Global North.

**Exclusion of Children from the Participatory Process**

In most studies (n=13), adult stakeholders primarily relied on convenience sampling to determine how children were recruited for the project. Children were often selected because they had personal connections to a space that was scheduled for development (e.g., schoolyard, public park) or because they had prior relationships with the adults spearheading the project. A reliance on this sampling technique inadvertently created representational disparities for children with disabilities, children living in low-income communities, and young children.

***Children with Disabilities***

Two studies indicated that children with disabilities might have been included within their sample but it was unclear to what degree these children played an active role in the project (Menconi & Grohmann, 2018; Pearson & Howe, 2017). Children with disabilities are among the populations most likely to be excluded from collaborative projects (Derr et al., 2018), which is particularly problematic given that playground features are often inaccessible to them (Yantzi et al., 2010). All children, regardless of their abilities, should be provided the opportunity to exercise their participation rights (Wenger et al., 2021). Inclusivity entails ensuring that the recruitment process for child participants does not exclude those with disabilities, as well as offering individualized accommodations and accepting continuous feedback (Wenger et al., 2021).

***Children Living in Low-Income Communities***

Children living in low-income communities are also often marginalized from the playground development process (Bosco & Joassart-Marcelli, 2015; Pawlowski et al., 2019; Yates & Oates, 2019). Low socioeconomic status has been identified as a social determinant of health and is known to affect individuals throughout their lifespan due to limited access to resources (Moss, 2010). Children living in lower-income communities might have different play experiences than children living in higher-income areas (Bosco & Joassart-Marcelli, 2015; Pawlowski et al., 2019). The lack of safe play spaces in these neighborhoods can inhibit opportunities for physical activity and forming social connections (Rogers, 2012).

***Young Children***

Six studies included preschool children (Malone, 2013; Menconi & Grohmann, 2018; Nah & Lee, 2016; Norðdahl & Einarsdóttir, 2015; Pearson & Howe, 2017; Yates & Oates, 2019), but only one focused exclusively on this population (Nah & Lee, 2016). Young children have been traditionally excluded from these processes when compared to school-aged individuals (Derr et al., 2018; Ataol et al., 2019). The lack of research with this demographic is disconcerting: playgrounds are often intended for use by children as young as 18 months (Canadian Standards Association, 2014). If young children are expected to play in these spaces, they also have the right to participate in their development. A range of innovative methods could be modified for use with younger children (Johnson et al., 2014). For example, visual methods such as photographs and drawings can foster inclusivity and provide opportunities for children to engage in research through nonverbal means (Einarsdóttir, 2007).

**Table 3. List of included studies**

Reference	Purpose of Study	Methods	Sample	Results
<b>1. Planning Stage of Playground Development</b>				
Bosco & Joassart-Marcelli (2015) USA	Explore children's emotional labor by analyzing a collaborative project involving green spaces.	<b>Methods used with Children:</b> <ul style="list-style-type: none"> <li>Visual methods</li> <li>Focus groups</li> </ul> <b>Methods used with Adults:</b> <ul style="list-style-type: none"> <li>Observations</li> </ul>	<b>Child Participants:</b> <ul style="list-style-type: none"> <li>12 children between the ages of 9 and 11</li> </ul> <b>Adult Participants:</b> <ul style="list-style-type: none"> <li>Landscape Architects</li> </ul>	Children's drawings depicted nature, private places and traditional play equipment.  Adults stifled children's emotions (e.g., silliness) and tokenized their contributions.
Khan et al. (2020) Bangladesh	Explore children's, teachers' and parents' preferences for learning, socializing and playing outside at primary schools.	<b>Methods used with Children:</b> <ul style="list-style-type: none"> <li>Focus groups</li> <li>Visual methods</li> </ul> <b>Methods used with Adults:</b> <ul style="list-style-type: none"> <li>Focus groups</li> </ul>	<b>Child Participants:</b> <ul style="list-style-type: none"> <li>16 girls and 13 boys between the ages of 8 and 12</li> </ul> <b>Adult Participants:</b> <ul style="list-style-type: none"> <li>School staff</li> <li>Families</li> </ul>	Children preferred both natural and artificial features as well as social and private spaces.
Kreutz et al. (2018) USA	Study the process of school children participating in the design of a park.	<b>Methods used with Children:</b> <ul style="list-style-type: none"> <li>Focus groups</li> <li>Visual methods</li> </ul> <b>Methods used with Adults:</b> <ul style="list-style-type: none"> <li>Interviews</li> </ul>	<b>Child Participants:</b> <ul style="list-style-type: none"> <li>10 children between the ages of 10 and 13</li> </ul> <b>Adult Participants:</b> <ul style="list-style-type: none"> <li>Project manager</li> <li>City representatives</li> <li>Landscape architects</li> <li>School staff</li> <li>Families</li> <li>University students</li> <li>Senior citizens</li> </ul>	Final designs did not match children's ideas.  Adult attitudes towards participation varied greatly.
Lozanovska & Xu (2013) Australia	Propose a pedagogical model for children's genuine participation in architectural design and education.	<b>Methods used with Children:</b> <ul style="list-style-type: none"> <li>Visual methods</li> </ul>	<b>Child Participants:</b> <ul style="list-style-type: none"> <li>90 children between the ages of 7 and 9</li> </ul> <b>Adult Participants:</b> <ul style="list-style-type: none"> <li>University students</li> <li>Architects</li> <li>Community members</li> <li>Families</li> <li>School staff</li> </ul>	Children and adults enjoyed collaborating with each other.  Adults should engage children using multiple methods (e.g., storytelling, model-making).

<p>Menconi &amp; Grohmann (2018)</p> <p>Italy</p>	<p>Develop a transferable method to retrofit a school playground and build alliances between schools, public administration and universities.</p>	<p><b>Methods used with Children:</b></p> <ul style="list-style-type: none"> <li>• Surveys</li> <li>• Visual methods</li> <li>• Computer software</li> </ul> <p><b>Methods used with Adults:</b></p> <ul style="list-style-type: none"> <li>• Workshops</li> <li>• Discussions</li> </ul>	<p><b>Child Participants:</b></p> <ul style="list-style-type: none"> <li>• 157 girls and 131 boys between the ages of 5 and 10</li> </ul> <p><b>Adult Participants:</b></p> <ul style="list-style-type: none"> <li>• University students</li> <li>• School staff</li> </ul>	<p>Children enjoyed making models and seeing their designs digitally represented.</p> <p>Teachers were initially skeptical of the participatory process.</p>
<p>Nah &amp; Lee (2016)</p> <p>South Korea</p>	<p>Examine how children's participation can be actualized when engaging in the development of playgrounds.</p>	<p><b>Methods used with Children:</b></p> <ul style="list-style-type: none"> <li>• Observations</li> <li>• Field notes</li> <li>• Audio and visual recordings</li> <li>• Visual methods</li> <li>• Field trips</li> </ul> <p><b>Methods used with Adults:</b></p> <ul style="list-style-type: none"> <li>• Interviews</li> <li>• Journals</li> <li>• Emails and telephone conversations</li> </ul>	<p><b>Child Participants:</b></p> <ul style="list-style-type: none"> <li>• 25 children between the ages of 5 and 6</li> </ul> <p><b>Adult Participants:</b></p> <ul style="list-style-type: none"> <li>• School staff</li> </ul>	<p>Children liked using cameras.</p> <p>Adults developed attentiveness and respect for children's views.</p>
<p>Norðdahl &amp; Einarsdóttir (2015)</p> <p>Iceland</p>	<p>Enhance awareness of young children's preferred outdoor activities and environment.</p>	<p><b>Methods used with Children:</b></p> <ul style="list-style-type: none"> <li>• Interviews</li> <li>• Observations</li> <li>• Walking tours</li> <li>• Visual methods</li> </ul> <p><b>Methods used with Adults:</b></p> <ul style="list-style-type: none"> <li>• Interviews</li> <li>• Meetings</li> </ul>	<p><b>Child Participants:</b></p> <ul style="list-style-type: none"> <li>• 100 children between the ages of 4 and 5</li> <li>• 189 children between the ages of 6 and 9</li> </ul> <p><b>Adult Participants:</b></p> <ul style="list-style-type: none"> <li>• School staff</li> </ul>	<p>Children enjoyed playgrounds that facilitated risky play, but also wanted the space to be more safe.</p> <p>Children liked interacting with nature, playing in private places, and socializing with peers.</p>

<p>Pearson &amp; Howe (2017)</p> <p>UK</p>	<p>Provide a critical account of a small research project that attempted to involve children in the redesign of their school playground.</p>	<p><b>Methods used with Children:</b></p> <ul style="list-style-type: none"> <li>• Focus groups</li> <li>• Visual methods</li> <li>• Questionnaires</li> </ul> <p><b>Methods used with Adults:</b></p> <ul style="list-style-type: none"> <li>• Scoping meetings</li> <li>• Questionnaires</li> <li>• Focus groups</li> </ul>	<p><b>Child Participants:</b></p> <ul style="list-style-type: none"> <li>• Children between 5 and 12</li> </ul> <p><b>Adult Participants:</b></p> <ul style="list-style-type: none"> <li>• School staff</li> </ul>	<p>2/3 of children felt that adults listened to them, but only 1/3 of children felt that their peers listened.</p> <p>3/4 of children felt confident their ideas would be taken and used by adults.</p>
<p>Polyzou et al. (2017)</p> <p>Greece</p>	<p>Evaluate an adapted drawing program to gain child perspectives regarding the development of their play spaces.</p>	<p><b>Methods used with Children:</b></p> <ul style="list-style-type: none"> <li>• Walking tours</li> <li>• Discussions</li> <li>• Questionnaires</li> <li>• Visual methods</li> <li>• Computer software</li> </ul>	<p><b>Child Participants:</b></p> <ul style="list-style-type: none"> <li>• 116 children between the ages of 10 and 12</li> </ul>	<p>75% of children stated that they enjoyed digital drawing more than hand drawing.</p> <p>93% of children said that they were satisfied with their drawings and found the software helpful.</p>
<p>Xu &amp; Izadpanahi (2016)</p> <p>Australia</p>	<p>Explore children's creative potential and achieve co-designing outcomes.</p>	<p><b>Methods used with Children:</b></p> <ul style="list-style-type: none"> <li>• Visual methods</li> <li>• Interviews</li> <li>• Questionnaires</li> </ul> <p><b>Methods used with Adults:</b></p> <ul style="list-style-type: none"> <li>• Interviews</li> </ul>	<p><b>Child Participants:</b></p> <ul style="list-style-type: none"> <li>• 48 children between the ages of 10 and 12</li> </ul> <p><b>Adult Participants:</b></p> <ul style="list-style-type: none"> <li>• University students</li> </ul>	<p>Children enjoyed interacting with university students while participating in various activities.</p> <p>Students had to balance fostering children's creativity without controlling them.</p>
<p>Yates &amp; Oates (2019)</p> <p>UK</p>	<p>Provide insight into children's views about their play choices and the challenges involved with child participation.</p>	<p><b>Methods used with Children:</b></p> <ul style="list-style-type: none"> <li>• Visual methods</li> <li>• Discussions</li> </ul>	<p><b>Child Participants:</b></p> <ul style="list-style-type: none"> <li>• 60 children between the ages of 6 and 7</li> </ul> <p><b>Adult Participants:</b></p> <ul style="list-style-type: none"> <li>• University students</li> </ul>	<p>Children valued nature, traditional play equipment, risky play and safety.</p>

<b>2. Combination of Planning, Construction and Evaluation Stage of Playground Development</b>				
Malone (2013)  Australia	Meaningfully involve children in the design of a new development, incorporating their preferences and visions of the space.	<b>Methods used with Children:</b> <ul style="list-style-type: none"> <li>• Surveys</li> <li>• Visual methods</li> <li>• Site visits</li> <li>• Discussions</li> </ul> <b>Methods used with Adults:</b> <ul style="list-style-type: none"> <li>• Interviews</li> </ul>	<b>Child Participants:</b> <ul style="list-style-type: none"> <li>• 30 kindergarteners between the ages of 5 and 6</li> <li>• 120 children between the ages of 9 and 10</li> </ul> <b>Adult Participants:</b> <ul style="list-style-type: none"> <li>• Urban developers</li> </ul>	Children wanted to socialize, explore nature, take risks and feel safe.  Adults built relationships with the children and wanted to collaborate with them in the future.
Özdemir (2019)  Turkey	Investigate the methodological approach when children actively participate in every stage of the planning process.	<b>Methods used with Children:</b> <ul style="list-style-type: none"> <li>• Participatory questioning action method</li> <li>• Child conferencing</li> <li>• Participatory action wall</li> </ul>	<b>Child Participants:</b> <ul style="list-style-type: none"> <li>• 20 children between the ages of 9 and 10</li> </ul> <b>Adult Participants:</b> <ul style="list-style-type: none"> <li>• Project facilitator</li> <li>• Technical staff</li> </ul>	Children preferred features that facilitated risky play, group games and the exploration of nature.
Pawlowski et al. (2019)  Denmark	Explore the effects of children's involvement in creating playable installations.	<b>Methods used with Children:</b> <ul style="list-style-type: none"> <li>• Site investigations</li> <li>• Visual methods</li> <li>• Surveys</li> <li>• Interviews</li> <li>• Accelerometer</li> <li>• GPS</li> </ul> <b>Methods used with Adults:</b> <ul style="list-style-type: none"> <li>• Interviews</li> </ul>	<b>Child Participants:</b> <ul style="list-style-type: none"> <li>• 39 children between the ages of 10 and 11</li> </ul> <b>Adult Participants:</b> <ul style="list-style-type: none"> <li>• School staff</li> </ul>	Final designs did not match children's ideas.  Teachers were initially skeptical of the participatory process.

### **Children's Preferences for Playground Design**

Most of the studies highlighted children's design preferences during the planning and evaluation stage of playground development (n=9), and they yielded three sub-themes: risk and safety, natural and artificial features, and social and private places.

#### ***Risk and Safety***

Children have a proclivity to seek out risky play experiences in a variety of environments (Norðahl & Einarsdóttir, 2015). Risky play is often characterized by a desire to navigate heights, fast speeds, and dangerous natural elements. For example, children enjoy playing in water, exploring drainage ditches, climbing trees, and speeding down hills (Norðahl & Einarsdóttir, 2015; Yates & Oates,

2019). Complex play structures that encourage risky play are considered extremely desirable (Menconi & Grohmann, 2018; Özdemir, 2019). Children's preferences included monkey bars, climbing walls, zip lines (Bosco & Joassart-Marcelli, 2015; Yates & Oates, 2019), laser tag, and water slides (Norðdahl & Einarsdóttir, 2015).

While children prefer risky play, they also appear to be aware of social norms regarding playground safety. Five studies found that children acknowledged the importance of safe outdoor play spaces (Bosco & Joassart-Marcelli, 2015; Malone, 2013; Norðdahl & Einarsdóttir, 2015; Pawlowski et al., 2019; Yates & Oates, 2019). Some expressed concern that open spaces would become "uncontrollable" and expose them to potential dangers in the community (Bosco & Joassart-Marcelli, 2015, p. 34).

### ***Natural and Artificial Features***

Most playground spaces consist of both natural and artificial features. Natural features include geophysical landforms (hills and fields) and natural substances (sand and water), wildlife (plants and animals), and loose materials (leaves and sticks). Artificial features include play equipment (swings, slides, and climbing frames) as well as sport facilities.

Children enjoy using their senses to explore the outdoors (Özdemir, 2019). They consider colorful flowers (Norðdahl & Einarsdóttir, 2015) and natural aromas important aspects of the playground (Khan et al., 2020). They like experimenting with materials found in nature (Özdemir, 2019). One study found that children tended to perceive the value of nature solely from an aesthetic perspective—until they were encouraged to discover alternative ways to use the space and realized that these features "could be complementary to the traditional indoor lessons" (Menconi & Grohmann, 2018, p. 78).

Some children alluded to the importance of artificial apparatuses (Khan et al., 2020; Norðdahl & Einarsdóttir, 2015; Yates & Oates, 2019). Menconi and Grohmann (2018) found that 42% of children referenced traditional play equipment when asked about the characteristics of "good" playgrounds. Khan and colleagues (2019) encouraged children to draw their ideal school ground for learning and play. The researchers found that 12% of participants' artwork included swings, slides, and seesaws. Many children desire a wider variety of artificial spaces (Norðdahl & Einarsdóttir, 2015; Yates & Oates, 2019).

### ***Social and Private Places***

Children highly value playground spaces that provide opportunities for socializing (Derr et al., 2018). These gathering places can be composed of both natural features (Khan et al., 2020; Norðdahl & Einarsdóttir, 2015; Özdemir, 2019) and artificial features (Khan et al., 2020; Menconi & Grohmann, 2018). When children were asked to identify "good" features of playgrounds, 14% of responses included athletic facilities and open fields (Menconi & Grohmann, 2018). Khan et al. (2020) found that 17% of participants' artwork, which depicted idealized playgrounds, contained images of objects required to play organized games and sports, including football (i.e., soccer) and cricket equipment. Previous research demonstrates the

importance of having access to spaces that foster relationship-building and contribute to overall well-being among children (Rogers, 2012).

Children also enjoy playing in private places (Bosco & Joassart-Marcelli, 2015; Norðdahl & Einarsdóttir, 2015). These locations allow them to spend time alone or with a small group of friends out of the watchful eye of adults. Hiding spots include tall grass, wooded areas, and playhouses (Khan et al., 2020; Kreutz et al., 2018). Private places are associated with physical and psychological risks including the possibility of being "caught" by adults playing in areas that are considered unsafe. Koch (2018) referred to the "underlife" of children, and suggested that subjective feelings of well-being emerge "when children are allowed to participate in games of the underlife in a way that does not compromise their relationship with adults and their capability to live up to prevalent rules and norms of behaviour" (p. 81).

In summary, children can effectively navigate the complexity and nuances of playground development. They value spaces that initially seem diametrically opposed and involve negotiating a balance between risk and safety, natural and artificial features, and social and private places.

### **Children's Perceptions of Participation**

Some studies examined how children perceived their own participation during the creation of playgrounds (Kreutz et al., 2018; Malone, 2013; Menconi & Grohmann, 2018; Pawlowski et al. 2019; Pearson & Howe, 2017; Xu & Izadpanahi, 2016). In general, most children enjoyed collaboration (Malone, 2013; Pearson & Howe, 2017; Xu & Izadpanahi, 2016) and one study noted children's ability to work with peers in a meaningful and tangible way (Malone, 2013).

Another study reported that children appreciated collaborating with adults involved in the study (researchers, university students, and "playground experts") (Xu & Izadpanahi, 2016). The children looked forward to the adults visiting their school and recognized the help that they provided. These thoughts were documented throughout the children's portfolios and questionnaire responses.

### **Children's Perceptions of How Their Ideas Were Valued**

Children's perceptions of their contributions during playground development varied widely (Kreutz et al., 2018; Pawlowski et al., 2019; Pearson & Howe, 2017). Pearson and Howe (2017) found that the children generally believed their ideas would be heard. This sentiment was reflected in a questionnaire, which was distributed to 18 child participants at the end of the planning stage. In contrast, Kreutz et al. (2018) and Pawlowski et al. (2019) found that children felt disappointed in the degree to which their opinions were acknowledged. In these studies, children's perspectives of playgrounds were gathered during the planning stage and analyzed by "professionals" who developed architectural designs. The final layout was often drastically different than what was initially discussed with the children (Bosco & Joassart-Marcelli, 2015; Kreutz et al., 2018; Pawlowski et al., 2019).

The disconnect between children's plans and the final design likely stemmed from

the dismissal of child participants following the completion of the planning stage. The exclusion of children after this integral first stage may preempt a disregard for their contributions and exposes a risk for tokenistic involvement. Despite feeling disappointed, some children appeared to accept that many of their ideas would be ignored; others were much more critical of the adults who were involved in the study and felt deceived. These emotions were expressed through children's verbal statements (Kreutz et al., 2018; Pawlowski et al., 2019).

One ethical requirement when conducting participatory research with children is to inform participants about how their ideas will be used (Derr et al., 2018; Hart, 1997). Children seemed to have different perceptions of how their ideas would be implemented. Some were confident their ideas would be taken forward and used by "experts" (Pearson & Howe, 2017); others were aware that not all of their ideas would be implemented (Kreutz et al., 2018). The discrepancy between how children understand the design process poses concerns related to the quality of participation.

### ***Children's Perceptions of Methods***

The majority of research studies referenced in this review were conducted using qualitative methods (n=9). The methods of data collection included interviews, observations, drawings, photographs, conferences, focus groups, model making activities, journaling, walking tours and community mapping. Studies that incorporated mixed methods were also present within this review (n=5). These articles tended to use at least one of the data collection methods listed above as well as quantitative methods such as questionnaires and surveys.

**Technology.** Children tend to like using technology to explore their environment as well as to document and present their ideas in a digital format (Menconi & Grohmann, 2018; Nah & Lee, 2016; Polyzou et al., 2017). They vastly prefer computer design software and digital cameras compared with traditional methods such as drawing (Nah & Lee, 2016; Polyzou et al., 2017). Technology can offer new intriguing experiences that hold the attention of children and allow them to represent their ideas in realistic and tangible ways.

**Walking Tours/Site Visits.** Children enjoy participating in site visits, which provide opportunities to interact with their surroundings and generate design ideas (Malone, 2013; Özdemir, 2019). One child participant commented, "I liked it because we got to get out of the classroom and go to the site, it was more interesting than sitting in a classroom. I would do it or something similar again. It's good kids get to be part of it and make a difference" (Malone, 2013, p. 391).

### **Adult Perceptions of Participation**

Approximately half of the studies (n=6) included adults' perceptions of the collaborative process. These adults included university students, parents, educators, landscape architects, and municipal representatives. Their perceptions varied within and across studies, ranging from positive to negative, and some changed over time.

***Positive Experiences with Participation***

Many adults are enthusiastic about engaging in participatory projects with children (Kreutz et al., 2018; Lozanovska & Xu, 2013; Malone, 2013). For example, one landscape architect appreciated how children effectively communicated what play meant to them, and commented that children proposed ideas that were unique and innovative, encouraging architects to stretch their understanding of what was possible (Kreutz et al., 2018). Malone (2013) observed similar sentiments among urban developers: throughout the project, these adults formed strong, reciprocal relationships with the children and were committed to including them in future projects.

***Negative Experiences with Participation***

While many adults embrace collaboration with children, others may have more negative experiences (Bosco & Joassart-Marcelli, 2015; Kreutz et al., 2018; Menconi & Grohmann, 2018). Kreutz et al. (2018) noticed that one landscape architect was highly critical of collaboration: as an "expert" with valuable knowledge regarding playgrounds, this individual made a conscious effort to distance children and other community members from participating. Similarly, some adult stakeholders were resistant to the messiness of child participation, and requested that children's ideas be communicated in a more structured and organized manner (Bosco & Joassart-Marcelli, 2015; Xu & Izadpanahi, 2016).

***Transformative Experiences with Participation***

Adults can demonstrate the capacity to change their perspectives regarding participation (Menconi & Grohmann, 2018; Nah & Lee, 2016). Initially, adults tend to express feelings of trepidation or skepticism about the collaborative process, which is related to their unfamiliarity with these experiences (Menconi & Grohmann, 2018; Pawlowski et al., 2019). Over time, they can become more comfortable engaging with children and embrace their role within a project. Based on the literature, teachers and other professionals who work primarily with children appear to be more open to change compared to those working as municipal employees or as funding allocators (Menconi & Grohmann, 2018; Nah & Lee, 2016).

Adults' opinions on the purpose of playgrounds can change as well. One study found that teachers initially viewed the outdoors as a space to play and exercise, but as the project progressed, teachers realized that the space could be used for educational purposes and relaxation (Menconi & Grohmann, 2018). They also started to question the rigidity of playground rules and asked how these benefited or hindered play experiences. Eventually, they appreciated the value of risky play, even though it might result in minor injuries (Menconi & Grohmann, 2018; Norðdahl & Einarsdóttir, 2015).

In summary, adult attitudes towards child participation varied widely within and across studies. Some adults had positive perceptions of children's contributions during the collaborative process, acknowledging their flexibility and creativity (Kreutz et al., 2018; Malone, 2013). Others discounted children's design concepts, which resulted in their ideas being decontextualized, misconstrued, and devalued (Bosco & Joassart-Marcelli, 2015; Menconi & Grohmann, 2018). A number of adults

entered projects with a sense of skepticism, but their attitudes were shown to evolve over time. These transformative experiences were most prevalent among teachers and appeared to be associated with the meaningful relationships they had with children (Menconi & Grohmann, 2018; Nah & Lee, 2016; Pawlowski et al., 2019).

### **Recommendations for the Creation of Future Playgrounds**

This critical analysis yielded several recommendations for creating playgrounds. These can help guide parents, community members, researchers, municipal representatives, and landscape architects when collaborating with children, and should be adapted depending on the context of each project and the child stakeholders.

### **Ongoing Consultation with Children**

One key point is that children should be consulted throughout the entire process of playground development, especially during later stages when children are often excluded (Kreutz et al., 2018; Özdemir, 2019; Pawlowski et al., 2019). Adult stakeholders must effectively communicate how children's ideas are being incorporated into the project. This dialogue will ensure ethical research practices, help minimize tokenism and reduce differences between children's ideas and the final design (Hart, 1997). Additionally, when children are well informed about their contributions (Kreutz et al., 2018; Pawlowski et al., 2019), they are more likely to take part in future collaborations (Hart, 1992).

### **Engaging Children in Participatory Projects through Hands-on Experiences**

It is recommended for children to explore and manipulate their environment by engaging in walking tours, site visits (Malone, 2013; Nah & Lee, 2016), 3D model-making (Meconi & Grohmann, 2018), and the use of technological devices (Menconi & Grohmann, 2018; Nah & Lee, 2016; Polyzou et al., 2017). Children vastly prefer these techniques to passive methods such as drawing and journaling (Nah & Lee, 2016; Polyzou et al., 2017; Xu & Izadpanahi, 2016). Additionally, adults should invite children to actively engage in the construction stage, for example by painting equipment, sanding wood, and digging holes (Özdemir, 2019; Pawlowski et al., 2019). It is crucial that children participate in ways that they find enjoyable and motivating (Hart, 1992).

### **Opportunities for Child Rights Education**

Article 42 of the UN Convention on the Rights of the Child states that children should be knowledgeable about their rights (UN General Assembly, 1989). Researchers and project administrators should educate children about the parameters and value of their role when they are involved in any project. Also, experts in the field of playground design, such as landscape architects and city planners, should be aware of children's rights and the benefits associated with child participation. Ideally, this will lead to meaningful collaborations between adults and children that can decrease the likelihood of tokenism. More education about, and awareness of, children's rights can mitigate feelings of skepticism, uneasiness, and outright disdain among adults regarding children's involvement in participatory projects (Menconi & Grohmann, 2018; Nah & Lee, 2016). It is unclear to what

degree children's rights were communicated to child participants in the reviewed studies.

### **Adult Reflective Practice**

In this context, reflective practice refers to an ongoing process of thinking about power dynamics, internal biases, and the role of authority when working with children on a project (Leavy, 2017). For example, some adult stakeholders sought out children's perspectives that were consistent with their preconceived notions, rather than genuinely listening to children's contributions (Bosco & Joassart-Marcelli, 2015; Punch, 2002). Additionally, it was difficult to determine whether the ideas expressed by child participants were truly their own or whether they were influenced by adult narratives (Bosco & Joassart-Marcelli, 2015; Yates & Oates, 2019). Adults should be willing to consider children's responses in light of existing power differentials between adults and children.

### **Limitations of Research**

Only 14 studies that focused on children's participation during the creation of playgrounds met our inclusion criteria and assessment standards, which likely resulted in the exclusion of articles that might have contained important information. Similarly, we used a scoped definition of the term "playground" to guide the search process; this might have limited the range of outdoor play environments that were represented within the studies. A third limitation is related to the sociology of childhood, which tends to frame children in a homogenous way and may neglect to reflect how race affects children's lives. A related limitation is that most studies did not provide any demographic information other than the age of the children. Future studies on collaborative playground design should consider frameworks that account for racial and other differences between children.

### **Conclusions**

To our knowledge, this study presents the first critical review of literature associated with children's participation in the development of playgrounds. As a critical review, an assessment of gaps, inconsistencies and strengths revealed prevalent themes and recommendations for the future. More specifically, the exclusion of young children, children with disabilities, and those from marginalized backgrounds exposes inequities in how children exercise their participation rights on issues that matter to them. Recommendations and insights regarding future playground development support the continued use of Hart's Ladder as a mechanism to assess the quality of child participation. The process of creating a playground is largely dependent on how well the adults work with children who are involved in the project. At the same time, children as social agents with their own skills and perspectives play an integral role in creating a bidirectional and collaborative synergy in these enterprises. Above all, children have a fundamental right to express their opinions regarding the design of playground spaces. If we are to foster the growth and development of child-friendly cities across the globe, then we must begin by ensuring that all children have an opportunity to exercise their rights and shape the cities in which they live.

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# Nature's Role in Young Children's Everyday Science Learning: A Case Study

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## **Abstract**

*To help address the lack of research in early science learning, this exploratory case study investigated a 7-year-old girl's conceptions of what counts as science in an everyday context. Abigail's view of science was fuelled by discovering interesting things during daily mundane activities. Her mom supported learning with a "sense-making" approach as an alternative to "correcting" Abigail's underdeveloped ideas. Interestingly, nature afforded many science learning opportunities that were often a result of the changing natural environment. Results from this study suggest ways to begin dismantling narrow ideas of science in which textbooks and teachers are the authority.*

**Keywords:** informal science learning, nature-based learning, young children, emergent science, parents as educators

## **Introduction**

The purpose of science is to provide useful models of reality that help us understand the natural world. Porter (2008) suggested, "Science is science when it asks and answers questions, when it uses observations and experiments to understand and explore the world around us" (p. 178). "Fundamentally, science is about using established lines of evidence to develop or refine explanations using theories, models, hypotheses, measurements, and observations" (NRC, 2007, p. 18)—something young children often undertake in everyday life.

Young children actively construct naive scientific theories to account for biological, psychological, physical, and geological events (Wellman & Gelman, 1998) and likely practice scientific thinking many years before starting school (Crowley & Galco, 2001). Young children's deep curiosities drive early science learning and are often the motivation behind "why" questions (Callanan & Oakes, 1992). This way of engaging the world is scientist-like in that it mirrors the explanatory thinking of scientists (Simon, 2001). Some children are so deeply driven in particular areas of wonderment that they are described as "experts" in domains related to science (Johnson et al., 2004).

For young children, developing science skill and knowledge happens by navigating the natural world through everyday learning (NRC, 2009). Everyday learning takes place in the context of family learning and is one of the most important environments where children learn about the world (NAEYC, 2013). Parents play a key role in supporting children's science learning in the home (Legare et al., 2017; NRC, 2009). In fact, some researchers contend parent interactions positively contribute to science learning, perhaps, more than practitioner intervention in the classroom (Lloyd et al., 2017). In other words, parents are a child's first teacher. Family learning is an adult-guided mode of learning in which a parent closely monitors the child's participation in ways that can lead to scientific exploration and the construction of scientific knowledge (Crowley & Jacobs, 2002; Goodwin, 2007).

Family experiences produce a range of learning opportunities from maintaining a family and household to enjoying hobbies or recreation and are said to be organized around "funds of knowledge" that pertain to a household's functioning and wellbeing (Gonzalez et al., 2005; Moll et al., 1992). Funds of knowledge recognizes knowledge that is not generally found in sanctioned learning and conceptualizes family experiences as a rich learning environment where children, to varying degrees, establish and consistently develop scientific knowledge. Routine activities include knowledge exploration and patterns of interactions that have the potential to support scientific practices (Ochs & Taylor, 1992; Ochs et al., 1992).

The way in which a parent engages a child within the zone of proximal development parallels the collaborative process that is central to how scientists do science (Vygotsky, 1978). Parents scaffold experiences to allow a child to achieve a goal that would otherwise be beyond his or her unassisted efforts (Wood et al., 1976). Scaffolding includes a range of efforts like coordinating organized recreational activities in which a child participates such as fishing, playing at the park, or skiing, to explaining things or experiences in a child's environment. Modeling of

metacognition, prompting, and questioning through exploratory talk is a parent's cultural and cognitive tool for enabling conceptual change (Mercer & Howe, 2012). Through parent-child interactions and conversations, children actively make sense of their environment and while parents infrequently offer complex explanations, conversations between parent and child lay the groundwork for developing scientific literacy (Callanan & Jipson, 2001).

As a result, parent-child interactions have the potential to contain rich science learning that forms a foundation for children to work with abstract and general ideas, concepts, or mechanisms (e.g., Crowley & Jacobs, 2002). This type of parent-child interaction is sophisticated and refutes outdated views about the limitations of young children's thinking that are still prevalent within the education system (Akerson et al., 2011; Campbell et al., 2016; Metz, 1995).

In addition to scaffolding, parents act as gatekeepers in establishing a connection to the natural world. Nature is important to a child's development across domains, cognitively, socially, emotionally, and physically as nature stimulates development in a variety of ways (Kellert, 2005). However, for children to benefit from nature, parents have to be able and willing to connect them to nature.

Young children's development is positively influenced by direct contact with nature (Dankiw et al., 2020). Learning in nature often increases levels of intrinsic motivation (Skinner et al., 2012) because being outdoors generally fosters a greater interest in learning about one's surroundings (e.g., Ernst & Stanek, 2006; Thorp, 2006). Interest increases for previously uninterested children (Truong et al., 2016) and disadvantaged children experience a positive emotional effect when learning in the natural world (McCree et al., 2018). Nature also encourages cooperative learning (Bell & Dymont, 2006). Children who play together in nature have more positive feelings toward one another (Moore, 1996).

Children's cognitive abilities are enhanced if they experience problem solving in natural settings as opposed to maintained settings (Charles, 2009). Moreover, cognitive development is positively supported in nature because children have opportunities to be creative and employ problem-solving skills as they negotiate elements of the natural world (Kellert, 2005). Nature provides young children with opportunities to experience phenomena that contribute to meaning-making because individuals and the environment influence and are influenced by one another in a context-bound process (Bronfenbrenner, 1999).

### **Research Purpose**

Over one's lifetime, more learning happens out-of-school (NRC, 2009). Therefore, the purpose of this research is to discover how everyday learning in a family environment may contribute to a young child's ability to recognize and participate in science. Even though researchers contend most science learning is experienced outside of the classroom through everyday experiences (Gerber et al., 2001), there continues to be a lack of research exploring early childhood science learning (Gelman & Brenneman, 2012; McNerney & Hall, 2017).

Another purpose of researching this type of informal learning is to influence early childhood classroom instruction. Everyday learning is a valuable resource but our school-centric culture undervalues informal learning or simply views it as a natural process by which learning happens (Lave, 1982). This conception biases views of learning toward in-classroom academic learning, and as a result, informal learning outcomes do not generally inform curriculum design or instructional practice.

Additionally, this investigation echoes the Nature-Based Learning Collaborative Research Network's proclamation that qualitative results may suggest how various settings with nature afford different opportunities for learning, which may lead to different outcomes (Jordan & Chawla, 2019). Researchers commonly investigate family science learning in informal contexts where elements of nature are present such as zoos (Worch & Haney, 2011), botanical gardens (Eberbach & Crowley, 2017), and nature centers (McClain & Zimmerman, 2014). Each of these learning spaces include some element of nature but are *designed spaces* with the goal of increasing science engagement. In contrast to a designed learning space, nature's role in learning at home might be different, which requires the need to understand nature's influence on informal learning in a broader context.

### **Theoretical Framework**

I adopted sociocultural theory and situated cognition as my investigative framework because I view early childhood learning as participatory, in which the formation of skills and abilities are a part of everyday experiences (Lave & Wenger, 1991; Rogoff & Lave, 1984). Consequently, activity is directly shaped by social, physical, and cultural factors. For children, learning, in this case science, is situated within social interactions with parents (Rogoff, 1990; Vygotsky, 1978). Sociocultural theory reasons that learning and development as originated in the social plane are a result of an "interactive process" between the parent and child (Cole & Wertsch, 1996; Litowitz, 1993; Vygotsky, 1978). The parent is the knowledgeable other that provides scaffolding within the child's zone of proximal development (Vygotsky, 1978).

Situated cognition views science as a process of participation in a part of a larger network of participants and institutions (Lehrer & Schauble, 2007). The acquisition of knowledge is situated in a particular context. In school, a child is viewed as a recipient in learning, in contrast to family learning experiences in which the child is generally an active participant (NRC, 2009; Wellman & Gelman, 1998). Knowledge and skills acquired within family learning are transferable into other contexts such as the classroom, provided the classroom positions the child in the learning process similar to where the child existed in the learning process within family learning experiences (Hedegaard, 1995).

While it is important to understand children's learning as conceptual change in either a domain-specific (Carey, 2000) or general manner (Case & Griffin, 1990; Inhelder & Piaget, 1958), it is equally important to understand the process of how children participate and learn through interactions with family and in everyday experiences (Rogoff, 1990; Vygotsky, 1978). By viewing learning as developmental, I can specify the kind of experiences that produce learning outcomes (Müller &

Liben, 2017).

## **Methods**

Qualitative results have the potential to provide descriptions that are important for understanding and applying results or identifying potential causal mechanisms that underlie learning. Qualitative results also have the potential to suggest how settings with and without nature afford different opportunities for teaching and learning, which may lead to different outcomes. These outcomes can then be tested in more controlled ways through experimental designs (Jordan & Chawla, 2019).

Accordingly, I applied a qualitative case study method, which values specific and highly textured details within a unique context instead of representativeness of the case (Yin, 2003; Stake, 1995). The goal of the case study is to use the focal child as a telling case. This telling case will illustrate what counts as science to a young child learning in a family context, how parents may support science learning, and nature's role in family science learning. By describing the research process in detail, readers can decide whether the results are transferrable to another setting.

## **Research Questions**

My original research questions were "What does a young child count as science in everyday learning?" and "How do parents support science learning?" After several cycles of coding, I also included an additional question "What is nature's role in family science learning?"

## **Participants and Setting**

I obtained Institutional Review Board approval and a combination of convenience sampling (short travel distance to the participants' house) and purposeful sampling (the family's active engagement of the focal child in science) was used to identify the participant by conducting a voluntary parent survey in the local area. My primary participant was Abigail, a 7-year-old attending the second grade in a public school located in a small rural town in upstate New York. She lived with her mother, father, and a younger sister. Both parents had a college education; her father was Caucasian and a self-employed lawyer, and her mother, Dee, was Caucasian-Hispanic and worked remotely in marketing.

## **Data Collection and Analysis**

I applied multiple data collection methods to gain a diverse perspective into the life of my participant. Multiple vantage points supported my effort to triangulate data and achieve dependability (Yin, 2003). Over a six-month period, I conducted five interviews that included one parent-child (60 minutes), one parent-only (45 minutes), and three child-only (30 minutes each) interviews. The parent-child interview was facilitated using an adapted version of the Science Activity Task instrument (SAT) (Zimmerman & Bell, 2014; see Appendix), while subsequent interviews were conducted using researcher-generated questions that were refined as data collection progressed. All interviews were audio-recorded and transcribed into text. In addition to interviewing, Abigail maintained a digital photo journal to represent "when" she was doing or saw science in her daily life. Her journal included 33 entries. Similarly, her mom kept a journal about how she supported

Abigail's interests. Finally, I engaged in participant observation as I spent time with the family before and after each interview. Observations were handwritten as field notes and all artifacts were recorded as a digital file and printed.

To generate codes that addressed each research question, I started data analysis with open coding that culminated into different categories (Strauss & Corbin, 1994). In the second and subsequent cycles of coding, I established clear links between my research questions and findings by applying a holistic coding method as a way to categorize chunks of data that eventually culminated into themes (as cited by Saldana, 2013). I validated the findings through member checking and peer debriefing.

### **Instruments**

The SAT is a tool for developing a grounded understanding for the meaning of science and can be used to find connections that youth see to science. The SAT reveals the science children see in their daily activities by adopting McDermott and Webber's (1998) "when is science" approach. Reframing the question "what is science" to "when is science" is important because asking young children directly "what is science" is not developmentally appropriate as the question is not embedded in the context of "doing science." Even though children may have limitations in verbalizing ideas, they are likely able to express their views when they see themselves participating in science-related activities because "doing science" is intimately connected to the sophisticated science abilities of young children (Metz, 2008; Wellman & Gelman, 1998).

Equally important, the "when is science" approach also acknowledges that children's development of science skill and knowledge is not linear, nor is it one-dimensional. In this way, the "when is science" approach represents the shift in thinking about the development of academic science competencies as exclusive to the classroom, to including other environments where students use disciplinary core ideas; crosscut concepts with scientific practices to explore, examine, and explain how and why phenomena occur; and design solutions to problems. These three dimensions are the foundation of the National Research Council's (2012) *Framework for K-12 Science Education*; even though this framework does not discuss informal settings for science education, the council notes, "[informal settings] provide many opportunities for learning science that complement and extend students' experiences in school" (p. 241).

### **Findings**

Table 1 summarizes activities that Abigail counted as science. Column 1 presents activities based on how closely she identified an activity as being related to science. Column 2 presents her frequency of engagement of each activity within each of the three categories.

**Table 1. SAT: Abigail's assessment of activities in relation to science and frequency of engagement**

<b>Closely Related to Science</b>	<b>Frequency of Engagement</b>
Reading books about true events (non-fiction)	A lot
Observing things in school science*	A lot
Talking about science in your school classroom*	A lot
Doing experiments or playing around with things at home	Sometimes
Going to a museum, zoo, science center	Sometimes
Conducting experiments in school*	Does not do
<b>Somewhat Related to Science</b>	
Doing math in school	A lot
Talking with friends	A lot
Using books in school (textbooks)	A lot
Playing on the playground	A lot
Doing social studies in school	A lot
Reading stories or comics (fiction)	A lot
Reading magazines or newspapers	Does not do
Playing a musical instrument or singing	A lot
Using a Kindle or iPad	A lot
Doing homework	A lot
Watching cartoons or a comedy on TV	A lot
Going to an afterschool program or club	Sometimes
Going to places of worship	Sometimes
Watching a movie at home or in a theater	Sometimes
Taking care of pets (feeding, walking)	Sometimes
Taking photographs, making movies, computer art	Sometimes
Cooking at home	Sometimes
Going to summer programs (camp, school, or community)	Sometimes
Mixing things together at home	Sometimes
Watching animal shows on TV	Sometimes
Playing videos games	Sometimes
Talking with parents and family	Sometimes
Playing board games	Sometimes
Fishing, camping, snorkeling, hiking, boating	Sometimes
<b>Does Not Relate to Science</b>	
Building things with magnets, Legos, or other toy and tools	Sometimes
Listening to music on the radio, computer, mp3s,	A lot
Playing soccer, basketball, football, other sports,	Sometimes
Making origami, stars, airplanes, paper folding	Sometimes
Drawing, knitting, painting, crocheting	Sometimes
Watching a show on tv like <i>Sid the Science Kid</i> , <i>The Magic School Bus</i> , or <i>MythBusters</i>	Does not do

\*activities related to school science

Abigail unequivocally associated science with "school science" activities. Examples of school science activities Abigail reported as "closely related" to science were observing things, talking about science, and conducting experiments in school. However, she also closely associated a variety of activities with science that went beyond school science. Abigail reported reading books about true events; doing

experiments or playing around with things at home; and going to a museum, zoo, science center, or aquarium, as "closely related" to science.

Interestingly, Abigail saw *most* activities as "somewhat related" to science. Examples of activities she reported as "somewhat related" to science were doing math in school, talking with friends, playing on the playground, reading stories or comics, reading magazines or newspapers, playing a musical instrument or singing, watching animal shows on TV, playing video games, and outdoor activities like fishing, hiking, and boating. When deciding whether "talking with friends" was related, she replied, "No, well kind of, depends what you would talk about!" She acknowledged that talking about science is doing science but only when the content of conversation is science. However, she implicitly viewed science as a collaborative process in the way she was eager to share her discoveries of science phenomena like a decaying frog, sap on a flower, and inchworms making silk.

While she generally saw most activities as "somewhat related," activities she deemed as "not related" to science were generally not of interest to her but were viewed as closely related by her mom. For example, watching *MythBusters* (a popular television show about science investigation) or *Science! KIDS* (a popular website with child-friendly science videos), as illustrated by the following interaction:

*Dee: Even though you don't watch them, would you think that watching those shows is science related?*

*Abigail: No.*

*Dee: You don't think so, like the Science Kids?*

*Abigail: No, no it is not.*

*(a while later...)*

*Abigail: Building things with magnets, Legos, or other toy and tools. No, no.*

*Dee: You don't think that is science?*

*Abigail: Fine, I'll do this (she picks up a yellow piece)*

*Dee: No, you don't have to.*

*Abigail: No. (she placed it back on to the table instead of the board)*

Just as Dee challenged Abigail's thinking about *MythBusters* in the episode above, Dee challenged Abigail's description of a decomposing frog. Abigail captured the remains of a snake and frog (Figure 1). She said the snake's skin was science because a snake was growing bigger and had to leave the skin behind. Similarly, she talked about how the frog was growing too but she knew the frog was no longer living like the snake. She was not exactly sure why it was getting "as big as a house," but knew it had something to do with science. Dee challenged Abigail's description of the frog and asked her to think of ways she could measure the frog. Abigail decided she could use the flowers with long stems to measure the frog.

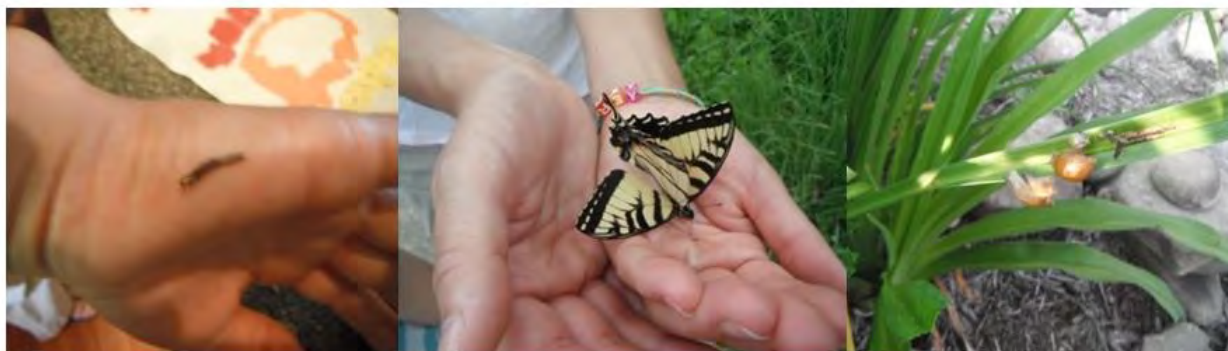
**Figure 1. Abigail's photo journal entries of once living things: snake and a decomposing frog**



Dee often let disagreement exist when Abigail's thinking was not aligned with Dee's thinking. Dee also seemed okay with allowing Abigail's ideas to be underdeveloped or incomplete as demonstrated in the discussion of *MythBusters*. Most of the time she did not attempt to correct Abigail but she often tried to influence Abigail to think about things in a different way. She tried to influence Abigail's thinking by asking questions or directing her attention as she did in the case of Abigail's description of the frog.

Abigail captured images of a centipede, butterfly, and snails (Figure 2). She discovered a centipede while taking a walk through a sculpture park near her home. She was afraid to touch the centipede and asked Dee to hold it so she could take a picture because she knew it was science even though she did not want to touch it.

**Figure 2. Abigail's photo journal entries of living things: centipede, butterfly, and snails**



She also captured plant life that she enjoyed observing (Figure 3). She discovered something known as the "spittlebug" one day while investigating some white matter

on a plant near her home. After wondering what she saw on the plant, Abigail and Dee used the internet to research what they had observed.

**Figure 3. Abigail's photo journal entries of plant life: flowers, grass, and a "spittlebug"**



All of the photos in Figures 1, 2, and 3, as was the case for most of the photos in her journal, were taken when Abigail interacted with nature while playing or walking near her rural home or in the local community. Consequently, Abigail occasionally developed an interest by accident. For example, while walking her dog she discovered a berry bush. In the following excerpt, Dee reflected on Abigail's discovery of and interest in the berries near their home:

*Yeah, like the berries, we found wild berries—the black berries. We—well, underneath the overpass where they frequently walk the dog, we pulled over there the other day so she could just go and pick the berries. And if she doesn't come with me to walk the dog, she says, 'can you bring me back some berries?'*

After discovering the berries, Abigail made it a point to visit the bush to enjoy the fruit and liked to observe how it changed during different seasons.

The photos included here are a representation of Abigail's photo journal, as it mostly depicted living or dead animals but also included some plant life. Dee's journal focused on facilitating Abigail's science experiences and the rich conversation that happened when Dee and Abigail were engaged in meaningful conversations during daily activities. Abigail observed, sometimes tasted, and wanted to know more even when she was scared to touch.

## **Discussion**

Based on a synthesis of the results of this study, informal learning positively contributes to a child's idea of what counts as science, and parent scaffolding plays an important role in that informal learning. Additionally, the natural world plays an important role in creating a rich context for learning about science.

This study contributes to the growing body of research exploring young children's natural curiosity about the world by illustrating what counts as science to a young child. Abigail's view of science was fuelled by discovering interesting things during daily mundane activities. Her conception of science was fluid, as demonstrated by her categorizing the majority of activities on the SAT as "somewhat related" to science. Direct experience was essential to viewing something as science-related, as demonstrated by her assessment of *MythBusters*. Abigail's inability to recognize activities that she does not do as science might indicate her inability to separate activity of the self and activity of the external world, a feature of the preoperational stage of cognitive development (Piaget, 1951). Piaget suggested that direct interaction was essential to the development of thinking. Similarly, emphasis on direct experience is echoed in the NRC's description of meaningful science education, in which "Students cannot comprehend scientific practices, nor fully appreciate the nature of scientific knowledge itself, without directly experiencing those practices for themselves" (NRC, 2012, p. 29).

Abigail's case adds to the literature on young children's ability to engage in a wide range of subtle and complex reasoning about the world (Akerson et al., 2011; Gelman & Kalish, 2005; Metz, 1995; NRC, 1999). Her desire to talk about her experiences provided an opportunity for her to share her ideas and in turn make sense of the world around her through conversation. Conversation with her mom became a resource for understanding and language was a tool used to support her thinking. Dee used language as a tool for learning by prompting or questioning during brief exchanges of information. While fragmented episodes of dialogue only provided bits and pieces of complex ideas, brief conversation accommodates a young child's cognitive load and thus might be more beneficial to emergent thinking (Callanan & Jipson, 2001).

Explanation episodes afforded Abigail the opportunity to increase her knowledge and to practice exchanging ideas in a way that embodies three-dimensional science learning (NRC, 2012). For example, knowledge exploration occurred when Dee and Abigail talked about Abigail's interests in living things. Abigail was able to construct and revise her ideas about natural phenomena during conversations with her mom as in the exchange about the size of the frog. Dee attempted to influence Abigail's thinking about the size of the decomposing frog by prompting her to think a different way about size, encouraging exploration through the use of dialogue, and by asking questions. Measuring the frog with stems seemed to capture the length of the frog rather than the bloating of the frog, which is what Abigail was comparing to a house. Nonetheless, dialogue allowed Dee to support Abigail's thinking but Dee's approach in this exchange is critical to Abigail's conceptions of science.

Dee's approach gave Abigail space to reason on her own, which illustrates what Campbell and colleagues (2016) refer to as "sense-making." Sense-making is an alternative approach to "correcting" a child's underdeveloped ideas. Researchers argue that misconceptions or ideas that are inconsistent with science ought to be viewed as a resource rather than a deficit that threatens the development of scientific reasoning in young children. Resources include partial understandings,

nonstandard ideas, everyday experiences and ways of talking. Abigail's misconception of the frog provided a basis for her mom to help her explore measurement. Dee could have easily viewed Abigail's "big as a house" analogy as wrong and could have "corrected" her by explaining how things are measured. Instead, Dee tried to help Abigail make sense of the frog's size but was only able to do so by starting where Abigail was in her thinking about the size of the frog. If Dee had chosen to "correct" Abigail, Abigail would have learned that her ideas may not be a resource for learning and that her incorrect thinking needs to be replaced with "right" ideas (Campbell et al., 2016).

Finally, and perhaps one of the most interesting aspects of Abigail's case, is that nature afforded many science learning opportunities as demonstrated by her photo journal. Her photo journal captured the richness of her family learning with nature. Larimore (2018) states learning with nature is "when the learning is a direct result of moments provided by the natural world" (p. 36). Abigail's photo journal supports evidence that nature is a direct and important part of learning (Jordan & Chawla, 2019; Kuo et al., 2019).

For Abigail, nature-based learning is a result of ordinary practices within her family's culture that represents an uncomplicated definition of authentic learning (Brown et al., 1989) and includes opportunities for free-choice learning (Falk, 2001). Research indicates that exploration in nature offers many opportunities for free-choice learning (Chawla et al., 2014). Additionally, her mom's support of Abigail's free-choice learning enabled direct experience with the natural world when Abigail was afraid but wanted to investigate, as in the case of touching the centipede.

Many of Abigail's teachable moments were by chance and a result of the changing natural environment. These teachable moments could only be achieved by consistent exposure to the natural world, which is different than occasional exposure to science phenomena in a designed informal learning experience. For example, Abigail developed an interest in berries by accident while out walking her dog. Subsequently, she then frequented the berry bush to enjoy the fruit and to observe its changing form during different seasons. Even when she was unable to walk the dog, she would ask her mom to return with some berries when the bush was in season.

Abigail's concrete experiences within nature led to observation, application of knowledge, opportunity for reflection, investigation, and sharing of ideas. Learning with nature, in nature, and about nature in a family context broadened Abigail's view of science and ideas of collaboration in science, which are in contrast to school science that often reinforces narrow ideas of science and authority of textbooks and teachers (Duschl, 2008). Participating in family activities that overlap with scientific practice created a recognition that there are many tools, methods, and interpretations in science. Her conception of science might solidify with more concrete experiences in school by recognizing her learning of science out of school.

### **Implications for Teachers**

Researchers continue to argue that classroom science practices should connect children's everyday experiences to scientific concepts (Gomes & Fler, 2018). Everyday science learning has much to offer when thinking about how teachers might support the three dimensions of science learning outlined in the National Research Council's (2012) *Framework for K-12 Science Education*. The three dimensions represent practices, cross-cutting concepts, and disciplinary core ideas. These dimensions are derived from what is known about the nature of learning science and include young children's capacity to learn science, the development of understanding over time, the consideration both of knowledge and practice, the linkage of science education to informal learning, and the promotion of equity.

To facilitate more equitable science instruction, teachers need to first broaden the idea of what counts as science in classroom instruction (Larimore, 2020). This is accomplished by understanding what children see as science in their everyday lives and then by taking these conceptions seriously. One way to do so is to explore misconceptions or underdeveloped ideas through a "sense-making" approach rather than a "correcting" approach.

When young children's ideas about science are taken seriously, educators recognize that everyday phenomena offer potential science content, which enables educators to begin to build on what children already know and can do (Gomes & Fler, 2018). In this way, teachers have the unique ability to remove barriers that exist between a child's learning in the classroom and a child's everyday learning. Although what happens in a classroom is significantly affected by several governing entities, "classroom teachers in the lower grades may have some latitude in how they use instructional time to meet district and state mandates" (NRC, 2012, p. 245).

If meaningful science learning takes place in the natural world, then teachers need to adopt methods of instruction that increase a child's proximity to the natural world and leverage natural phenomena in academic science learning. Integrating principles of a nature-based approach into teaching practice is one way to do so during instructional hours. Educators need to be able to understand how to facilitate learning with, in, and about nature in programs that are not necessarily nature-based or even nature-inclined. "While it is impractical to transform all preschools into nature-based ones, it is reasonable for early childhood providers to consider the fundamental principles of nature-based preschools and integrate them into their teaching practice" (Larimore, 2018, p. 35).

I believe there is value in trying to influence small changes in established non-nature-based programs as a strategy to bring about a shift in a traditional model of instruction that is unlikely to adopt new ideas unless directed by state or federal governments. The goal is to influence teachers directly at the classroom level by providing them with relatively simple ways of adopting a learning with nature approach even if the entire program does not support or is not designed for such an approach. Larimore (2018) describes a continuum of practice from no nature to nature-based instruction and then outlines practical tips for integrating nature into any early childhood program.

**Implications for Families**

Parents remain a powerful influence on young children's learning and have the unique ability to support their child because of the intimate knowledge of their interests, motivations, and background knowledge. Parents should be encouraged to contribute to conversations with teachers about how to integrate the natural world into the classroom by talking about the things they do at home. Designing parent outreach programs that recognize and communicate the power of this influence is one way to begin dismantling narrow ideas of science in which textbooks and teachers are the authority.

An effective outreach program will encourage families to share real-life examples of the rich science learning embedded in daily life, which can then be integrated into classroom learning. An effective outreach program will also build upon parenting practices that may already be present by reinforcing ways in which parents play an essential role in science learning. For example, encouraging parents to recognize that a child's how and why questions are an expression of curiosity, that asking how or why questions have the potential to invite a child's curiosity, and that prompting their child to think differently about something while also giving the space for that thinking to be incorrect or incomplete is essential for more disciplined science engagement later in life.

Additionally, researchers designing outreach programs can identify valuable "missed" opportunities that emerge from case studies and use these experiences to build specific activities that facilitate parent-child science exploration in the everyday world. For example, after studying Abigail's case, an interesting question that might be asked is, "how could two things, one alive and one dead, be 'growing'?" These opportunities are only missed if we fail to reflect on them and use them to identify what could have been. Sharing and building on rich examples from cases in research further dismantles narrow ideas of science by using real people and real experiences in a way that will help both parents and educators recognize everyday learning as a necessary building block in science competency.

**Limitations and Future Research Directions**

The family that participated in this study reported a high level of science engagement in the survey used to recruit participants. Abigail's family was selected because the goal of this research was to focus on specific characteristics of science learning in a family context. This sampling approach is particularly useful in exploratory qualitative research (Palys, 2008), however, it results in a limited representation of the wider population. Nonetheless, these limitations also represent future research directions to expand the ideas presented in this study. Suggested future directions include exploring science learning experiences of young children that are similar or different from Abigail in terms of various characteristics like culture, race, gender, socioeconomic status, family composition, and geographic location.

**Conclusion**

Family learning offers a snapshot into foundational science learning that takes place during everyday activities when a child is in proximity to nature. For science

instruction in school to be meaningful, the curriculum must consider a student's informal learning experiences. Likewise, for a child to be ready for disciplined science engagement, they must have opportunities to engage in informal science learning to form the building blocks of knowledge. The reciprocity between these two spheres demands science instruction "explicitly draw upon participants' cultural practices, including everyday language, linguistic practices, and common cultural experiences" (NRC, 2009, p. 236). Inclusion of family learning increases the likelihood that curriculum is culturally sensitive because outcomes of academic learning is derived directly from experiences that represent a child's frame of reference (Hedegaard, 2003).

On a special note, the COVID-19 pandemic presented one of the biggest challenges to classroom learning in the history of our education system as academic learning was physically displaced from many schools across the nation. As a result, we were reminded of the need to seriously integrate everyday and nature-based learning into instruction. The irony of teaching and learning during the pandemic is that leveraging informal learning or the natural world was available but, I suspect, underused because it was not well understood or integrated into teaching practice pre-pandemic. I would argue that teachers who had already integrated informal and/or nature-based learning into their instruction were more likely to know how to facilitate continuous learning opportunities during the pandemic because their idea of "real" learning would have already included learning outside of the classroom or learning that leveraged the natural world. Meaningful teaching and learning is not limited to a particular place with a preconceived set of learning experiences, and the construction of knowledge is anything but linear or one-dimensional.

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## Appendix A. Science Activity Task

### Phase One – Relative to Science



### Phase Two – Frequency of Participation



# **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
<b><i>External</i></b>		<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%
<b><i>Psychological</i></b>		<i>18</i>	<i>100%</i>
	Fear	16	88.9%
	Preferences	13	72.2%
	Aversion to Nature	7	38.9%
<b><i>Socioeconomic</i></b>		<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 uncleanliness, 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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# **Creating a Child-Friendly Neighborhood: Iranian Schoolchildren Talk about Desirable and Undesirable Elements in Their Neighborhoods**

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## **Abstract**

*Iranian children live in city neighborhoods often rated poorly in terms of child-friendly indicators. Children's voices expressing priorities, needs, and desires for improving their neighborhoods are given little attention by urban planners. This research investigated schoolchildren's views of favorable and unfavorable attributes of their neighborhood environments. The top three desirable neighborhood features children identified were: participation, access to green areas and the natural environment; and quality of built environments and public urban spaces. These results can broaden planners' perspectives for creating child-friendly local environments. Considering children's ideas like this would help to mainstream better urban policies in Iran.*

**Keywords:** child-friendly neighborhood, children's views, children's participation, Iranian cities, urban planning

## Introduction

Population forecasts show that by 2025, 60% of children globally will inhabit urban areas (Krishnamurthy, 2019). Yet, young citizens have little presence in the decision-making scene. With no role in political or economic development, such as voting or paying taxes, children are commonly overlooked in urban policymaking (Brown et al., 2019). Adults ignore their capacity to participate and influence urban planning and implementation processes (Affandi et al., 2019). Without participatory perspectives, older-generation assumptions have led to the formation of urban spaces which are not child-responsive, especially at the neighborhood level.

Nonetheless, even within prevailing top-down urban planning, some decision-makers have adopted more participatory approaches that recognize children's expertise about their own needs in their lived environment. Instead of *studying children* in the city, it is preferable to understand the urban environment *with children* (Burke, 2005; McAllister, 2011).

Through UNICEF's Child-Friendly City (CFC) framework, which operationalizes the 1989 United Nation's Convention on the Rights of the Child (UNCRC), a movement emerged that focused serious attention on the extent to which urban environments supported children's growth and development. Research in North and South America, Africa, Australasia, Asia and Europe show that most features of CFCs have relevance across all countries. These include children's rights to access basic health and education services, facilitating areas for play (Kingston et al., 2007), and more recently also include attention to clean energy, smart data and ICT networks (UNICEF, 2018). However, implementation of the CFC framework and its features is still influenced by countries' political contexts (Nan, 2020), and cultural norms governing gender, sexuality, and ability.

Interestingly, the religious characteristics of nations or children's relationship with religion are rarely mentioned in the CFC context. This poses additional tensions for scholars and practitioners wanting to support children's participation in planning processes in theocratic nations. In Iran, many traditional cultural and religious rules regulate children's lives—clothing, speaking, mixing, places they are allowed, boys/girls schooling—and children's needs for play, leisure and learning are subordinated to top-down decisions by adults with little awareness of what interests children or what children value in their environment. Children's ideas are not generally considered of value in planning or designing urban locations, nor are children deemed to have the competence to be involved. Children's participation is often considered inherently subversive of existing formal systems even in wealthy democratic countries. Furthermore, children's views may conflict with existing social and cultural norms. Neighborhoods have different spatial, social, and cultural characteristics (Joye et al., 2016), and children use their living environments differently than adults (Monaghan, 2019). It is thus important for local professionals to refine generic models of CFC and children's engagement in planning processes in their local context to create their own child-friendly features in neighborhood development.

The sophistication of children's perspectives about favorable and unfavorable attributes of their neighborhoods can assist urban planners to design more child-friendly neighborhoods. Indeed, awareness of children's priorities, needs, and desires in their neighborhoods has a significant impact on children themselves: being asked to express their ideas about city matters in childhood and exposed to democratic processes prepares them to participate as responsible and mature adult citizens (Oestreich, 2012). Understanding children's perceptions and concerns in urban settings is also significant in raising children as active citizens and enhancing their position within the adult community (Cele & Van der Burgt, 2015). Children's interaction with adults who are part of society's power structures brings valuable effects for these professionals since dialogue between children and adults involves consideration of children's views, taking into account their age and maturity (UNICEF, 2017).

Professionals are capable of jointly planning neighborhoods with children based on children's current and future needs (Rakhimova, 2011). Indeed, in wealthier countries over recent years, increasing attention has focused on working with children to design their neighborhoods to improve physical and social settings for children's benefit and well-being (Carpiano, 2009; Christensen & O'Brien, 2003; Loebach, 2013). Unfortunately, the pace of change is uneven in different areas due to the socio-cultural contexts of children's living environments. Children in many developing countries such as Iran have fewer opportunities to contribute to planning and development processes. Today Iranian children are involved in some local projects and urban research (Behnia et al., 2020; Ghalandarian & Younesi, 2020; IRNA, 2019). Examples of children's involvement in projects in Iran include: the Bam child-friendly city (UNICEF, 2005), the City of Children in Zarand (SedayeZarand News Agency, 2017), the project of "Developing a common vision in the Yousef-Abad neighborhood in Tehran" (Barakpour & Sharafi, 2017), children's expectations from the city of Tehran in the competition of "The city I like" (IRNA, 2019), fostering social inclusion of migrant children in the Yazd community, creating a framework for the implementation of meaningful child participation in the Kouhsangi Complex in the city of Mashhad, and children's participation in the process of urban planning for local parks in Tabriz (UNICEF, 2019). While children's contribution to these efforts is valuable, for their engagement to be genuine, children's insights must be incorporated into planning processes and affect urban decisions and plans' outcomes (Carroll et al., 2019; Clark & Percy-Smith, 2006).

To better understand children's viewpoints about their neighborhood in Iranian cities, we invited 10-12-year-old children to share their understanding of their local environment. The study aimed to elucidate which factors and elements of the neighborhood attract or repel a child in their neighborhood, and whether they consider their neighborhood to be child-friendly or not. The present article begins with the relevant literature around child-friendly settings and the integration of children in creating urban spaces. To better understand the concept of CFC and the situation of urban children in the study area, the next section reviews the idea of the child-friendly city in Iran. The process of inviting participants to reveal insights about their neighborhoods through semi-structured interviews and analysis of children's perspectives are then elaborated in the method and result sections. The

last parts of the article discuss the findings and draw out the main implications of the study.

### **Child-Friendly Urban Environments**

The aim of creating a child-friendly environment is to improve children's lives, now and in the future. A child-friendly city is a sustainable city that supports the rights of children. One of the important aspects of sustainability is including a broad range of voices, including those of children, which is one of the characteristics of a CFC (UNICEF, 2005). Through children's participation in the planning and implementation of urban projects and policy at the local level, children can play a significant role in addressing the challenges of sustainability (Malone, 2016). CFCs are child-oriented in substance, not just in rhetoric, with child-responsive settings that meet children's needs. Creating public spaces for play and leisure and parks emphasizes children's right to participate in public space and discourse (Affandi et al., 2019; Pitsikali et al., 2020; Whitzman et al., 2010). Within a spatial and social planning context, the UNCRC enshrines the rights of every young citizen to: have effective governance (Articles 3, 4, 6); express their ideas (Articles 12-14); participate socially with their peers and engage with their communities (Article 15); have access to nature and a healthy, unpolluted environment (Article 24); enjoy freedom of movement (Article 12); have access to information (Article 17); and be protected from exploitation (Articles 19, 32-36) and discrimination (Article 2, 8, 23) (UNICEF Innocenti Research Centre, 2004). As Malone (2001, p. 11) argues, "a child-friendly city is a people-friendly city" since all citizens benefit from urban interventions that improve children's lives. Cities commit to recognizing and upholding children's human rights (Riggio, 2002) by implementing the UNCRC because this transforms mechanisms of urban governance, the physical fabric of cities, and the very structure of societies.

Since cities have extensive control over political and economic resources, they play an important role in children's lives. Unfortunately, many children live in areas with poor housing, transportation and other physical infrastructure; inadequate waste and sanitation services; limited access to health and education services; and polluted environments. The child-friendly city movement emerged in response to these issues, compounded by globalization and rapid urbanization as rural immigrants flowed into towns and cities. One of the main principles of the CFC framework is children's participation (UNICEF Innocenti Research Centre, 2004) which guides adults and decision-makers to encourage children's participation in decision-making processes and listen to their ideas to ensure that they are reflected in decisions affecting children's lives (Davey et al., 2010; Lansdown, 2001; Carroll et al., 2019). Specifically, Article 12 of the UNCRC states that children have the right to "express an opinion and to have that opinion taken into account in any matter or procedure affecting the child" (United Nations, 1989).

In addition, the CFC framework identifies eight other building blocks (United Nations Convention on the Rights of the Child, 2009, p. 9):

*A child-friendly legal framework; a city-wide Children's Rights Strategy; a Children's Rights Unit or coordinating mechanism; a child impact assessment*

*and evaluation; a children's budget; a regular State of the City's Children Report; dissemination of children's rights and independent advocacy for children.*

For each building block, researchers and planners have roles in providing advocacy for children and contributing to strategies, impact assessment, budgeting and reporting. To do so effectively they need to consult with children about their lives. Children are capable of understanding their surrounding environments and they are familiar with the influence of their local environment on their own lives, so it is highly desirable they should participate in community development processes (Driskell, 2002). When children are asked about what makes a good city, they are knowledgeable and expressive (Woolley et al., 1999; Morrow, 1998; Driskell, 2002; Alderson, 2000).

Within the local setting, one of the goals of child-friendly environments is that children of different ages are able to explore, experience, play and socialize with peers in their neighborhoods, with or without the presence of parents or caregivers (Gill, 2019; Hashim et al., 2019). The environmental quality of the neighborhood affects children's identity and sense of belonging and their physical and mental development (Monaghan, 2019). The neighborhood is the gateway to the larger city context; thus, before facing the complexities of the city, children gain experience in the local environment, learn to understand and accept differences, and learn to be patient and responsible citizens (Freeman & Tranter, 2011; Hashim et al., 2019).

Child-friendly neighborhoods can promote children's mental health and well-being and allow them to feel safe in independent and unrestricted movement. The main characteristics and elements of a child-friendly neighborhood are similar to those of a child-friendly city, including child participation and access to green, play and safe spaces (Zerlina & Sulaiman, 2020). The results of some studies have identified other characteristics and elements as enhancing the child-friendliness of neighborhoods. Zerlina and Sulaiman (2020) include playgrounds, access to public parks, green areas, safety, independent mobility, cycle routes, pedestrian connectivity, housing, and children's participation as features that make a neighborhood child friendly. Martin and Wood (2014) divide the characteristics of a child-friendly neighborhood into two realms: the physical realm and the psychosocial realm. The physical realm includes characteristics such as walkability, aesthetics, nature and green spaces, "places to go," and being able to "do things" within the local neighborhood. Such a neighborhood environment is a place not only for smaller children but for adolescents as well. In the realm of psychosocial safety of the neighborhood, Martin and Wood (2014) include feeling valued and not excluded, as well as a sense of community.

Remarkably, children's views show consistent themes over time and across countries. Research about children's independent mobility is one example seen in the following series of studies: Poland, Mexico and Argentina in the 1970s (Lynch, 1977), Australia in the 1990s (Malone, 1999), and Denmark (Christensen & Mikkelsen, 2013), New Zealand (Witten et al., 2017) Turkey (Çubukçu et al., 2018), Malaysia (Yatiman et al., 2012) and South Africa (Benwell, 2009) in the

2000s. Findings across this research show children value nature and visiting friends, but concerns about traffic cause them to restrict their movements if they feel the environment is not safe. A positive common aspect of studies about children's rights and creating child-friendly cities has been researchers' respect for children's views about their environments, and the desire to help children influence policy and planning decisions.

### **Children's Participation in Child-Friendly Cities**

One of the main principles of the CFC framework is children's participation (UNICEF Innocenti Research Centre, 2004), which guides adults and decision-makers to encourage children's involvement in decision-making processes and to listen to children's ideas to ensure that they are reflected in decisions affecting their lives (Davey et al., 2010; Lansdown, 2001; Carroll et al., 2019). Specifically, Article 12 of the UNCRC states that children have the right to "express an opinion and to have that opinion taken into account in any matter or procedure affecting the child" (United Nations, 1989). In addition, the CFC framework identifies eight other building blocks to ensure child-friendliness in urban environments (Children & Family Justice Center et al., 2009, p. 9):

*A child-friendly legal framework; a city-wide Children's Rights Strategy; a Children's Rights Unit or coordinating mechanism; a child impact assessment and evaluation; a children's budget; a regular State of the City's Children Report; dissemination of children's rights; and independent advocacy for children.*

For each building block, researchers and planners have roles in providing advocacy for children and contributing to strategies, impact assessment, budgeting and reporting. To do so effectively, these professionals need to consult with children about their lives. Children are capable of understanding their surrounding environments and the influence of their local environment on their own lives, so it is highly desirable that they should participate in community development processes (Driskell, 2002). An extensive body of research has demonstrated that when children are asked about what makes a good city, they are knowledgeable and expressive (Woolley et al., 1999; Morrow, 1998; Driskell, 2002; Alderson, 2000). The present research builds on this work by adding Iranian children's views about their neighborhoods.

### **Child-Friendly Urban Settings in Iran**

The concept of designing a child-friendly environment does not have a long record in Iran (Kalantari et al., 2013; Kiani & Esmailzadeh Kavaki, 2012). The number of discussions about children's transport is increasing (Ahmadi & Taniguchi, 2007; Davoudi et al., 2018; Shokoohi et al., 2011), and the same is true of articles about children's urban context in Iranian journals (Marouf et al., 2015; Ramezani & Said, 2013; Shahrizadeh & Moayedfar, 2017b). There is still, however, a paucity of data about children's views that constrains the ability to influence decision-makers.

The absence of policies and processes that include children in planning their neighborhoods is also influenced by Iranian history. In 1979, the Islamic and

republican revolution in Iran transformed the political system from a kingdom to a theocratic Islamic republic. Iran underwent massive social changes that have influenced family size and urbanization. Along with progressive effects reducing birthrate, greater restrictions were placed on people's mobility, especially that of girls and women, and religious study increased in schools. In the post-revolutionary period, the country experienced war with neighboring Iraq for nearly a decade. Although Iran ratified the UNCRC, Iranian children face many problems including poverty, child labor, and homelessness, along with distinctly urban issues of access to the outdoor environment, traffic, and places for children to play. These problems point to the planning and policy gap in addressing the well-being of children in Iranian cities (Marouf et al., 2015).

Various factors have contributed to restricting Iranian children's active presence in the urban public spaces of their neighborhoods. Modernization has led to changes in the structure of Iranian cities that have significantly restricted children's movements in and between high-rise apartments and home spaces. Cities formed around arterial roadways to make traffic flow easier, however in most cases this form denies the physical and psychological needs of children, compromises their safety, and frustrates their experience of open space in city neighborhoods (Mansouri & Ghare Bigloo, 2012). These problems have increased parents' concerns and consequently reduced the presence of children in urban environments and isolated them in private spaces. In a study of the relationship between neighborhood physical environments and the leisure activities of 10- to 12-year-old children in Tehran, Hedayati (2018) indicated that children's activities were more inside the home than outside. In poorer socio-economic areas some children can still be found playing in neighborhood public spaces.

Another reason for children's absence in public spaces is lack of access to the appropriate urban services required to address their needs. A study in Yazd City about per capita funding in urban development plans found that allocations were insufficient to meet the needs of children under 18 years. This resulted, for example, in a lack of play equipment (Shahrizadeh & Moayedfar, 2017a). Research in Ardabil City examined primary school children's ideas about their ideal city and also found that city facilities were not adequate for children; except for a few playgrounds and parks, no other spaces were dedicated to children. Here, too, this lack of urban play spaces limited children's activities mainly to home and school (Imani et al., 2017). Overall, the contemporary urban form in Iran has minimized urban spaces and does not properly facilitate children's presence and activity.

## **Methods**

We conducted semi-structured interviews with 30 children aged 10-12 years to identify how they feel and think about where they live. "Qualitative research experts argue there is no straightforward answer to sample size" (Vasileiou et al., 2018, p. 2), but the imperative is to provide new data and identify common patterns. This cohort of children provided a range of opinions but was not too large to analyze for the practical purpose of identifying themes relevant to the investigation. Environmental research has shown that school-age children are the most engaged users of outdoor landscapes, especially around home and local

surroundings (Chatterjee, 2006). At the age of 10-12-years children are able to express their understanding of their environment.

We conducted this research in the city of Mashhad, located in northeastern Iran. Mashhad is Iran's second-largest city by population, area, and number of construction projects (Akhavan Tabassi & Abu Bakar, 2009). In the context of Iranian single-gendered schools, we selected equal numbers of children from a girls' school and from a boys' school to participate. Both selected schools are located in middle-income neighborhoods in Mashhad, thus eliciting the experiences of children who form the socio-economic majority in Iran, rather than wealthy or extremely poor children.

The lead author conducted the interviews with children individually. Two aspects of the interview method in this study are notable. First, semi-structured interview techniques are supported by feminist scholars for studying women and other marginalized groups, including children (Chatterjee, 2006). Since these groups often have no opportunity to tell their stories, methods such as face-to-face interviews allow them to do so. Second, interviews took the form of informal conversations, so children could be more relaxed when participating in what was for them a new type of interaction. Complicated words were avoided, as well as overly simple words and notions, as both can restrict children to trivial answers (Alderson, 2000; Fargas-Malet et al., 2010). Children were asked which aspects of urban spaces they liked and did not like in their neighborhoods, and whether they considered their neighborhoods child-friendly spaces or not. Further questions sought more detailed information. The interviews were recorded and transcribed.

Several children took the interview conversations to a second level, expressing curiosity about why the researcher was asking about their ideas regarding their local settings. They wanted to know who would use their data and for what purpose—these are positive examples of research participants “speaking back” to the research process/project itself (Jacobs-Huey, 2002). Sometimes during interviews children stopped and thought about the questions or the conversations, some remaining engaged, while others ended their interview. The interviewer would wait and give space for this variety of responses, following the precept that “listening to children is also about respecting their silences” (Clark, 2001, p. 335).

We applied thematic content analysis to the qualitative interview data (Gentile, 2016). In addition to the identification of themes relevant to planning, we identified emergent themes during coding and the analysis of interview transcripts in a joint deductive-inductive process via NVivo that is common in such research (Lobe et al., 2008). This research had university human research ethics approval.

### **Findings: Child-Friendly Neighborhood Indicators from Children's Perspectives**

Children's perceptions about desirable and undesirable elements and aspects of their living environments included both physical and social characteristics, and reflected matters addressed by the UNCRC. Our analyses led to the generation of themes presented in Table 1 showing desirable characteristics children identified for

their neighborhoods. Children talked about participation in activities that affect their lives, access to nature, the quality of the urban built form and public spaces, access to recreation and play spaces, level of street and neighborhood hygiene, and socio-cultural issues such as safety and social networks. Participants also mentioned the importance of religious spaces, reflective of their political and socio-cultural context.

**Table 1. Children’s views of characteristics of a favorable neighborhood**

<b>Theme</b>	<b>Category</b>	<b>Sub-category</b>
<b>Participation</b>	Participation of children	<ul style="list-style-type: none"> <li>• Listening to children’s voice</li> <li>• Participation of children in schools</li> <li>• Participation of children in neighborhoods’ decisions</li> </ul>
<b>Green spaces and natural environment</b>	Parks	<ul style="list-style-type: none"> <li>• More neighborhood parks</li> </ul>
	Other green elements	<ul style="list-style-type: none"> <li>• Planting more trees</li> <li>• Planting more flowers</li> <li>• More lawn</li> </ul>
	Protection of green spaces and natural environment	<ul style="list-style-type: none"> <li>• Protecting plants during playing</li> <li>• Watering trees in the neighborhoods’ parks</li> <li>• Not walking on the grass in the parks</li> <li>• More protection in neighborhood parks</li> </ul>
<b>Quality of built environments and public urban spaces</b>	Public urban spaces	<ul style="list-style-type: none"> <li>• More urban furniture</li> <li>• More open spaces</li> <li>• More paved streets</li> <li>• Squares in neighborhoods</li> </ul>
	Buildings	<ul style="list-style-type: none"> <li>• Renovating old buildings</li> </ul>
	Shopping centers	<ul style="list-style-type: none"> <li>• More and well-designed shopping centers</li> </ul>
<b>Recreational and play spaces</b>	Streets as playing areas	<ul style="list-style-type: none"> <li>• Biking in the streets</li> <li>• Playing football</li> <li>• Meeting friends</li> </ul>
	Other play spaces	<ul style="list-style-type: none"> <li>• More football fields</li> <li>• More game clubs</li> <li>• Public hall</li> </ul>
	Gender specific play area	<ul style="list-style-type: none"> <li>• More sports fields for girls</li> </ul>
<b>Hygiene</b>	<ul style="list-style-type: none"> <li>• Cleaner neighborhood</li> <li>• Not throwing rubbish in the streets</li> <li>• More trash bins</li> <li>• Cleaner parks</li> <li>• Cleaner playgrounds</li> <li>• Cleaner public toilets</li> <li>• No dusty and muddy areas</li> </ul>	

<b>People and friends</b>	People	Presence of people
	Friends	Socializing with friends Playing with friends and peers
	Neighbors	Kind neighbors Positive feelings towards neighbors
<b>Safety and security</b>	Safety in the built environments and public urban spaces	Less dead-end streets Less old buildings Less narrow streets
	Safety in green spaces	Safe parks with no offenders
	Safety elements	Guard in the neighborhoods Guard in the parks More police officers
<b>Access and proximity</b>	Access to school Access to parks	Less distance between schools and houses Less distance between parks and houses
<b>Religious spaces</b>	Holy Shrine Mosques Religious schools	

Children referred to their emotions and memories from specific places and times they had spent in their neighborhoods. Urban characteristics, available activities, and constraints in their neighborhoods influenced their experiences—for instance, play equipment or its absence; bike, walking and running spaces; areas for ball play; trees and other natural components. However, children’s comments were not always based on their own experiences; they sometimes relied on what they learned from others about judging urban spaces. Thus, children’s responses can be seen to represent their unique personality, socialization with their families, religious and other educational training, and also their individual socio-cultural and religious backgrounds.

**Participation**

Children talked about their willingness to take part in decisions, including decisions made at schools and also decisions about their neighborhoods. They believed that children like themselves should be engaged in creating spaces and places in their local areas. Typical responses from children included:

*Children must be asked about their neighborhood parks because adults do not know what happened in our hearts (10-year old boy).*

In addition to children’s desire to participate in the study and share their views about their neighborhoods, the discussions often revealed that children were insightful and knowledgeable about the physical, social, leisure and ecological aspects of their neighborhoods. Importantly, some of the children could link different experiences and observations to abstract concepts; for example, one 10-year-old girl linked the night-time activity of shops with her sense of security, “I

like shops in my neighborhood because they are open until night, so my neighborhood is safe."

### **Green Spaces and Natural Environment**

Children's ability to think at multiple levels was evident when discussing access to nature and the quality of parks. Children identified the planted areas of their neighborhoods and their local parks as desirable places to be. These were areas that gave them a sense of well-being. As one 12-year-old boy exclaimed, "I like the green area in my neighborhood because it makes me feel good." In addition to their emotional response to nature, children had pragmatic suggestions for improving the natural elements in their neighborhoods. Examples of these actions included "planting more trees and flowers," "building more parks," "more lawns," "more green spaces" and "improving the quality of parks."

Indeed, children mentioned improvements to parks and natural areas in their neighborhoods more frequently than other aspects of their urban environments, demonstrating how important the natural environment is in their lives. Children could also think strategically into the future, as illustrated by their views about the need for the protection of green spaces. For example:

*Parks must be kept!* (10-year-old girl)

*The nature of [our] neighborhood should be preserved* (11-year-old girl).

These girls seemed to be concerned they might lose nature in their neighborhood, so many of their comments focused on how to preserve the environment. They mentioned: "protecting plants during playing," "watering trees in the neighborhood's parks" and "not walking on the grass in the parks."

### **Quality of Built Environments and Public Urban Spaces**

Children's appreciation of nature was not restricted to parks and vegetation. Some children talked about other spaces in their neighborhoods, such as squares, which also allow children to interact with nature. "I like the neighborhood's square because it is big, has a fountain and has green parts around it," mentioned an 11-year-old boy. Children liked those public urban spaces in their neighborhoods where they can enjoy nature, beauty and good design.

Children discussed the general quality of the built environments in the things they noted as positive or negative in their experience, as well as identifying more specific attributes of shops and streets. Their conversations revealed the plurality of their aspirations, interests and needs for the city in which they live. While some children wanted to see the city "building bigger and more buildings," others supported the "renovation of old buildings." A few children liked the design of hotels in their neighborhoods. In neighborhoods that had hotels, children expressed interest in the hotels' physical design and their function in bringing diverse groups of people and activities to their locality. Some indicated a need for "more kindergartens." Importantly, children were articulate when explaining why they liked environmental features, and the implications for their neighborhood. One 10-year-old girl stated, "[the] streets where I live are good because they are clean."

### **Recreational and Play Spaces**

In addition to mentioning the attributes of the built environment, children also identified the functional benefits of physical spaces in their neighborhood. Iran segregates schools by gender in both primary and secondary education, as well as outdoor play. Boys have much greater freedom in neighborhood mobility and are allowed to play sports and engage in physical activities. Girls, by contrast, face cultural and religious protocols constraining their activities to a much greater extent. Many of the boys said that they liked the streets of their neighborhoods because they can play there. They also talked about the benefits of sports fields and public halls in their neighborhoods, which allowed them to socialize, play, and take part in outdoor physical activities, sports as well as more sedentary activities. Comments from a 12-year-old boy demonstrated awareness of spatial relationships due to their experiences and observations, "I do not like the parking lot in front of our neighborhood's park which is an obstacle to playing football." The following quotations illustrate themes regarding facilities and boys' enjoyment of sporting activities:

*I like the football field in my neighborhood (12-year-old boy).*

*The game club of the neighborhood is one of the good places (12-year-old boy).*

*I like biking in the neighborhood (10-year-old boy).*

*I like those parts of the neighborhood where I can play with my friends (11-year-old boy).*

Children had ideas for changing and modifying the playing areas in their neighborhoods. They expressed their wishes about "building amusement parks," obtaining "equipment for playing football, volleyball and basketball," "building playfields."

As boys have more freedom in playing outdoors, as noted above, some girls suggested "building sports fields for girls," so they could also be more active. The desire for girls to have their own sports fields suggest they want to have similar opportunities to boys, even though religious and cultural norms limit the location, time and type of activities that girls are permitted.

The remarkable thing about what both boys and girls said about modifying their neighborhoods' playing areas is the practical competence they demonstrated. On the one hand, they were able to imaginatively assess limitations in their physical environment, while on the other hand they could propose appropriate solutions that are congruent with children's activity needs and sensible planning actions that had not been enacted.

### **Hygiene**

Features of living areas relating to hygiene and keeping neighborhoods clean were important indicators for children that spaces are child-friendly. Children discussed the need for "cleaner parks" and "cleaner playgrounds." Some of them expressed their desires for more waste facilities and services, as one 10-year-old girl said, "[m]ore trash bins in my neighborhood are required; maybe it helps make cleaner

streets." Some children recognized the behavioral elements that create dirty neighborhoods, for instance, one 12-year-old girl wanted action so that local people would "not throw away rubbish," understanding that better waste facilities would help change behavior. Other children could see the benefits of proactively maintaining the tidiness and hygienic qualities of the neighborhood in statements such as this by a 10-year-old boy who proposed, "Gathering the rubbish from neighborhoods."

### **People and Friends**

The presence and connection between people make children feel safe and secure, a key element in creating livable spaces for them. As a 10-year-old girl shared, "The crowding of people in our neighborhoods is important for me because it makes me feel safe." Many children reported they liked their neighborhoods because they have friends and neighbors nearby. Some children also expressed positive feelings about their neighbors who are known to them: "We have kind and friendly neighbors in our neighborhood. They help us when we need them" (12-year-old girl).

### **Safety and Security**

Ensuring that spaces in the neighborhoods promoted safety was another common idea expressed by children. Recommendations for improving safety included: "guards for protecting neighborhood," "guards for protecting parks," and "guards in the narrow streets." Children's suggestions centered on formal types of policing instead of community-based or physical design responses, so it seems that children made distinctions between a general social safety net provided by the broader community and professional protection from criminal or other serious activity.

### **Access and Proximity**

Access to children's desired locations such as parks and schools was an important issue for children. Some children expressed the need for "building parks closer so we can walk to parks," and others explained that developers should be "building schools near houses," all of which are ideas that align with desirable planning practice. Some children considered their neighborhoods to be pleasant because they have good, easy access to places and services. A 10-year-old girl said, "The best feature of our neighborhood is its proximity to my school."

### **Religious Spaces**

One significant item children mentioned during interviews was access to religious areas such as mosques in their neighborhoods. Faith-based sites are favorite places for some children. A boy aged 12, for instance, mentioned that "We live in a good neighborhood because we have access to the Holy Shrine." A 10-year-old boy noted, "I like a religious school (seminary) in our neighborhood." A combination of factors makes this worth noting for urban designers. Some children find visiting their local mosque pleasurable with family members and relatives. This develops their cultural sense of tradition in a secure and calm environment. In the increasingly restricted urban milieu, the promise of physical space in religious settings also offers the embedded aesthetics that are built into the location, in contrast to utilitarian home environments or less structured, unsafe or unavailable

places elsewhere in the neighborhood. Safe and easy access across roads to religious places is one example of the need for conscious adaptation of urban design. Some children found being able to go to the mosque with grandparents or other relatives to be pleasant and companionable, moving through an environment imbued with a sense of faith tradition and history.

### **Child-Friendly Neighborhoods**

Children were asked whether they considered their neighborhood to be child friendly or not. Out of 30 participants, six children believed that their neighborhood was not suitable for children, but 24 considered their neighborhood to be child friendly. Those who thought their neighborhood was unfriendly mentioned religion, size, safety and ordinariness, as illustrated by the following quotations: "our neighborhood is a "religious place," "our neighborhood is poky," "our neighborhood had nothing special," and "it is not safe outside at night." While many children liked their neighborhood's religious spaces such as mosques and their surrounds, a few of the children referred to religious characteristics of neighborhoods as a less-friendly feature. For these children, if observant practices had the effect of restricting available space and opportunities for playing activities, they perceived this as reducing the livability of their neighborhood.

Most of children had a sense of belonging to their neighborhoods. The statements below show that both boys and girls agreed on aspects that make a child-friendly neighborhood:

*It is child-friendly because it is near to shops and parks (12-year-old girl).*

*It is friendly for children because of its park (12-year-old boy).*

*It is good for children since it has some places for playing (10-year-old boy).*

*It is a good place because I can play with my friends there and visit my relatives (11-year-old girl).*

*It is appropriate for children because it is near the Holy Shrine (10-year-old boy).*

*It is suitable for children because it has policemen (11-year-old boy).*

Children did not mention many unfavorable areas in their neighborhood. Many of them answered that everything is pleasant. However, the most frequently mentioned answers about undesirable features of their neighborhoods included old buildings in some neighborhoods, the presence of some shops and how some shops were operated, the attributes of some local parks, lack of safety in some neighborhoods, and the general character of the neighborhood in some instances. Typical responses were:

*Some local shops are expensive, and their products are not up to standard. There is no date of expiration on some goods (12-year-old boy).*

*I do not like the park of neighborhood since a robbery took place (10-year-old girl).*

*Some shops are crowded and men and women are close to each other (11-year-old boy).*

Again, intrusion of high-priced shops are perceived as extractive rather than part of locally based shopping. Community safety, too, is highlighted above even the desirability of room and space for enjoyable activities. Further, while a child in the United States would not even think to refer to men and women being in close proximity, in Iran, the juxtaposition of men and women is commonly understood in religious and gender hierarchy terms. In the preceding quote from an Iranian child, it is clear that crowded neighborhood spaces are perceived as undesirable not simply due to physical discomfort, but because of the breach of religious-political gender expectations. Each of these is part of the difficulty building local resilience without attention to these urban children's needs.

## **Discussion**

This research aimed to discover what children in Mashhad City, Iran, thought about their neighborhoods, and the elements that they considered to be child-friendly. This article has presented children's interview responses to demonstrate that children's points of view are valuable and that they can be active partners in planning. The findings indicate that children like many aspects of their neighborhoods, such as the natural aspects of parks and aesthetically pleasing buildings that reflect tradition, religious values and architectural design. They think greater attention needs to be focused on improving the quality of some of their neighborhoods' features such as access to green spaces and cleanliness.

While many aspects of these Iranian children's views including safety, quality of the environment, and access to play and green spaces were similar to the ideas of children in other contexts such as Australia (Horsley neighborhood in the town of Dapto; Malone, 2011), Finland (the neighborhood of Pihlajamäki in Helsinki; Haikkola et al., 2007), and Sweden (three neighborhoods in Stockholm and the town of Gällivare; Nordström, 2010), there were also differences due to context-specific matters. The present research suggests that aspects of the UNCRC and the CFC framework can and are being effectively applied in Iran, but indicators assessing the child-friendliness of neighborhoods should continue to be developed locally. Cities and countries have unique social, economic and cultural backgrounds. Historically in Iran, children have been, and continue to be, ignored during decision-making processes, although there are some signs that this is changing. Traditional patriarchal systems in Iran did not let children express their opinions freely either in the family nor in society, and this is still a problem today. In the present study, for example, differences between girls' and boys' ability to play freely outdoors were indicated by the lack of girls' voices about playing in the street and their expressed desire for a girls' sports field.

In theocratic societies, children are strongly aware of and engaged with religion and the influence of associated cultural norms, but this is not strongly represented in contemporary research nor the development of CFC indicators. Religious spaces can have an important role in shaping children's ideas about their neighborhoods. In the present study, some children talked about mosques in their neighborhoods, which is not surprising, as the majority of neighborhoods in Iran have a mosque and a primary school as the neighborhood center. Visiting the local mosque with

grandparents and moving within the wide spaces offered there provides positive feelings for many in this 10-12-year old cohort of schoolchildren.

The use of conversational, semi-structured style interviews as a research tool allowed children's ideas about their neighborhoods to be elicited gradually and dialogically. It gave the children the chance to convey their thoughts and feelings in words in more open and independent ways. What participants said about their neighborhoods' features demonstrates that children living in the context of this research reflected similar preferences to what children have expressed in other contexts, including children's desires to access green spaces and play with friends in a hygienic and safe neighborhood.

## **Conclusion**

This research has reported the views of children living in the city of Mashhad in Iran about their neighborhoods and what would make their local settings ideal. Participants had valuable perspectives and suggestions for making their neighborhoods better, showing a high level of competency and demonstrating that they are capable of working with professionals to design urban strategies.

Facilitating more interaction between planners and local children can provide the missing link for better planning in Iran. This can include considering children's engagement in neighborhood planning, integrating children's insights into local programs' outcomes, institutionalizing the concepts and methods of participation in educational environments through programs such as student councils, and establishing institutions such as child and youth councils in local governments.

Fortunately, there are existing educational structures that facilitate children's participation in civic activities, and children in this study were eager to contribute to research and planning processes. Their comments indicated that many of their human rights are being partially addressed within their neighborhoods, such as access to parks, space enabling outdoor play, places to socialize, and experiencing a sense of safety. Children also raised important issues with regard to the quality of parks and services as well as public cleanliness and disposal of rubbish.

The information that the children provided was informative and relevant to decision-makers and planners. This sort of information can readily be incorporated into city-wide children's strategies and state-of-the-city's-children report updates. Thematic and local issues and topics need not undercut other planning assessments or proposals, but rather add value. Significantly, children's contributions can provide professionals with salient information for spatial and social planning. This enables planners to advocate on the behalf of children, and to help children influence the development of child-friendly spaces and places.

The challenges for children and professional planners in Iran are layered, building upon the theocratic patriarchal system of governance, the planning system itself, and the willingness of planners to work with children as partners in planning activities for better urban environments.

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# **Designing Hospital Environments to Improve the Psychological Wellbeing of Pediatric Patients**

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## **Abstract**

*The hospital environment may either positively or negatively affect patient experience. The potential of the hospital environment to stimulate children's psychological wellbeing (PWB) is yet to be fully understood. This paper aims to describe how interventions in the hospital may improve the PWB of pediatric patients (including self-acceptance, positive relations, autonomy, environmental mastery, life purpose, and personal growth). We conducted interviews with healthcare experts to identify possible interventions that would respond to children's needs, and architecture and mental health experts assessed the proposals' potential to improve children's PWB. Results indicate that it is possible for the hospital environment to stimulate all components of children's PWB, especially environmental mastery, personal growth, and self-acceptance.*

**Keywords:** healthcare design, hospitals, wellbeing, psychological wellbeing, pediatrics

## **Introduction**

Many components of healthcare environments have the potential to positively affect patient wellbeing (Diener et al., 2018). Healthcare environments that meet users' needs can improve not only their physical but also psychological health (Bosch & Lorusso, 2019; Carrus & Pirchio, 2019; Felipe et al., 2017).

There is an increasing interest in understanding the impact of healthcare environments on patients' emotional responses in order to better align design strategies with users' needs (Capolongo, 2016; Gharipour & Trout, 2020). Healthcare facilities can meet pediatric patients' needs for autonomy (e.g., Lambert et al., 2013; Peditto et al., 2020), reduce their feelings of isolation (e.g., Bosch & Lorusso, 2019; Lambert et al., 2013), and create a more positive hospital experience by stimulating social engagement, interaction, entertainment, and learning (Lambert et al., 2013). Such environments are commonly referred to as "child-friendly." They may help lessen the patients' suffering (Hamdan et al., 2016) and support children's wellbeing (Ford, 2011).

Healthcare providers are commonly invited to be part of the process to design hospital environments since their opinions are based on observations and daily interaction with the patients (Mourshed & Zhao, 2012). Following this approach, we propose the following research question: based on experts' assessments, how may interventions in the built environment improve the wellbeing of pediatric patients during hospitalization?

This paper contributes to the state-of-the-art in healthcare design by understanding how the built environment may impact the psychological wellbeing (PWB) of hospitalized children. Our perspective targets specific components of PWB: self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth (Ryff's model of psychological wellbeing; Ryff, 1989; Ryff & Keyes, 1995). The novelty of our study relies on discussing how specific interventions in the built environment may stimulate each component of PWB. The interventions proposed in this paper were directed to the Brazilian Universal Healthcare System, which means that they are context-specific, although hopefully they can inspire similar work in other countries.

Our study was divided into two stages. In the first, we conducted in-depth interviews with seven volunteers with experience in pediatric inpatient care who shared their proposals to stimulate children's wellbeing. In the second stage, eight mental health and architecture professionals linked the proposed interventions to the six components of PWB described in the following section.

## **Designing Hospitals to Improve Children's Wellbeing**

Subjective wellbeing is a broad concept that includes a person's "emotional responses, domain satisfactions, and global judgments of life satisfaction" (Diener et al., 1999, p. 277). It relies on individuals' subjective appraisals of their own lives (Keinonen et al., 2013) based on two sources of information: cognitive evaluations and emotional assessments (Veenhoven, 2010). Such evaluations refer to several life domains, including one's health.

Psychological wellbeing (PWB) is a construct that entails more than emotion and life satisfaction. Ryff (1989) describes six core dimensions of PWB:

- self-acceptance (thinking positively about oneself)
- positive relations with others (loving others, being empathic, having affection for others)
- autonomy
- purpose in life (feeling that there is purpose in and meaning to life)
- personal growth (development of one's potential, growing and expanding as a person)
- environmental mastery (participating in and mastering the environment, being able to choose or create settings suitable to their psychic conditions)

In healthcare settings, the physical environment may have an impact on patient wellbeing and psychological health (Alzoubi & Al-Rqaibat, 2015; Bosch & Lorusso, 2019; Carrus & Pirchio, 2019; Water et al., 2017; Shepley et al., 2012). Hospital environments can promote patient engagement in their treatment by providing "physical comfort, sense of control, access to social support, and access to positive distractions" (Bosch & Lorusso, 2019, p. 82). Such distractions have the power to enhance positive feelings and to hold a person's attention (Ulrich, 1991).

Distractions may help hospitalized children stay occupied and positively engaged, reducing their risk of becoming bored and experiencing negative feelings about their situation (Bishop, 2017). Hospital environments that do not have the capacity of igniting children's imagination and help them deal with being in the hospital can lead to absenteeism from outpatient appointments. Adding positive distractions and features to the environment may not only help with absenteeism but also benefit pediatric patients' wellbeing and help reduce their resistance to treatments (McLaughlan et al., 2019). Overall, the hospital environment directly affects patients' health and recovery, with a healing environment helping reduce their stress while hospitalized (Douglas & Douglas, 2014).

Pediatric patients also desire to control their surroundings to have a greater sense of autonomy (Peditto et al., 2020; Sherman et al., 2005). Built environment features that may improve the experiences of hospitalized children include: spaces that facilitate patient interaction (Asfour, 2019; Peditto et al., 2020; McLaughlan, 2017; Nasab et al., 2020); cheerful colors (e.g., light blue, light green, and light yellow) that help diminish the clinical and scary character of the built environment (Water et al., 2017; Nasab et al., 2020); colorful decor and furniture; natural light, green spaces, and water features (Nasab et al., 2020); pictorial interventions (Monti et al., 2012); temperature control; personalizable rooms; and kitchen access (Peditto et al., 2020).

The built environment is crucial to achieving successful treatment outcomes; healthcare based solely on a biomedical perspective does not lead to satisfactory care from the patient's perspective (Edvardsson et al., 2006). Thus, to design hospitals to enhance children's wellbeing, it may be valuable to bring a wide variety

of experts' ideas and perceptions into the design process. Our methods, presented in the following session, include data collection and analysis based on the opinions of experts including physicians, nurses, child life specialists, mental health professionals, and architects.

## **Method**

This study used a qualitative research design divided into two stages to identify the potential of interventions in hospital environments to improve the psychological wellbeing (PWB) of pediatric patients.<sup>1</sup>

### **First Stage**

In the first stage of the study, the researchers conducted individual in-depth interviews, in a semi-structured format, with seven healthcare professionals during the participants' working hours. The interviews took place at Hospital de Clínicas de Porto Alegre, in the pediatric unit where patients aged 0-17 years old are treated. The authors invited the interviewees in person or via email to take part in the study. In case of an agreement to participate, interviews were booked according to the participants' schedules. Interviewees signed an informed consent form, which was followed by the interview.

The researchers presented participants with three open-ended questions investigating their ideas for interventions in the built environment to stimulate the wellbeing of hospitalized children:

1. What could be improved in the hospital rooms? (For example, colors, stickers, and the like)
2. What could be improved in the children's experience when they are submitted to radiology exams? (For example, the temperature of the gel used during exams, or equipment sounds)
3. What could be improved in the children's experience when they are submitted to laboratory exams? (For example, they may feel uncomfortable with intravenous (IV) lines or the mobility of IV poles)

The interviews were audio-recorded and transcribed. We analyzed the interview contents using Thematic Analysis, with responses grouped by similarity into categories (e.g., design, co-creation, and play). When data saturation was achieved (i.e., additional interviews stopped bringing new content), the interviewer stopped inviting experts to participate. To preserve participants' anonymity, they are presented in the results section as HC1 to HC7 (HC indicating healthcare professional).

### **Second Stage**

In the second stage of the study, we engaged with four mental health professionals and four architects. Participants were approached by email. Similar to the first stage of this study, research aims were explained, and informed consent forms

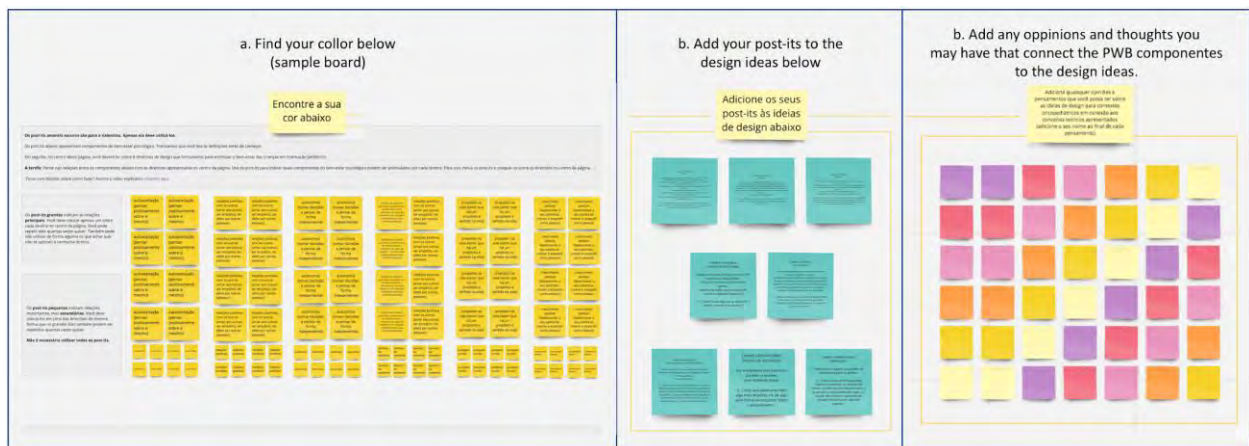
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<sup>1</sup> This study was approved by the Institutional Review Board of the Clinical Hospital of Porto Alegre (CAAE # 94028918.5.0000.5327).

were collected prior to data collection. Using an online platform, the eight participants reviewed the interventions proposed by the healthcare professionals in the first stage of the study and evaluated their potential to stimulate children's PWB during hospitalization.

Logging in to the online platform at a time of their preference, participants first watched a 5-minute video recorded by the researchers explaining the task and related contents: (i) The participants were expected to connect the six components of PWB, which were explained in the video, to the categories of design interventions to stimulate the PWB of pediatric patients during hospitalization that were put forward in the first stage of the study (Table 1). (ii) Each participant had a color assigned to them, displayed on the left of the page, and several sticky-backed notes identifying the components of PWB in their color. They were instructed to use only the sticky notes of the color assigned to them. The large sticky notes indicated primary (more substantial) connections, and small sticky notes meant secondary connections (i.e., relevant but less meaningful than the primary one) (Figure 1a). (iii) They were instructed to place their sticky notes on the top of the categories of design interventions presented in green in the center of the page (Figure 1b). They were asked only to connect the PWB components they felt were relevant to the categories of design interventions. They were asked to connect only one primary component of PWB to each category, but they could also link secondary components to the categories. (iv) They should provide explanations to each connection made, using the sticky notes available on the right of the page (Figure 1c). Even though the task was performed asynchronously by the participants, they were each stimulated to log in many times to the online platform, see what other participants had responded to, and complement their responses. In some cases, when researchers were unclear about the explanations provided on the right-hand sticky notes, participants were asked to log in and provide further information.

**Figure 1. Task displayed in the online platform**



Participants' responses were organized in a spreadsheet indicating the frequency in which each PWB component was connected to each category, as primary or secondary connection, as seen in the following section. To preserve participants'

anonymity, they are presented in the results section as MH1 to MH4 (MH indicating mental health professional) and A1 to A4 (A indicating architect).

## **Results**

The seven healthcare professionals (three physicians, two nurses, and two child life specialists<sup>2</sup> who are physical educators), four mental health professionals, and four architects had, respectively, mean ages of 42, 47, and 40 years old and 14, 22, and 19 years of experience.

Using thematic analysis, we clustered the responses to each of the open-ended interview questions into themes. Within each theme, we grouped all professionals' responses by similarity, forming a total of eight categories of interventions in the built environment to promote the PWB of hospitalized children.

In response to the first interview question regarding possible interventions in the hospital rooms, all participants stated that they perceived the current rooms as ordinary and plain, with no fun elements such as color. The lack of photographs, toys, and colorful walls was deemed unsuitable given the age of patients usually occupying the rooms. Some interviewees said that there should be enough space to play in (HC1 and HC6) and that the rooms should be customizable (HC1, 3, 4, 5, 6, 7). On the other hand, all participants followed up these negative comments justifying that rooms were configured to be easily sanitized and non-customizable due to the high turnover of patients and the possibility of spreading diseases.

Even though participants were not asked about sound, one of them (HC6) brought attention to the matter. "If you have a small baby and you play a soothing song, like one of those baby CD's, you know, like Bach for children... I think that it would help them calm down even when going through something, like when they have to fast, it may bring them peace."

Our thematic analysis of participants' responses revealed three categories of interventions related to hospital rooms: design, co-creation, and play. Answers given by participants are summarized in Table 1, organized into these three categories.

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<sup>2</sup> Child Life Specialists are educated and trained to deal with the impacts of illness and injury on patients. Certified Child Life Specialists provide evidence-based interventions to infants, children, youth, and families, such as therapeutic play, preparation for procedures, and education to reduce distress.

**Table 1. Theme: Hospital rooms and corridors**

Categories	Suggested interventions	Quotes
Design	<ul style="list-style-type: none"> <li>• More attractive accessory table to make the food look more appealing</li> <li>• Fun decoration of the room</li> <li>• Stickers on walls that could be transferred with patients when moved to another room</li> <li>• Colorful rooms with painted walls or decorated with stickers and bright closets</li> <li>• White walls with colorful details</li> <li>• Images projected on the ceiling for children to look at while in bed</li> <li>• More joyful corridors</li> <li>• Plants projected on the walls, showing the process of life and death through the changing of seasons</li> </ul>	<p>“It is such a sad room. A child's room is not a sad room, right? Children's rooms at home have their toys, there are the things they like, things that their parents make for them, so I just miss that. I think it could be a little more [joyful].” (HC7)</p> <p>“Some children have to be isolated, they cannot leave the room, and having a more colorful room, with more engravings, would be even better for them, they would feel cozier.” (HC2)</p>
Co-creation	<ul style="list-style-type: none"> <li>• Common areas where patients could display drawings, pictures, and writings</li> <li>• Displays on each hospital room door for children to hang their drawings</li> <li>• Virtual panels for each child, which they could bring to the hospital with them</li> <li>• Pictures of something children like to look at to be projected on the walls, with images changing every day (e.g., a place, an object, the sun)</li> <li>• Customizable hospital rooms.</li> </ul>	<p>“[Having their pictures and drawings may] even facilitate conversation, you know? Then we would say ‘cool pictures, who are these people? Don't you want to introduce them to me?’ So, it even would be a way for us to interact better with them.” (HC3)</p> <p>“They could bring photos to be projected on a wall in the unit. These photos could change every day, like one day it would be someone's photo, the next day another's, creating an expectation, with people leaving their rooms and going there to look at what it will be that day.” (HC6)</p>
Play	<ul style="list-style-type: none"> <li>• Hard-shell accessory boards for children to put toys on top while playing in bed</li> <li>• Mobile whiteboards they could draw on while in bed</li> <li>• More suitable play-on boards to be used in bed while keeping the bed's hygiene</li> <li>• Spaces to play on for those who cannot leave their beds</li> <li>• Colorful tatami mats on the floor by the bed to play on</li> </ul>	<p>“This is a pediatric unit. There should be things that stimulate these children. Things for them to play in the rooms and corridors.” (HC3)</p> <p>“Maybe create something that has a board for them to write on, these whiteboards, a movable board, like a tray, that you put on the table, that way you have some playful structures for them so that they can play in a interesting way while in bed.” (HC1)</p>

The interview question concerning children’s experiences when submitted to radiology exams brought a variety of answers. Some professionals (HC1, 5, 6, 7) argued that, since the entire hospital uses the same radiology unit, innovations to make it more child-friendly could not be implemented. However, one of the participants (HC6) said that it is always possible to plan interventions in the environment and take them to the management to check whether they agree to implement the ideas. Table 2 presents the two categories of ideas generated by participants: the patient journey to the exam and the exam room itself.

**Table 2. Theme: Radiology exams**

Categories	Suggested interventions	Quotes
Patient journey to the exam	<ul style="list-style-type: none"> <li>• Child-sized wheelchairs, with safety belts and fun design</li> <li>• Remote-controlled miniature cars</li> <li>• Wheelchairs that resemble cars or space rockets</li> </ul>	<p>“Maybe it would be something that would help them accept and want to go to the exam.” (HC5)</p> <p>“Going to the supermarket is an extremely boring thing, but sometimes they have a miniature car for the children to sit in the shopping cart. The child wants to go in; time flies for them while you shop.” (HC1)</p>
Exam room	<ul style="list-style-type: none"> <li>• Box of toys for children to play with while waiting for the exam</li> <li>• Fun walls (e.g., turn them into a forest or aquarium through painting or stickers)</li> <li>• Virtual reality or DVDs for them to watch on the equipment’s top shell during the exams (e.g., movies, landscapes, nature sounds)</li> </ul>	<p>“They could get a headphone, which could play songs or the soundtrack for the thing they are watching. There can even be landscapes, with sounds of places, things like that.” (HC6)</p> <p>“There could be some toys so that they can be entertained while waiting for the exam.” (HC2)</p>

In response to the third interview question, ideas to improve children's experiences with laboratory exams, participants concentrated their responses around improvements to IV poles and ways to distract children during the exams (HC2 and 4). Our thematic analysis classified their answers into three categories: improvements to the IV poles, ways of distraction, and rewards (Table 3).

**Table 3. Theme: Laboratory exams**

Categories	Suggested interventions	Quotes
Improvements to the IV poles	<ul style="list-style-type: none"> <li>• IV poles with animals faces and paws</li> <li>• Medication encapsulated in a superhero or princess logo</li> <li>• IV poles lighter in weight</li> </ul>	<p>"I think that the pole could have covers, things that were colored to cover what they are carrying [the IV attached to the pole]. They could say: 'Today I'm going to go with the Spiderman cover'." (HC7)</p> <p>"The pole could be different. Something to do with the fact that the nurses started calling it "puppy," because it has a collar and all, so I don't know, making a pole in the shape of a dog or something." (HC4)</p>
Ways of distraction	<ul style="list-style-type: none"> <li>• Toys to distract them during the exams</li> <li>• Virtual reality for them to visualize something more pleasant than the exam</li> </ul>	<p>"I think that something more entertaining could be done, you know, having something to distract them while they underwent the procedure." (HC2)</p> <p>"So, these virtual reality glasses are things that can be interesting when taking the child to another place, for them to stay put." (HC6)</p>
Rewards	<ul style="list-style-type: none"> <li>• "Courage badge" stickers that could be accumulated towards a prize</li> </ul>	<p>"You create a little book for them to glue their stickers on... the exam stickers, the medication stickers, and then when the child fills it all, the parents convert that act of courage of the child to something they want." (HC1)</p>

In the second stage of the research, mental health professionals and architects with experience in healthcare design classified how each one of the eight categories of interventions might stimulate children's psychological wellbeing (PWB) during hospitalization (Table 4). The values displayed in Table 4 are the number of connections made by participants. We weighted primary connections as 1 and secondary connections as 0.5 and calculated how much all interventions may stimulate each component of PWB (total score by column), as well as how much each intervention may stimulate PWB overall (total score by row). Table 4 presents the eight categories of intervention in descending order according to their total scores.

**Table 4. Connections made between categories of design interventions and PWB components**

PWB Components	Number of connections (primary and secondary)												Quotes	
	Environmental Mastery		Personal Growth		Self-acceptance		Autonomy		Positive relationships		Purpose			Total score for each category
	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary		
Categories of interventions														
Hospital rooms and corridors: co-creation	7		1	1			1		2		2		11	<p>"I like the idea of bringing something of theirs to the hospital. Also, in the common areas, present drawings or writings of those who recovered, who've been there and overcome it." (MH1)</p> <p>"The mastery of the environment (...) encourages the child to feel at home in a space that they helped to design, leaving their mark and identity on it, making them part of the environment and the environment part of them." (A3)</p>
Laboratory exams: rewards			6			2			1	2	1		10	<p>"Not only they will be rewarded for putting together an 'X' number of stickers, but they will also, above all, show how brave they were to complete this journey." (MH2)</p> <p>"The award, although symbolic, stimulates self-esteem, promotes individual growth and gives the feeling of victory. 'I did it. I won. I did the exam.'" (A3)</p>
Hospital rooms and corridors: play	1		4			3	1	2	1				9.5	<p>"Playing is a form of expression of not only of the conscious but also of the unconscious mind (...). This would allow the understanding of the hardships that the child goes through at that moment." (MH3)</p> <p>"I believe that play is a part of human development. Many toys stimulate the child and should not be left aside due to hospitalization. The proposed intervention brings children closer to this activity and empowers them as human beings." (A4)</p>
Laboratory exams: improvements to the IV pole	2	2			3	1	1	1		1	1		9.5	<p>"In this moment of so few choices in life, even small opportunities to choose [such as personalizing the IV poles] are meaningful." (MH3)</p>



## Discussion

There are three different ways to interpret the results reported in Table 4. It seems that mental health professionals and architects assessed all of the proposed interventions as beneficial to promote the PWB of hospitalized children, aligned with many previous studies on the topic (e.g., Bosch & Lorusso, 2019; Carrus & Pirchio, 2019; Water et al., 2017; Alzoubi & Al-Rqaibat, 2015; Edvardsson et al., 2006).

Observing results by column in Table 4, it is noticeable that the proposed interventions stimulate the components of PWB in different ways and to different degrees. Environmental mastery had the highest score, followed by personal growth and self-acceptance—meaning interventions to hospital processes and environment are able to have the greatest impact on these aspects of PWB. Interviewers affirmed that, due to the high number of patients to which healthcare professionals must attend, the staff might merely go through the motions and not explain directly to patients where, how, and what is going to happen in the exams they will experience, negatively affecting the patients' ability to master the environment (i.e., choosing and creating settings suitable to their needs). Similarly, procedures are often explained to parents while in the children's presence, but without explicitly addressing the children, making it challenging for them to grow personally (i.e., have positive feelings about themselves). Patients, who should be active in their treatment since their bodies are the ones being treated, sometimes are just spectators, watching while their bodies are poked, moved around, and touched daily by several people, making it hard for the children to understand their diseases and accept themselves and their life as it is (i.e., think positively about themselves); (definitions of PWB components in parentheses by Ryff (1989) and Ryff and Keyes (1995)).

Observing the total scores in Table 4 by row, the results indicate that most categories of intervention have similar potential to stimulate children's PWB (scores range from 9 to 11), except for "laboratory exams: ways of distraction." These scores suggest that the proposals to stimulate children's PWB put forward by healthcare professionals in the first stage of the research were accurate, according to the mental health professionals and healthcare architects that assessed such ideas in stage 2. Moreover, their responses were aligned with results from previous relevant studies: (Peditto et al., 2020; Asfour, 2019; McLaughlan, 2017; Nasab et al., 2020; Water et al., 2017; Monti et al., 2012). The proposal regarding distraction during laboratory exams was the lowest ranked by mental health professionals and architects; the literature reviewed in this paper also did not provide strong evidence to support the assumption that ignoring any negative impact of the medical treatment would be beneficial to the PWB of children.

Considering individual scores for all categories in Table 4 (column "total score"), those with the most potential to stimulate PWB were "hospital rooms and corridors" both "co-creation" and "design" to stimulate environmental mastery, and "Laboratory exams: rewards" to stimulate personal growth. Also, interventions can be tailored to target specific aims by observing how each category impacts the different PWB components separately (e.g., "Laboratory exams: improvements to the IV pole" as the most adequate intervention to stimulate self-acceptance).

The participants pointed out several features that may make the hospital a more child-friendly environment and enhance children's PWB. Cues that may help distract children, such as adding color to the walls, can positively impact their experience as inpatients. Displayed artwork may help them stay occupied and not feel bored while appreciating decor on the walls (Bishop, 2017; Mari Ruberg Ekra & Gjengedal, 2012). As proposed by Bishop (2017), children enjoy being distracted to avoid thinking about their situation and feeling uncomfortable with the hospitalization. As found by Mari Ruberg Ekra and Gjengedal (2012), children might want to go home while hospitalized because they see the hospital as boring and too different from their daily lives, even feeling like time slows down there. Thus, the scores assigned by the professionals in stage 2 to the proposed interventions indicate that such changes to the hospital environment may stimulate children's PWB. The reduction of stress may consequently speed patients' health and recovery (Douglas & Douglas, 2014).

It should be noted that a friendly pediatric environment embraces not only children's but also adolescents' needs. The interventions proposed by our study participants were focused on young children and thus may not be suitable for adolescents. According to Bishop (2017), both children and youth enjoy having varied artwork as part of the aesthetics of the hospital environment, helping them feel that it is appropriate for them. Thus, corridors and walls may present ever-changing art stimuli, appropriate for different demographics. Having age-appropriate activities and feeling welcomed by the staff are also central to child-friendliness for both hospitalized children and youth (Bishop, 2017), as all patients expect to feel that there is something appropriate for them.

## **Conclusions**

This research aimed to identify the potential of the built environment to enhance the psychological wellbeing (PWB) of pediatric patients during hospitalization. Toward that end, we carried out interviews with healthcare experts to collect their ideas on interventions in the built environment that would meet patients' needs. In the experts' view, the hospital room environments in which patients sleep and spend most of their days do not resemble children's bedrooms and should be made more fun and child-friendly to improve children's PWB. Even small interventions in their hospital rooms could bring more joy to them, enhancing the patients' wellbeing.

When the healthcare professionals' ideas for interventions were submitted to the evaluation of mental health professionals and healthcare architects, it became evident how influential healthcare environments can be on children's PWB. More specifically, our research advances the state-of-the-art by addressing specific PWB components and indicating design interventions that can target each of them.

In total, 36 different ideas for intervention in the environment of pediatric hospital units were brought to light in the interviews with the group of experts. Some of the suggested interventions may lead to design solutions that enhance children's wellbeing. However, other ideas may not be feasible due to context, for example,

having something for children to watch while being submitted to radiology exams. Even though this might have the potential to keep them still and make them feel less anxious about the exam, it may also affect their brain activity while in the MRI scan, leading to changes in the results. Thus, a thorough analysis of such interventions is required to identify viable ideas.

All ideas should be adapted to local needs and contingencies. For example, hospitals with limited funding may explore the aesthetics of the ward, possibly engaging patients themselves in the process of creating their environments. Adding children's artwork to walls and corridors or even asking them to develop specific work to display is a low-cost, high-involvement alternative. Cultural preferences should also be taken into consideration in tailoring child-friendly environments. Thus, even though the suggestions might be universal (e.g., playing soothing music), they should be tailored to specific pediatric populations (e.g., playing distinct music genres to children from different cultural backgrounds).

It is important to highlight that all professionals seemed worried about maintaining a sterile environment and ways that innovations could be implemented without exposing children to infection. Proposed interventions using technology and virtual reality could be a feasible solution to the sanitization problem. Similarly, ideas such as projections on the walls could bring life to corridor walls, hospital rooms, and ceilings without harming patients.

There were limitations to this study. First, it focused on professionals recruited in a single hospital. Their broad understanding of pediatric environments, denoted by their average time of experience, suggests that their responses were not limited to that specific institution. Nevertheless, their current work environment may have created a bias by focusing their attention on current issues they observe in the hospital where they currently work. Second, we limited the interviews to three specific topics (i.e., ideas of interventions in hospital rooms and corridors, radiology exams, and laboratory exams). Although our choice of having them focus on particular issues could help direct their attention toward a specific topic for innovation, that may have limited their answers and ideas, and not given them space to come up with their own scenarios. Third, this study is focused on adults' perspectives and we did not explore children's perspectives on patient friendliness. Further exploration of the topic may assist academics and practitioners in understanding how to help children master settings by making them more suitable to their needs. Fourth, discussions on gender, accessibility, and inclusion were not addressed in this paper but would potentially contribute to understanding pediatric patients' psychological wellbeing in further research.

We would also like to note that the participants in stage 2 of our study were able to see each other's replies on the online platform. On one hand, this may have had a positive impact since it added a sense of co-creation to the process, as if they were all part of a design workshop, discussing opinions. On the other hand, it may also be seen as a limitation of the research because participants may have influenced one another.

The design process will continue in the next steps of this study when experts from both inside and outside of the hospital will be invited to participate in a two-day workshop with architects and healthcare professionals. Together, they will detail and develop the ideas explored in this paper into actual interventions in the built environment.

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# **Meaningful Conflicts in Nature? Exploring Peer Conflict in a Nature Preschool During Outdoor and Indoor Play**

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## **Abstract**

*This study explored peer conflict among preschoolers during indoor and outdoor free play in a nature-based preschool. We collected data through observations and video recordings of 15 preschoolers and analyzed and coded the data using an event sampling method. The findings revealed differences in primary conflict catalysts between indoor and outdoor settings. Play ideas was the main conflict catalyst in the outdoor setting, while distribution of resources was the primary conflict catalyst in the indoor setting. The implications of the study suggest that outdoor nature environments seem to provide children more meaningful conflict situations around play ideas rather than the mere possession of material.*

**Keywords:** peer conflict, outdoor, nature, free play, early childhood education, preschool

## **Introduction**

Conflicts are naturally occurring events (Chen et al., 2001) and an inevitable part of life. Learning conflict management and resolution skills are important to children's cognitive development and later life relationships (Chen et al., 2001; Laursen et al., 1996; Nucci et al., 1996) as conflict situations provide children with opportunities to acquire and practice social skills such as negotiation, resource sharing, cooperation, emotional regulation, and conflict management (Aasen et al., 2009; Wheeler, 2004). However, peer conflict in early childhood often has a negative connotation and is sometimes construed as increasing classroom tension. This negative view of conflict can be a source of distress to early childhood teachers when they focus on conflict avoidance or quickly trying to restore peace (Arcaro-McPhee et al., 2002; Chen, 2003) instead of using the developmental benefits of peer conflict engagement. Because the majority of studies conducted to understand children's peer conflict have focused on indoor classrooms, there is a need to expand the range of study contexts since children's behaviors are largely influenced by their immediate environment (Bronfenbrenner, 1986).

One understudied context in the conflict literature is the outdoor, natural environment. This literature is scant, in part, due to the fact that nature-based programs are not a typical early childhood setting in the U.S. Interestingly, however, the number of nature-based preschools in the United States has more than doubled in the past few years (NAAEE, 2020). Nature preschools have gained more attention because they employ curricula rich in child-led learning and free play, and tend to offer larger natural outdoor play spaces (Finch & Bailie, 2015). Features of the natural environment (e.g., open space, natural lighting, changing landscape) differ from those of indoor classrooms (e.g., controlled climates, four walls, predictable, designated spaces, and fluorescent lighting). The outdoor environment affords opportunities for children to engage in deeply sustained play, explore independently, develop physical skills, and learn without direct adult control (Bohling et al., 2010; Fjørtoft, 2004; Maynard et al., 2013; Stack & Nikiforidou, 2019; Stephenson, 2003; Tovey, 2007). The availability of resources in nature-based programs also differs from standard indoor classrooms. Materials in nature-based outdoor classrooms are primarily natural materials that are renewable and plentiful, which allow for longer and more in-depth engagement (Bohling et al., 2010; Dennis et al., 2014).

Likewise, nature-based preschools provide an ideal and important context in which to study and understand children's naturally occurring behaviors such as conflict engagement and management. Studying children's conflict in a nature-based program could provide deeper insight into understanding conflict in addition to the study of conflicts in the indoor setting. The purpose of this study is to understand how and why conflict emerges among children during child-initiated play in outdoor and indoor free play, and investigate whether there are any differing patterns of conflict between the outdoor and indoor settings at a nature-based preschool.

## Review of the Literature

### Peer Conflict During the Early Years

Previous research that has examined conflict in the early years (ages 2-5) refers to *peer conflict* among children as an event in which one child protests, retaliates, or resists the action or verbalization of another child (Chen et al., 2001; Shantz, 1987). The conflict can be destructive (threats, coercion) or constructive (mutual problem solving) in nature. Both forms contribute to children's social, emotional, moral, and cognitive development (Chen et al., 2001; Laursen et al., 2001; Shantz, 1987; Wheeler, 2004) as well as the formation and maintenance of interpersonal relationships (Laursen et al., 1996). *Peer* conflict is defined as a mutual disagreement or hostility between two or more people who are of equal or similar power (Noakes & Rinaldi, 2006; Sidorowicz & Hair, 2009). Participating in, and navigating through, conflict provides a venue for children to practice and develop negotiation skills, logical thinking, perspective taking, relationship management, and problem solving (Aasen et al., 2009; Laursen et al., 2001; Malloy & McMurray, 1996; Piaget, 1932; Wheeler, 2004). Conflict among preschooler peers tends to occur most often during child-led time (Malloy & McMurray, 1996).

Conflict is different from aggression. Conflict refers to incompatible behaviors or goals, while aggression suggests the intent to harm or injure another individual (Parke & Slaby, 1983; Shantz, 1987). Aggressive behaviors may occur during conflict, but conflict in and of itself is not aggression (Shantz, 1987; Wheeler, 2004). Research suggests most conflict episodes do not involve aggression (Shantz, 1987). However, when conflicts are elevated, aggressive conflicts could happen with a higher frequency during free play compared to guided activities (Cordoni et al., 2016).

Conflicts are generated by an initial action. Previous research has identified five distinct catalysts for conflict between children: physical harm, psychological harm, distribution of resources, play ideas, and social-conventional issues (Chen et al., 2001; Killen & Turiel, 1991). According to prior studies conducted in indoor classrooms and laboratories, the largest percentage of conflicts among toddlers and preschoolers are initiated over possession disputes/distribution of resources (Chen et al., 2001; Shantz, 1987). The second most frequently occurring catalyst was response to another child's actions or lack of actions such as refusal to adopt a suggested fantasy role (Shantz, 1987). Conflicts involving physical and psychological harm were observed more often in free play settings than in structured peer-group settings (Killen & Turiel, 1991). Chen and colleagues (2001) noted significant age-related patterns in the conflict catalyst. For example, between the ages of 2 and 5, conflicts initiated by distribution of resources decreased while conflicts over play ideas increased.

### Contextual Factors

Contextual factors such as setting location and availability of space have been shown to influence the presence of conflict among children. Play is the primary context in which young children engage in social activities where conflicts arise. Further, play provides children opportunities to explore roles, try new skills, test

already acquired skills, and develop socialization techniques that allow them to navigate, negotiate, and resolve peer conflict. Therefore, this study uses free play context to explore conflict in a nature-based preschool.

A naturalistic, observational study of preschoolers that examined possession disputes during indoor free play conducted by Ramsey (1986) found situational factors such as the types, quality, and distribution of materials present in a setting were significantly related to the occurrence of possession-related conflict episodes. Additionally, Ramsey (1986) noted the accessibility of the space also significantly impacted possession disputes. For instance, possession-based conflicts were more likely to occur in areas with closed spaces or single entrances (Ramsey, 1986). On the contrary, a mixed methods study conducted by Stack and Nikiforidou (2019), which examined indoor and outdoor possession-based conflict among 12 preschoolers, found no difference in the rate of such conflicts by setting. A study by Killen and Turiel (1991) found the structuredness of activities was more related to the occurrence of conflicts rather than indoor or outdoor setting factors. Specifically, they reported more distribution of resources conflicts in semi-structured peer group settings than in free play.

### **Nature Preschool as a New Context of Study**

The terms “nature-based preschool” and “nature preschool” are used interchangeably in the literature (Larimore, 2016). Further, these may be referred to as a place-based school, outdoor preschool, nature kindergarten, forest kindergarten, zoo and aquarium school, etc. (NAAEE, 2020). Nature-based outdoor classrooms are designed for use throughout the seasons and in all types of weather. Nature-based programs either provide outdoor and indoor nature experiences for children, or conduct the entire program outdoors. Further, nature-based programs generally share three common elements: 1) nature themes and daily nature exploration are central to programming, 2) programs are equally committed to both high standards and developmentally appropriate practices in early childhood education, and 3) programs employ best practices of environmental education (Finch & Bailie, 2015).

Nature-based outdoor classrooms support unique exploration opportunities (Bohling et al., 2010; Finch & Bailie, 2015), child-initiated and full body learning, and the opportunity to interact directly with nature, which may promote environmental stewardship (Kuo et al., 2019). Nature-based programs’ outdoor play space may include commercialized play equipment; however, the programs primarily feature natural elements such as logs, gardens, slopes, digging pits, shrub hideaways, water sources (i.e., a rain barrel), and “loose parts” such as sticks, rocks, seed pods, and stalks (Finch & Bailie, 2015). The presence of plentiful and renewable natural materials provides open-ended and evolving use; a stick can become a wand, cane, broom, pencil, or spatula.

In a qualitative case study conducted in a nature preschool, Bohling and colleagues (2010) reported only 18% of the 60 documented teacher observations represented adult-directed activities; the remaining were child-initiated. These findings support literature suggesting the natural outdoor environment lends itself to child-initiated

learning by providing a larger degree of freedom and a smaller degree of adult control (Sutterby & Frost, 2006; Maynard et al., 2013). Additionally, in the outdoor environment, when teachers do plan activities, they tend to have a greater emphasis on children's collaboration and social skills (Maynard et al., 2013).

While empirical research on nature-based learning is accumulating (Jordan & Chawla, 2019), scant research exists on peer conflict in nature-based preschool settings. A deeper understanding is warranted given the rise in nature-based programs. Further, although previous empirical research studies examined conflict episodes during free play in relation to emergent social and emotional skills development, most studies focused on the indoor space or were conducted in a laboratory setting; few have included an outdoor nature-based program.

To add to the existing literature, this study addressed three research questions: 1) How does peer conflict emerge among children during outdoor, child-initiated play in a nature-based preschool? 2) How does peer conflict emerge among children during indoor, child-initiated play in a nature-based preschool? 3) Are there any patterns of conflict between indoor and outdoor settings?

## **Method**

### **Setting**

The participating nature preschool in this study is the only one in the area and is operated by a lab preschool affiliated with a university in the mid-Atlantic region of the United States. The nature preschool enrolls up to 16 children ages 3 to 4 years (age at fall enrollment). The program operates half-days Monday through Friday, 9:15 AM to 1:00 PM. The outdoor environment is used for two-thirds of the school day, and the children are outdoors in all weather types for approximately three hours each day. The outdoor setting includes access to a forested area, meadow, creek, and pond. For this study, the outdoor data was obtained during free play that occurred in the forested area. The design of the nature-based preschool indoor setting reflects a standard indoor preschool classroom.

The outdoor space is a forested area approximately 5,000 square feet. The space provides children access to a bird blind, stage, mud kitchen, wooden planks and pallets, rope swing, and large wooden spool tables (Figures 1a and 1b). There is an abundance of natural materials such as rocks, sticks, dirt, mud, bark, seeds, and plants. In addition to the naturally occurring materials, a few "indoor" items such as miniature fairies, markers, colored pencils, kitchen utensils, and butterfly wing costumes are also available outdoors. Children engage in extended play in the forested area selecting between free play and adult-planned nature-based activities that integrate science, math, literacy, and the arts. Planned activities, such as painting the sky's reflection on a mirror, occur at the art picnic table and the writing table. The remaining space is open for free play. Rules govern the use of the rope swing and workbench tools as well as the number of children allowed at the activity table.

**Figure 1a. Nature preschool outdoor setting**



**Figure 1b. Nature preschool outdoor setting**



The indoor space is 700 square feet and configured into “centers” with three tables that allow for various activities such as writing, playdough, painting, table games, and manipulatives (Figure 2). The space also contains a light table with magnetic colored tiles for building and creating, and two centers marked by area rugs. One area rug is designated for train and block play, while the other is for reading among pillows and sitting together for circle time. There is also a dramatic play area that converts to a science center as needed. Children have access to books, stuffed toys, blocks, puzzles, small manipulatives, dramatic play props, and art supplies. The room is intentionally set up according to the weekly lesson plan. For example, for the lesson *We can see, feel, touch, and hear the FALL changes all around us!* the science center contained plants, magnifying glasses, clipboards and pencils; the back activity table contained painting with watercolors; and the middle activity table contained a leaf sorting activity. Children are free to move about the room selecting from the planned activities. Rules govern the number of children allowed at each center.

**Figure 2. Nature preschool indoor setting**



The class is instructed by a lead teacher and an Early Childhood Education (ECE) (ages 0-8) pre-service teacher completing her practicum. Additional classroom support is provided by ECE undergraduate university field placement students, and a Lab School staff member. The lead teacher has a BS in ECE, a MS in Literacy, Naturalist Certification, and 17 years of teaching experience. According to the lead teacher, the nature preschool uses an emergent curriculum combining children’s interests and needs, what is occurring in the nature environment, Teaching Strategies GOLD assessment indicators (Lambert, 2020), and past experiences.

Teachers encourage cooperative learning and social skills and purposefully select a balance of child- and teacher-directed activities to foster social, physical, cognitive, and language development. The scope and sequence of curriculum themes change year to year and are dependent upon the children enrolled.

### **Participants**

Fifteen children aged 36-60 months (mean age 48.5 months) participated in this study. Eight of the children were female; eight were Caucasian, two were Greek, two were Asian, and three were other (White/Filipino, Pakistani, Serbian). Three of the children attended the nature preschool program the previous year, seven were Dual Language Learners, and none of the participating children had a documented disability. The researchers assigned each focal child a number (001-015) for identification purposes, observed each individual child on a designated day, and video recorded them during their indoor and outdoor free play.

### **Data Collection**

In accordance with Institutional Review Board (IRB) requirements, we obtained parental consent for collection of observation and demographic data prior to data collection. Demographic data (including child age, gender, home language, years enrolled, cognitive and/or physical limitations) were obtained from the school office manager. Weekly lesson plans were provided by the lead teacher. One researcher collected naturalistic observation data through video recording and field notes over the course of five consecutive weeks in November and December. Each focal child was video-recorded for a 30-minute observation period during both their indoor and outdoor free play to obtain a running record of social interactions. We collected an average of 28 minutes, 47 seconds of indoor data and 29 minutes, 38 seconds of outdoor data for each focal child, for a total of 461 minutes, 52 seconds of indoor and 474 minutes, 31 seconds of outdoor video data.

To increase the children's comfort level with the researcher, the researcher was introduced to the class and spent time with the children in the indoor and outdoor settings prior to data collection. The initial time was spent without equipment, then progressed to the researcher capturing written observation notes and finally using a video camera to both familiarize the children with the equipment and to test its battery life and microphone. Spending time in the indoor and outdoor setting also allowed the researcher to become familiar with class routines, available play opportunities, and space configuration and use. The researcher collected video data by following the focal child at a distance that did not interfere with the child's peer interactions or play.

Prior to conducting focal child observations, the researcher met with the lead teacher and program director to discuss the procedure. All meeting participants agreed that children and teachers would conduct their day as usual and if the researcher observed a conflict that held potential to cause harm and no other adult was present, the researcher would notify the closest teacher. The collected video data were transcribed verbatim by the researcher, however during the transcription process, the lead teacher was consulted to review selected portions of video data to clarify unclear child dialogue.

The researcher gathered written field notes at the beginning of each observation session and during the video recording process to provide setting details and to collect any information deemed important for constructing a complete picture of the conflict occurrences. Field notes are used in qualitative research to “assist in the maintenance of the research instrument” (Marshall & Rossman, 2016, p. 117), and to document pertinent contextual information (Phillippi & Lauderdale, 2018), allowing for creating the full depth of the study context. The researcher collected nonjudgmental descriptions of the context and what was observed. For example, field notes contained information regarding date, time, focal child ID number, weather (temperature, precipitation, wind), number of children and teachers present, and additional environmental information deemed important for forming a complete picture (e.g., parental presence). Member checking notes were maintained on the back of the field notes and in a separate notebook. Member checking occurred between the researchers and the lead teacher to verify data and ensure accurate and correct representation of the children (Marshall & Rossman, 2016).

### **Trustworthiness, Rigor, and Ethics**

This study employed multiple processes to reduce subjectivity and maintain trustworthiness, rigor and ethics. Our submission of the research protocol included a letter of support from the participant site as well as scripts for participant recruitment and child assent. Data was reported anonymously for all participants and pseudonyms were used in the findings. Transcribed discourse has been reported and portrayed as accurately and faithfully as possible. To address potential researcher bias and confirmation bias, direct quotes and concrete examples are provided, and the write-up acknowledges that description is the product of interpretation. Likewise, regular peer debriefing with another researcher throughout the research process addressed potential researcher bias and ensured analyses were grounded in the data. To ensure the researcher captured accurate focal child data, member checking with the lead teacher occurred during and after data collection. For inter-rater reliability of the coding process, a non-involved peer researcher was trained on the identification of a conflict event and the coding process. Coding agreement between researchers to identify conflict events was 100%. Coding agreement in other categories was 93.8%. The two researchers collectively reviewed and discussed any coding disagreements until 100% agreement was reached. Further, the researchers searched for disconfirming evidence in the data and continually reevaluate impressions, responses, and emergent themes.

### **Data Coding**

The event sampling method is used to identify specific behaviors to serve as the unit of analysis (Miller, 2018) and is commonly used to discover an event’s causes and results (Wortham, 1995). The unit of analysis for this study was the conflict event and participants as a whole group rather than focusing on individual child behaviors. The researchers reviewed a total of 30 transcripts, 627 pages, using event sampling (indoor, n=15; outdoor, n=15). The definition of a conflict we constructed was informed by previous research: *a social interaction in which an*

*emotional exchange occurs between two or more individuals that is characterized by events in which one individual protests, resists, retaliates, or opposes the actions of another individual, and the second individual’s action is met with resistance or acceptance* (Chen et al., 2001; Garvey, 1984; Shantz, 1987). We identified incidents that met our definition of a conflict event, and used only transcripts that contained a conflict event in the coding process (indoor n=10; outdoor n=10). After identification of conflict events, we reviewed each conflict event in detail in order to develop a rich picture of the conflict sequence.

The data analyzed for this study focused on the observed conflict events and the types of incidents that sparked conflicts—or “conflict catalysts”—that occurred between children. The catalyst coding process began with a priori categories identified in previous research: physical harm, psychological harm, distribution of resources, play ideas, and social--conventional issues (Chen et al., 2001; Killen & Turiel 1991; Shantz, 1987). We reviewed the indoor conflict event data first, followed by the outdoor data. Each a priori catalyst category was observed at least one time. Additionally, two conflict catalysts were identified that not been listed or described in the a priori category descriptions: tickling and accusation. A review of existing literature found that tickling in adults has been reported to cause discomfort and pain (Harris & Alvarado, 2005); therefore, tickling was added to the description of a physical harm catalyst. Accusation of a false action has been reported to cause psychological harm in adults (Brooks & Greenberg, 2021); therefore, accusation was added to the description of a psychological harm catalyst. Catalysts that appeared in our data and their descriptions are listed in Table 1. After coding for conflict catalyst, we then coded the data for conflict location, duration, and relevant item or action of interest, for instance, the use of a toy or exclusion from an activity.

**Table 1. Catalyst definitions**

Catalyst	Coding	Description
Distribution of resources	DR	fairness issues such as violation of sharing, turn taking, grabbing, taking
Play idea	PI	who will do what, how, when and where, use of play space
Social-conventional issues	SCI	violation of class or school rules about running indoors, how to take turns, or cleaning up time and procedure, number of center participants
Physical harm	PH	hitting, biting, punching, kicking, <b>tickling</b>
Psychological harm	PSH	name-calling, teasing, <b>accusation</b>

Note: Bold type indicates new emerged category descriptions not identified in previous children’s conflict literature.

## Results

### Outdoor Conflicts

Our first research question explored how peer conflict emerges among children during outdoor child-initiated play in a nature-based preschool. There were 22 conflict events noted in the outdoor setting transcripts. The locations of the majority of the outdoor conflicts were evenly distributed between the jumping stump ( $n = 5$ , 22.72%), open play space ( $n = 4$ , 18.18%), stage ( $n = 3$ , 13.64%), and mud kitchen ( $n = 3$ , 13.64%). The remaining conflicts occurred at the fairy garden ( $n = 2$ , 9.09%), obstacle course ( $n = 2$ , 9.09%), snack table ( $n = 1$ , 4.54%) and workbench ( $n = 1$ , 4.54%). Conflict events noted in the outdoor setting were an average of 49.72 seconds and ranged from 18 to 151 seconds. Three types of catalysts were observed in the outdoor setting: play ideas, distribution of resources, and physical harm. Play ideas were the main catalyst observed in the outdoor space and accounted for 54.6% ( $n = 12$ ) of outdoor conflict, while distribution of resources catalyst accounted for 40.9% ( $n = 9$ ) of outdoor conflict.

### ***Play Ideas as the Main Conflict Catalyst in the Outdoor Setting***

The conflict catalyst that emerged most often in the outdoor setting was opposing views around play ideas. There were 12 play idea conflict events in the outdoor setting, of which five were centered around the use of the play space, five entailed the type of play, and two were in regard to who would do what, how, when, and where. The following example of a play ideas conflict occurred at the outdoor stage. The outdoor stage provides the children with the opportunity to engage in collaborative group play. Likewise, the openness and structuredness of the space allow for children to create their own show. The stage is constructed of wood, sits a few inches off the ground, and has colorful sheer curtains across the back. Five classmates decided to put on a show about unicorns. Each child was dancing, singing and shouting while moving around the stage. One child appeared to be the leader directing the movements and stage location for dancing. Marlow went behind the curtain area to dance and sing. When Lucas reached his hand out and attempted to touch Marlow while motioning for her to return to the front of the stage, the following exchange occurred:

*Marlow: "Stop, stop, stop stop!" (Lucas lifts the curtain and goes under the curtain to the backside of the stage) "Stop! You stop it!" (Marlow tries to get Lucas to go back to the other side of the curtain by placing her arm on his jacket)*

*Lucas: "No. You stop it!"*

*Marlow: "No!"*

*Classmate Directing the Show: "Ok guys we got to start the show"*

*Lucas: "No!"*

*Classmate Directing the Show: "We gotta start the show"*

*(Lucas steps backward off the stage, then gently touches Marlow's back and walks to the front of the stage)*

This conflict sequence demonstrates the fluid and temporary nature of play idea conflict that emerges in the outdoor setting over the use of the play space. The conflict unfolded over varying desires between two classmates for the proper place to dance during the unicorn show. Both children were able to express their intentions and understood the intention of the other (Dunn & Slomkowski, 1992). Lucas displayed his desire to follow the "director's" instructions to have all show participants dance in front of the curtain, while Marlow desired to dance behind the curtain. Lucas attempted to obtain Marlow's compliance, while Marlow voiced her refusal. This conflict also demonstrates the socially oriented issues of conflict.

It is not uncommon for young children to focus on their intended goal and not take the perspective of their peer (Denham et al., 2003; Chen et al., 2001). Another example of a play ideas conflict occurred at the obstacle course when two children expressed their personal desire to achieve individual goals. An adult university undergraduate student was present and attempted to help the classmates understand the perspective of their peer.

*Lucy: "I'm a teacher okay" (holds up her hand for Jacob to hold)*

*Adult: "You're the teacher."*

*Jacob: "No" (pulls hand away)*

*Lucy: "I'm a teacher."*

*Adult: "Oh, she wants to help you cross, that's what she's saying."*

*Lucy: "Cause I'm a just a teacher" (reaches up to hold Jacob's hand)*

*Jacob: "Well noo" (begins to walk, moves his hand away again)*

*Lucy: "I'm a, I just said I'm a teacher. I'm gonna help you."*

*(Lucy reaches up, holds Jacob's coat sleeve)*

*Jacob: "No I wa wa wa wanna walk I don't want you help me."*

*Lucy: "Yes. I need to."*

*Jacob: "I don't want you to" (tries to move his arms away)*

*Lucy: "Yes I do" (Lucy holds both of Jacob's hands)*

*Adult: "Listen to Jacob, he doesn't want you to, okay."*

*Lucy: "Kay."*

This conflict emerged due to peers possessing separate play type desires and goals. Lucy wanted to assume the role of a teacher while Jacob desired to independently walk on the balance beam. Both children persisted verbally and physically to achieve their goal by using expressive language and actions to communicate their individual desire. Lucy's attempts to hold Jacob's hand and his withdrawal of his hand demonstrate the use of physical actions to express their opposing desire. The exchange between the children provides both children with the opportunity to understand the perspective of their peer and recognize their needs.

### **Indoor Conflicts**

Our second research question explored how peer conflict emerges among children during indoor child-initiated play in a nature-based preschool. There were 33 conflict events noted in the indoor setting transcripts. The majority of indoor

conflict events ( $n = 18$ , 54.54%) occurred at the light table, followed by the middle activity table ( $n = 6$ , 18.18%). The remaining indoor conflict events occurred at the train carpet ( $n = 4$ , 12.12%), play kitchen ( $n = 2$ , 6.06%), snack table ( $n = 1$ , 3.03%), science center ( $n = 1$ , 3.03%) and the bookshelf ( $n = 1$ , 3.03%). The average indoor conflict duration was 38 seconds, with a range of 4 to 117 seconds. Four types of catalysts were observed in the indoor setting: distribution of resources, play ideas, social-conventional issues, and psychological harm. In the indoor setting, distribution of resources ( $n = 25$ , 75.8%) was the most frequently observed catalyst, which is consistent with previous research (Chen et al., 2001; Killen & Turiel 1991; Shantz, 1987). Play ideas was the next-frequent catalyst type ( $n = 4$ , 12.1%) in the indoor setting, which is also consistent with previous research (Chen et al., 2001).

### ***Distribution of Resources as the Main Conflict Catalyst in the Indoor Setting***

Distribution of resources was the primary conflict catalyst in the indoor setting. Thirteen of the 25 distribution of resources conflicts occurred at the light table over magnetic tiles. The next most prevalent item involved in conflicts was trains ( $n = 4$ ). Below is an example of why conflict emerged at the light table.

*(Kara takes a large stack of the square light tiles with which both children were building and places them in front of her. Greg looks into the bin to select additional tiles and notices the stack is gone. He turns towards Kara and sees the stack in front of her. Greg reaches for the stack of square light tiles shouting Kara's name.)*

*Greg: "Kara!"*

*Kara: "Ahh, I... sorry (she notices Greg taking the light tile stack and grabs it with both hands) "No!" (Greg tugs them back from her grasp. Kara leans over the light tile stack and pulls on the light tile stack.)*

*Greg: "Mine!" (Both children tugging on the stack of light tiles)*

The scarcity of light tiles generated distribution of resources conflict as the children tried to control the available tiles in order to build their structures. Individual goals resulted in disputes around access to and use of the shared light tiles. Conflicts catalyzed by distribution of resources in the indoor setting generally occurred during activities that contained less physical movement such as standing at the light table or sitting at a table playing with plastic dinosaurs, and those that had limited quantities of materials.

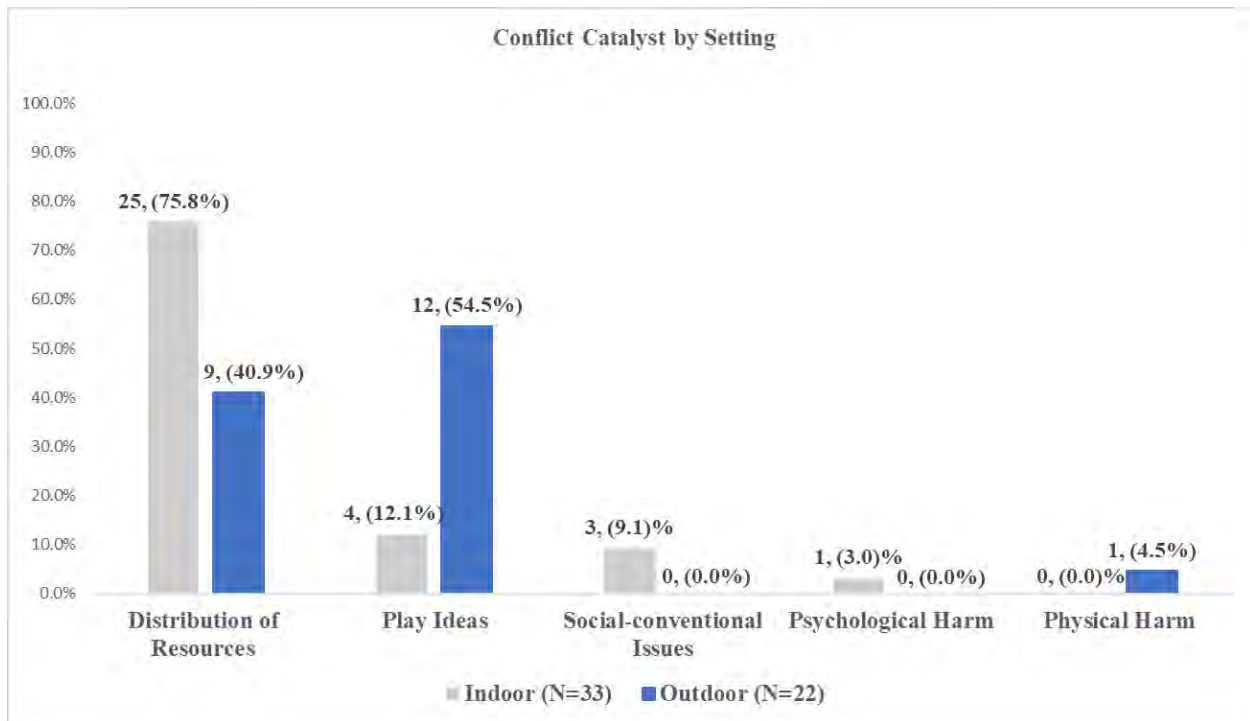
### **Patterns of Conflict Between Indoor and Outdoor Settings**

The third research question sought to understand if any patterns of conflict emerged between the indoor and outdoor settings. We did observe differences in the frequency and locations of conflicts between indoor and outdoor settings. Among the 55 conflict incidents, 22 (60%) were identified in the outdoor setting compared to 33 conflict events (40%) reported in the indoor setting. The location of the conflicts in the outdoor setting was evenly distributed across different areas such as the jumping stump, open play space, stage, mud kitchen, fairy garden, obstacle course, snack table and workbench, while the indoor conflicts largely

occurred at the same places such as the light table (n = 18) and the middle activity table (n = 6).

We observed three types of conflict catalysts in the outdoor setting: play ideas (n = 12), distribution of resources (n = 9), and physical harm (n = 1). We observed four types of catalysts in the indoor setting: distribution of resources (n = 25), play ideas (n = 4), social-conventional issues (n = 3), and psychological harm (n = 1). Thus, play ideas was the main category of conflict catalyst observed in the outdoor setting while distribution of resources was the primary catalyst in the indoor setting. There were differences noted across the two settings in the form of the play ideas conflicts; specifically, in the outdoor space five of the conflicts involved the use of play space, five centered on the type of play, and two were about who would do what, how, when and where. In contrast, only the latter appeared as a type of play ideas catalyst in the indoor setting.

**Figure 3. Frequency of catalyst by setting**



**Discussion**

Although conflict may be viewed by adults as a non-desirable behavior, peer conflict is inevitable during early childhood and is recognized as an important part of the developmental process. Peer conflict has been investigated in previous studies, but rarely in nature-based programs that incorporate an outdoor classroom. Our findings suggest conflict catalyst and frequency vary by setting; thus, these findings add to the literature by filling the gap in understanding peer conflict in a nature-based preschool and a natural outdoor setting.

The main finding of the study raises a key question about whether the difference in primary conflict catalysts between settings is a direct result of the outdoor environment itself. The difference in conflict catalyst by setting may be due to a variety of factors that differ between settings, such as the quantity of resources, available space, lighting, noise level, and activity center participant restrictions. For example, play ideas may be a more prevalent conflict catalyst in the outdoor space due to the wide-open spaces, opportunities for deep sustained play, and abundant supply of loose parts in the form of natural materials (Bohling et al., 2010; Fjørtoft, 2004), as well as the naturally occurring materials that present differently with weather and seasonal changes (Bohling et al., 2010) unlike the prefabricated items and manufactured manipulatives found indoors. Further, the outdoor setting naturally provides new play opportunities allowing for natural objects (e.g., sticks, stones, bark) to be more easily reinvented and play spaces to be reconfigured. This suggests that children may engage in more meaningful conflict situations such as asserting different play ideas rather than merely arguing over the possession of materials.

Our conflict catalyst analysis revealed that distribution of resources (i.e., fairness issues such as violation of sharing, turn taking, grabbing, taking) was the primary catalyst for conflict in the indoor setting, which is consistent with decades of previous studies that established possession-based conflict as the most prevalent among preschoolers in indoor classrooms (Chen et al., 2001; Shantz, 1987). Moreover, this result was not surprising given the observed indoor distribution of resources conflicts were disputes over object possession and ownership generated by a limited supply of an item (e.g., magnetic tiles, tree stump pillow, train engine, icing bag, dinosaur). Further, previous research has asserted that conflicts over distribution of resources are more likely to occur in areas with a single entrance and closed spaces (Ramsey, 1986), and these types of areas are more prevalent in the indoor setting in this study.

Additionally, our findings are different from the previous study by Stack and Nikiforidou (2019) that found nearly equal possession-based disputes in the indoor and outdoor settings. The outdoor environment in their study was a large garden area that adjoined the front and back sides of the main building while our outdoor setting was surrounded by nature and located away from the building. In our study, twenty-five indoor conflicts were due to the distribution of resources compared to only nine in the outdoor setting. Notably almost half of the distribution of resources catalysts in the outdoors were generated by non-nature-based items (e.g., rake, plastic turtle, paint). Children seem to have fewer conflicts over nature-based materials. It might be possible that they view the nature-based materials as part of nature instead of one's possession and therefore, they may be more willing to share with each other. The wide-open spaces might also have contributed to fewer distribution of resources conflicts.

Chen and colleagues (2001) noted age-related patterns of conflict catalysts that suggested distribution of resources conflicts decrease between ages 2 and 5, while play ideas conflicts increase. In our study, this pattern emerged between the two settings, which suggests the natural, outdoor environment may challenge children

to be developmentally ahead. With the same age children, play ideas emerged as the primary catalyst in the outdoor setting but not in the indoor setting. In the outdoor setting, play ideas conflicts were initiated by opposing views on roles in play, types of play in which to engage, and the intended use of items during play. Engagement in symbolic play occurred frequently in the outdoor space as large groups of children engaged collectively in activities such as turning the mud kitchen into a candy shop, and building a school pool with a diving board. Frequent symbolic play created opportunities to discuss participant roles such as who will be which superhero, who will be in charge of cooking, and who will gather the food. These discussions became conflicts when suggestions were met with an opposing view. Often, the observed play discourse was longer and used more advanced vocabulary during play ideas conflicts than during distribution of resources conflicts. Further, the outdoor environment afforded children opportunities to rearrange their surroundings to fit the play frame, generating conflict around item usage such as the use of a plank for creating a ramp to climb onto a wooden spool table as opposed to it being used as a seesaw.

Social-conventional issues were observed only in the indoor setting. These conflicts were due to limitations placed on the number of children allowed at each indoor center. In contrast, because the outdoor setting had fewer centers with restrictions on the number of participants, children had more freedom to gather in larger groups. Previous research (e.g., Bohling et al., 2010) suggests children play collectively in larger groups in the outdoor environment. Play in larger groups was not possible in the indoor setting due to space limitations and participant restrictions. These restrictions set up potential for social-conventional issues conflicts when children desired to enter an activity but the activity center was full.

Our study contributes to the understanding of child development by examining peer conflicts in outdoor nature settings in contrast to the typical conflict study done only in an indoor setting. Engagement in peer conflict is important for child development as it provides children with opportunity to practice conflict management skills and foster moral, social, emotional and cognitive development (Chen et al., 2001; Shantz, 1987; Wheeler, 2004). This study provides insight into the benefits of outdoor nature play and supports increasing children's outdoor free play time as a way to provide opportunity for children to engage in more meaningful conflict. An implication of the study is that the outdoor nature environment seems to provide children more meaningful conflict events around play ideas rather than around the mere possession of materials, which was the catalyst commonly identified in previous literature. Thus, the nature-based outdoor environment is likely to provide more opportunities to practice perspective taking, communication, negotiation, and self-regulation skills. Our findings can be added to the existing literature in support of the additional value of and need for outdoor nature-based experiences (Kuo et al., 2019).

### **Limitations and Future Research**

First, small sample size limits the generalizability of the study findings. Findings may be different in other nature-based preschools due to variety of factors such as class size, adult-child ratios, and teacher certification and experience. Using

multiple nature-based preschools may give better representation. Second, our study only included typically developing children and did not include children with documented disabilities. Malloy and McMurray (1996) noted children with disabilities tend to use conflict strategies not used by typically developing children. Lastly, the presence of the researcher during the data collection may have influenced participants' behavior. Although we did not experience this directly, some children might have been conscious about the presence of the researcher.

Future research can seek to understand the differences in conflict catalyst between the indoor and outdoor settings by more deeply investigating the relationship between the type of catalyst and the type of play (symbolic, constructive, functional) in a nature-based preschool. Additionally, future research could investigate the effects of conflict duration as our data revealed that outdoor conflicts seemed to last longer than indoor conflicts. The longer conflict duration may be related to the higher quality of play afforded by the outdoor environment and/or the ability for children to engage in independent play which may allow them to engage in longer conflict negotiation situations. Future study should also examine conflict in nature-based programs in relation to individual characteristics such as race, gender, language, and disability.

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# **Eyes on Parkland: Understanding Youth Civic Engagement in the Aftermath of a Mass Shooting**

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## **Abstract**

*Youth are currently participating in civic and social life, often using social media and organizing in ways unique to their generation. In this position paper we apply several theoretical frameworks to the specific case of youth civic engagement in the aftermath of the 2018 mass shooting at Marjorie Stoneman Douglas High School in Parkland, Florida to identify lessons about youth participation. The institutional adultism the Parkland students faced warrants a closer look at both the assets and challenges youth and adults face when entering youth-adult partnerships. We call for future research to continue unpacking the intersectional, contextual, and power-laden dynamics of youth civic engagement.*

**Keywords:** youth civic engagement, Parkland, Florida, social justice, gun violence

On February 14<sup>th</sup>, 2018 a white, 19-year-old, former Stoneman Douglas High School student entered the grounds of his alma mater in Parkland, Florida with a bag full of ammunition and unloaded several rounds of bullets on students, teachers, and staff. Dozens were wounded and 17 people were killed. The aftermath of the mass shooting resulted in extraordinary community activity with young people in the lead. After the shooting in Parkland, high school students rallied and spoke out about the preventable deaths precipitated by a lack of gun laws and regulations, calling out gun lobbies and politicians on social media, and organizing a national protest (March for Our Lives) less than a month after the shooting.

Mass shootings in public spaces, the high-profile killings of unarmed Black youth by police, and large movements of young people into the streets to protest these conditions are beginning to feel common. Youth are participating in civic and social life, often using social media and organizing in ways unique to their generation. Yet, an examination of youth civic engagement through the lens of voting patterns and expectations to vote in the future would not have predicted the large movements of young people into the streets, voicing their opinions on social media, and organizing around issues that matter to them in ways that are quite extraordinary. In other words, national conversations about youth civic engagement are revealing inherent contradictions about how young people engage in civic life. The case of youth organizing and protest in the aftermath of the mass shooting at Stoneman Douglas High School in Parkland, Florida exemplifies the movement of young people into national conversations and highlights the contemporary socio-political context of youth civic engagement. There are lessons to be drawn from the case of Parkland.

The case of the Parkland youth illuminates the academic frameworks of youth civic engagement, while also challenging dominant narratives about what young people want and where they belong within political hierarchies. Youth-adult partnerships must reckon with institutional adultism, or the reality that social and political hierarchies routinely exclude youth from decision-making. And yet, the case of Parkland tells us that young people are informed and ready to engage in civic life. Central to our argument is the struggle (on-the-ground and in the literature) between amplifying youth voice and authentic youth-adult power-sharing. As we explore the national narratives about the youth of Parkland, we also illustrate the intersectional means by which circumstance and privilege highlight the voice of some youth more than others.

### **The Framing of Youth Civic Engagement**

Youth civic engagement is a broad concept, ranging from a singular activity (e.g., voting), to on-going processes (e.g., youth councils), specialized projects (e.g., participatory budgeting), and community organizing activities. These and other forms each engage youth perspectives into community life and, simultaneously, experientially educate youth about the choices, settings, and actors necessary to influence change. These various activities, and many others, present a range of possibilities for theorizing and examining different youth-led community efforts. Scholars have identified typologies to help categorize the broad range of possible activities that can occur under the umbrella of civic engagement. Checkoway and

Aldana (2013), for example, identified four forms, recognizing some overlap in categories: citizen participation, grassroots organizing, intergroup dialogue, and sociopolitical development. Taft and Gordon (2013) also distinguished between civic opportunities for youth that are available within government (e.g., youth councils) versus those that are available outside of government (e.g., youth community organizing).

Our previous research examining formal settings of youth civic engagement in the context of youth councils identified three common theoretical frameworks for understanding youth civic engagement: policy process, positive youth development, and social justice (Collins et al., 2018). We compared these three frameworks on factors such as: membership and role of adults, meetings, activities, social networks, and involvement with government. We describe the three briefly below and describe Parkland youth activities that fit within each frame.

### **Policy Process**

Policy process models are those that operate within or very close to government and in many ways model operations of other types of government councils. Youth councils operating primarily from a policy process frame require some adult guidance to navigate formal processes and are characterized by fairly formal meetings including access to policy makers. Activities are policy-focused and aim to have community impact. Social networks are important in order to access opportunities to serve. Because the policy focus is predominant, these groups of young people tend to operate formally within governments and can have access to decision-makers.

Youth political participation is significant in the narrative of Parkland and represents a policy process framework. Young people used social media and other news outlets to protest gun laws, while simultaneously lobbying lawmakers and gaining the attention of powerful government and private sector leaders. Days after the shooting, students organized a lobbying action, with more than 40 students (accompanied by teachers and parents) traveling to the state house to meet with lawmakers (Founders of March for Our Lives, 2018). Additionally, youth demanded to know why more was not done to prevent shootings and ban assault weapons; on CNN (later reported by *The Washington Post*), Parkland student Lyliah Skinner was quoted as saying, "How are we allowed to buy guns at the age of 18 or 19? That's something we shouldn't be able to do" (Viebeck, 2018). While these young people were outsiders to the "formal" policy realm, their access to lawmakers and ability to have their voices heard on a national level is remarkable for a population that often lacks voice and power in civic life (Collins & Mead, 2020). The efforts of the Parkland youth clearly were aimed at achieving specific policy actions related to gun safety.

### **Positive Youth Development**

Positive youth development models of youth civic engagement are premised upon the extensive and wide-ranging attributes of youth development practice: asset- (rather than deficit-) focused, collaborative, community-oriented, competency-building, connected, valuing cultural membership, holistic, long-range, normative,

promotive, and universal (Amodeo & Collins, 2007). Positive youth development emphasizes “comprehensive views of youth as assets, as individuals with resources and capabilities that deserve full support and development” (Costello et al., 2001). Youth development models are characterized by youth-adult partnerships where adults are knowledgeable about and practice positive youth development. Meetings tend to have more informal procedures and are activity-focused. Activities of the group aim at youths’ skill development (e.g., public speaking, running meetings). Social networks focus on socialization and there can be a minimal focus on formal government.

In regard to Parkland, the positive youth development frame presents itself implicitly, as a foundational characteristic undergirding the support, sympathy, and resources visible within the narrative about the Parkland teens. At least initially, extensive sympathy was a key characteristic. On the day of the shooting, *The Washington Post* reported on the on-air breakdown of CNN counterterrorism analyst Philip Mudd. This seasoned journalist, used to reporting on acts of terrorism around the world, was shaken by Parkland and said on live television, “A child of God is dead. Can we not acknowledge in this country that we cannot accept this?” and then sobs and turns away from the camera (Wemple, 2018). Notably, there were implicit statements about the value of children’s lives.

Positive youth development is the strategic valuing and empowerment of youth based on an assets-focused approach (Amodeo & Collins, 2007). The voices of the Stoneman Douglas students were cultivated and emboldened, so when tragedy struck, not only were these young people publicly and emphatically mourned, but their voices were valued. Youth leaders such as Cameron Kasky, David Hogg, Jaclyn Corin, and Emma Gonzalez possessed the skills necessary to face the media (e.g., public speaking, creative writing, organizing, etc.). It is not surprising to learn that these students were class officers and Advanced Placement students, and had already expressed an interest in politics and leadership (Bent, 2020; Founders of March for Our Lives, 2018). Their educational opportunities were instrumental in cultivating their skills to engage in civic action.

### **Social Justice**

Social justice “is a broad macro-level term that recognizes and addresses structural and systemic inequalities through an analysis of power relations and identifies the need for active engagement to address inequalities” (Collins et al., 2018, p. 602). Thus, social justice frameworks emphasize connection to community, equity and inclusion. Meetings emphasize procedural justice, making sure all voices are heard and offering significant opportunity for discussion of diversity and justice. Activities are youth-driven and community engaged. Access is based on representation of one’s community. There is a strong focus on youth being experts in their own lives and the right for their voices to be heard. Activities are often carried out outside of government as the government is viewed as representing the interests of dominant powers.

Initially, the youth of Parkland were met with overflowing sympathy and grief, but as the youth began to shape their own narrative and desires for change, the media

coverage shifted. In the evolving politicization of the Parkland youth, the social justice framework is evident in 1) the call for youth rights and a need to listen to youth voices, and 2) in the collaboration in which Parkland youth engaged that attempted to broaden the lens of gun violence. The media's concern for the rights of youth (Farhi, 2018), as well as from among youth themselves who demanded their voices be heard, evokes the social justice framework by amplifying the issues of rights, agency and autonomy.

The March for Our Lives movement extended efforts to amplify issues of gun violence beyond Parkland (Cullen, 2019). This took the form of broadening the youth organizers within the movement (Chandler, 2018) and the "sibling" protests that Parkland inspired throughout the country (Moyer, 2018), as well as specific efforts on the part of Parkland organizers to reach out and meet with youth of color who were similarly active in fighting for gun restrictions and other youth-driven concerns but who garnered less media attention (Lang, 2018).

### **Paradox of Youth Voice: Attention versus Power**

Framing the case of Parkland in terms of the three youth civic engagement frameworks illustrates that young people engage in civic dialogue in multiple ways and seek to elevate their voices within and outside of formal structures. The Parkland case unequivocally promotes the message that youth are informed and ready to engage, particularly around issues and priorities that matter to them.

Scholars have suggested there are important differences in the contexts of engagement and, consequently, the reasons why youth choose to engage. In one example, Conner and Cosner (2016) compared youth involved in a government-sanctioned youth commission versus a community-based organizing group. The researchers concluded that although both sets of youth saw themselves as civic actors and change agents, youth organizers saw greater need for systemic change whereas youth commissioners had greater trust in government systems. Similarly, Cushing and van Vliet- (2016) noted that official venues may not be the most important participatory settings as these reflect mainstream approaches to change (Taft & Gordon, 2013). Taft and Gordon (2013) identified the need for further research to examine the different contexts in which youth participate in civic life.

Social networking has been recognized as a critical tool in the organizing efforts of youth, in particular because it can overcome the siloing of singular efforts within a school or community (Kornbluh et al., 2016). In one recent study, Boulianne (2015) conducted a meta-analysis examining the association between social networking sites and political activities. This research found that 82% of the studies included in the review indicated a positive correlation between participating in a social networking site and engaging in social action (including demonstrations and rallies), especially among youth and young adults (15-30 years).

Also relevant is the extent to which adults are a part of the youth-focused effort and the nature of their relationship with young people engaged in civic engagement. The adult-youth relationship is critical in understanding variation within youth civic engagement. There is a robust literature on this (Hart, 1992;

Wong et al., 2010) that provides several typologies of youth participation, particularly in relation to adults. Integral to these typologies is the power sharing relationship between young people and adults, and the degree to which youth have meaningful voice in decision making (Zeldin et al., 2014). Evident within the Parkland case are the implicit and explicit roles adults played in supporting, amplifying, and later criticizing youth.

### **What about Power Sharing?**

Yes, Parkland students were engaged and their social positions (e.g., majority white, middle-class, suburban) gave them access to much sympathy. Yet, after about a week of coverage that focused on Parkland youth as victims, even these privileged youth began to experience media criticism and backlash. National news coverage first critiqued the efficacy and longevity of social media activism (Timberg & Lowery, 2018), followed by online conspiracies painting students like David Hogg as a “crisis actor” (Timberg et al., 2018) and attempts to pigeon-hole students like Emma Gonzalez as exceptional and/or *the* leader of the movement (Bent, 2020). In other words, as the students of Parkland become more politically vocal and demanded change, criticisms of the youth mounted.

While there exists a robust literature about the importance and utility of youth-adult partnerships, the case of Parkland portrays adults as unprepared to listen to young people. Or, more to the point, adults might have been willing to listen but that did not materialize into affording them the power to make change. In fact, once Parkland youth attempted to both expand their voice and change policy, and began to focus on the National Rifle Association (NRA), massive adult resistance occurred. This is evident in the dwindling national media coverage, youths’ overwhelming lack of access in regard to policy and local politics, and ultimately how little policy changed in the wake of the organizing. Even for the Parkland students, who acknowledged their privileged identities and status (Founders of March for Our Lives, 2018), it remains true that “children live lives outside the normative terms of political recognition giving them limited access to power and rights-driven legibility” (Bent, 2019, p. 70).

While Parkland students were valued and given voice within the national conversation about gun violence—facilitated in part by the socioeconomic and racial make-up of their community—institutional adultism belies the status quo that children and youth fundamentally lack access to practice, policy, and legal decisions (Flasher, 1978). Several scholars have more recently discussed institutional adultism as age-based policies that make it impossible for young people to access voting and political representation, even though these arenas of social and political life deeply impact children and youth (DeJong & Love, 2015; Godwin, 2011).

It is unsurprising then, that by the time the Parkland youth earnestly began organizing the March for Our Lives, they sought to distance themselves from adults. Only youth activists were allowed to speak at the event on the National Mall, and in the call for official poster designs the group limited submissions to individuals under 24 years old (Alter, 2018). The move to distance themselves from adults illustrates an awareness among the organizers of the limitations of youth-adult partnership. In

order to maintain legitimacy, whether in the eyes of other youth, the media, or themselves, the Parkland youth sought to project the image that young people can engage in policy processes and social justice on their own terms. Importantly, “on their own terms” does not equate to without adults—parents, teachers, and advisers helped develop and support these teenagers into the competent and empowered public speakers and leaders they became. Yet, as the organizers witnessed the unwillingness of politicians to make meaningful change around gun laws, they sought to exclude adults from everything except to “order pizza”(Alter, 2018).

While we and many others applaud the Parkland organizers for using their platform to expand the conversation about gun violence, it remains important to consider the Parkland youth within the context of privilege and all that their social positions provided in terms of positive youth development. Yes, the Parkland students sought to expand attention beyond their school’s tragedy to include gun violence occurring in marginalized communities. Yes, this included touring with a range of youth activists and the inclusion of Naomi Wadler<sup>1</sup> at the March for Our Lives. And yet, attention on Parkland (and Columbine and Sandy Hook before it) illustrates the inherent status and sympathy majority white and affluent communities possess within the national narrative.

A youth backlash towards adultism, or rather a disinterest in collaboration, is justified given the intense scrutiny and trauma endured by the Parkland youth. Still, institutional adultism warrants a closer look at both the assets and challenges youth and adults face when entering youth-adult partnerships. There is a fundamental imbalance of power when these actors work together: materially, culturally, politically. The positive youth development frame demonstrates that young people possess the assets of idealism and visionary thinking, and when motivated can create innovative solutions. Understanding positive youth development demands an intersectional analytical framework (Crenshaw, 1989; 1991) for understanding how people with different combinations of socio-political identities and positions (e.g., age, race, class, gender, ability, geographic location) encounter and experience different and unique forms of privilege and oppression in society (Collins & Bilge, 2020). Intersectionality scholars note that there are interconnecting structures of power in society that inequitably and differentially distribute power and privileges to some and harm and oppression to others (Collins & Bilge, 2020). Adults bear the difficult job of translating the intricacies of systems, particularly political systems, while also maintaining an ingrained respect for the rights and autonomy of youth. The academic literature on adult-youth partnerships needs to continue unpacking the intersectional, contextual, and power-laden dynamics existent among its actors.

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<sup>1</sup> A 12-year-old African-American middle-school student, inspired by the Parkland protests, Wadler, alongside a fellow student, organized a walk-out during school. Students stood in silence for 18-minutes, recognizing the 17 Parkland individuals killed while also honoring the death of Courtlin Arrington, a black girl killed during a school shooting in March, 2018 in Alabama. Wadler’s walkout received national media attention and Wadler was later invited by the March for Our Lives organizers to speak at the event in Washington, D.C.

## Conclusion

Through the lens of innocence, the national spotlight granted Marjorie Stoneman Douglas students empathy and elevated their voices, but as the students became more vocal against the political status quo, criticism of the students increased. Adults constructed massive resistance to the voices of Parkland youth and hindered progress around reforming gun violence. That said, the response to the shooting created a rallying call for youth across the country to mobilize around the issue of gun violence. While this position paper does not examine the extent to which the Parkland activism inspired others, future research should consider the ripple effects of such periods of national spotlight on youth activism and youth-led organizing.

The media coverage of youth civic engagement in Parkland highlights that young people care deeply about issues such as gun reform and safety in their communities. Our discussion of Parkland in the context of civic engagement frameworks confirm that youth *are* engaging in civic life and have the skills to identify community issues and present relevant solutions. The students' actions demonstrated elements of policy process, positive youth development, and social justice frames; youth in Parkland had the skills, knowledge, and relationships with adults to engage in policy-focused activities. The fact that they had a clear focus on gun control helped to move their agenda forward. Addressing legislation related to gun control was a major element of their activities.

Understanding youth civic engagement requires an intersectional approach; age, class, race and place are deeply rooted in the story of the Parkland mass shooting and the ways and means youth activism erupted afterwards. While political systems and structures are intrinsically designed to exclude youth from decision-making, the promise of youth includes the belief that things can change. It might be difficult for many adults to share power with youth in politics, schools, and organizations; however, young people themselves are already dreaming of such possibilities.

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# **Forest Fridays: Leveraging Land Manager-Educator Partnerships to Overcome Barriers to Outdoor Environmental Education**

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## **Abstract**

*Land manager-educator partnerships provide opportunities to overcome barriers associated with outdoor and environmental education within the United States' K-12 education system. This case study reviews the design and implementation of a novel outdoor environmental education program for kindergartners called Forest Fridays that involved half-day excursions to a local forest. Forest Fridays emerged from a unique partnership between three kindergarten teachers and a forest manager in Flagstaff, Arizona that removed resource and planning barriers in order to facilitate program establishment and operation. Immersive observation and informal program review with the program coordinators informed recommendations that may support the establishment of similar partnerships and programs elsewhere.*

**Keywords:** outdoor education, environmental education, program development, manager-educator partnerships, K-12 education

## **Introduction**

Outdoor education offers non-traditional avenues for introducing children to new environmental concepts and experiences. Learning outside is linked to a host of benefits associated with childhood health and development, social competencies, interpersonal skills, and social relations among children (Becker et al., 2017; Malone & Waite, 2016). Environmental literacy— “the elementary knowledge, skills, and motives to cope with environmental needs and contribute to sustainable development” (UNESCO, 1989, p. 1)— and positive childhood experiences in nature can foster an increased connection to nature later in life, documented by pro-environmental and conservation behaviors as adults (Cheng & Monroe, 2012). Despite these positive outcomes, outdoor environmental education remains an underutilized tool within public and compulsory education (MacQuarrie, 2018). Developing novel approaches to support environmental education in outdoor spaces is now increasingly critical to motivate life-long positive environmental attitudes and behaviors among students.

Educators face multiple barriers to implementing outdoor and environmental programs within traditional schooling, including lack of time, limited flexibility and support from administrators and school boards, and pressures from curriculum, education standards and testing to focus on scores and other objectives (Ernst, 2014; Waite, 2009). These challenges are compounded by a documented absence of resources to support the design and implementation of new environmental education programs, as well as a distinct lack of training or professional development opportunities (Marchant et al., 2019). Administrative perceptions of outdoor education as an additional or peripheral activity as opposed to a constructive education tool have allowed such barriers to become widespread (MacQuarrie, 2018; Waite, 2009). Many of these barriers highlight the incompatibility of outdoor education in the context of current education standards and teaching assessment metrics, which can disincentivize educators from experimenting with new teaching pedagogies.

Learning in an outdoor space produces opportunities for experiential knowledge development and problem solving in novel environments and situations, away from the pressures and expectations of the school environment and traditional academic practices, which are based on transmissive and didactic pedagogies (Harris, 2018). Outdoor education also can lead to improved conceptual understanding and test scores across multiple subjects when compared to traditional schooling (James & Williams, 2017). Learning outside also helps motivate apathetic students and aids students who struggle with traditional classroom learning (James & Williams, 2017). However, the logistical complexity of outdoor education—such as finding suitable locations, transportation need and cost, inclement weather, overall program costs and resources, and safety or liability concerns—make this approach to learning exceptionally challenging, particularly for underfunded or urban schools (Ernst, 2014; Marchant et al., 2019). Partnerships with organizations outside the K-12 education system offer one way to alleviate the resource shortages that educators face when exploring opportunities for, and overcoming barriers to, incorporating outdoor environmental education into teaching.

Documenting and advancing understandings of how new outdoor environmental education programs are designed and implemented through emergent partnerships can provide structure and guidance for educators considering this approach. Here, we outline the development and trial of a partnership between kindergarten teachers at Kinsey Elementary School and Northern Arizona University's (NAU) Centennial Forest called "Forest Fridays," based in Flagstaff, Arizona. The Centennial Forest is comprised of 47,500 acres of Arizona State Trust land that is managed by the NAU School of Forestry and utilized for education and research purposes. It is dominated by ponderosa pine forest on mildly varied terrain at an elevation of approximately 7,000 feet, with an established field camp that served as a home base for Forest Fridays activities. Forest Fridays is an exemplary case of how a partnership between K-12 educators and land managers can support the development of novel outdoor education programs from the ground up. Immersive observation of Forest Fridays development and implementation coupled with informal program review with program coordinators provide insights that can contribute to a framework for other educators and land managers to replicate, modify, and learn from when developing their own programs.

**Figure 1. Forest Friday students being led on a nature hike**



## **Forest Fridays as an Outdoor Education Tool**

Forest Fridays represents a departure from traditional teaching in the U.S. education system. Below, we describe the process of establishing the program and designing its structure, so that other educators and land managers can replicate or modify this effort to their own context.

### **Program Establishment**

Efforts to establish the structure of Forest Fridays drew heavily on existing programs and efforts tied to outdoor and environmental education. The forest kindergarten movement began in the mid-20<sup>th</sup> century in northern Europe and is now popular internationally (Hughes et al., 2021; Knight, 2013). This concept has since been transferred to North American contexts, most notably through the success of similar outdoor education programs in the state of Vermont (Walker, 2016) that influenced the development of Flagstaff's Forest Fridays. The Forest Fridays program emerged organically between the NAU forest manager and a local kindergarten teacher who worked at Kinsey Elementary. This relationship, and the forest manager's existing experience with forest-based environmental education, were central to the establishment of Forest Fridays. Starting the Forest Fridays program was a risk for both Kinsey Elementary and the teachers involved; the program required financial investment due to transportation needs and necessitated additional parent chaperones to ensure student safety. The program also took away classroom and planning time from the teachers due to travel and the less-structured format of activities. The pre-existing relationship between the land manager and one of the teachers afforded the trust and responsiveness that was critical to the approval and success of Forest Fridays.

Project Learning Tree (PLT), a well-recognized nationwide environmental education program, offers core competencies that teachers need in order to establish and effectively engage with programs like Forest Fridays. PLT began in 1976 as a collaboration between the American Forest Institute and the Western Regional Environmental Education Council (PLT, n.d.). The NAU forest manager was the PLT coordinator for the state of Arizona and offered annual trainings, which became the core source of staff education among Kinsey Elementary teachers at the outset of planning for Forest Fridays. The PLT training introduced teachers to philosophies associated with environmental education and invited hands-on experience executing some of the activities. Critically, this training provided resources and examples to better facilitate environmental education programs that were subsequently translated to Forest Fridays.

Establishing a local, accessible area for Forest Fridays was key to both program design and building a sense of familiarity and continuity for students. NAU's Centennial Forest offers an ideal setting for K-12 outdoor education; the field camp has basic infrastructure, including pit toilets and running water, as well as a ramada that provided shelter and a centralized meeting space for students. Forest Fridays used the established field camp facilities, like the ramada and walking paths, as much as possible. Other activities were dispersed and rotated to different areas of the surrounding forest to minimize the potential for negative environmental impacts. The Centennial Forest field camp is accessed via a short 20-minute drive

from Kinsey Elementary which minimized costs and time lost to travel. Forest Friday coordinators (i.e., the three kindergarten teachers, the NAU forest manager, and the lead author, who is a doctoral student at NAU) tested the structure and resources for this program through two pilot excursions undertaken in the spring of 2019 to ensure that the location and programming were appropriate. These successful pilots finalized the program's set-up, becoming the permanent framework for excursions during the 2020 school year.

### **Program Structure**

Forest kindergartens are primarily child-led, play-based, and held exclusively or predominantly outdoors. While Forest Fridays is based on the principles of forest kindergartens, the structure of the Forest Fridays program was developed to meet the local teachers' needs and their curriculum standards. The coordinators developed the program structure to find a balance between incorporating forest kindergarten principles and ensuring the program met the more structured requirements of the U.S. public school system. For example, while some activities were dedicated to unstructured playtime, others were organized lessons that ensured science curriculum topics were fully addressed.

Forest Fridays were somewhat constrained by the school schedule, which included early dismissal on Fridays, meaning that participating children must return to school by 12:30pm. A total timeframe of three hours was well suited for the program given this context and allowed for focused activities without leading to exhaustion or disinterest among the students, as kindergarten students in the U.S. are generally between 5 and 6 years old. There was an average of two Forest Fridays excursions a month—every other Friday—to allow teachers to balance Forest Fridays with other demands on their classroom time. On alternating Fridays when teaching was school-based, teaching still followed the Forest Fridays program structure but would focus on science and environmental education in and around the school grounds. Additionally, NAU's Centennial Forest is accessed via unpaved roads, meaning that buses are unable to make the trip during the snowy winter months. All Forest Fridays in December, January, and February were held on site at Kinsey Elementary to account for these conditions. Local guests, including an entomologist, a firefighter, and a wildlife biologist, visited the school during these months to replicate the diversity of activities and information that students had benefitted from in the forest.

Establishing a consistent structure for implementation of Forest Fridays was critical for creating a welcoming learning environment. In the first semester of the inaugural year, the coordinators mostly focused on the students being comfortable in the forest by developing familiarity with both the location and the coordinators. The scope of the program was broadened through partnerships to offer more varied learning experiences for the children in the second semester. The forest manager leveraged their existing connections to university faculty, natural resource managers, and other scientists to recruit local guests during the winter months and this allowed for a richer diversity of experience as the children learned from experts across an array of topics.

The program designers decided that the daily set-up of the Forest Fridays excursions should be simple yet flexible to allow for adaptation to changes or unplanned disruptions. A key tenet of place-based education is to incorporate local, natural phenomena as a “foundation for curriculum development” (Knapp, 2005). The flexibility to incorporate environmental changes and context, such as precipitation or the appearance of wildlife, allowed Forest Fridays educators to capitalize on opportunities to provide impromptu lessons that connected classroom-based education to students’ direct experiences and observations in the forest.

A typical timeline for a Forest Fridays excursion was as follows:

- 9:30am: Students and teachers arrive at the Centennial Forest via bus. Everyone meets under the ramada to review the morning’s activities
- 9:45-10:15am: First activity (e.g., nature hike/scavenger hunt)
- 10:15-10:45am: Second activity (e.g., story with activity)
- 10:45-11:15am: Third activity (e.g., unstructured time in nature-play area)
- 11:15-11:45am: Lunch
- 12:00pm: Students and teachers load back onto buses to return to school

Three kindergarten classes, each with 15 to 20 students, attended each Forest Friday simultaneously, so producing three rotating activities allowed each class to participate fully. Although Forest Fridays followed a general schedule, the timing was fluid to support emergent learning opportunities. The three activities followed a consistent framework: one station of unstructured time at the natural play area, one that was active but structured around a core lesson or activity, and one that was less active, such as a story, craft, or other stationary activity. This allowed for opportunities to engage in different types of learning and play during each excursion. After activities concluded, all three classes ate lunch together under the ramada. This unstructured time invited students to reflect on what they had learned and participated in that day, occasionally leading to exciting and spontaneous learning opportunities.

### **Integration with Curriculum**

The teachers placed a high priority on ensuring that Forest Fridays developed into an outdoor, environmental education effort that could become a long-term, permanent component of the Kinsey kindergarten experience. In order to achieve this, it was critical that the topics, activities, and practices used at Forest Fridays integrated well with the established curriculum and standards that the teachers and school must follow. Specifically, integrating topics such as *five senses*, *animals*, *weather*, and *living versus non-living* helped ensure that what was being learned in the forest could be built upon with classroom-based lessons. Kinsey teachers provided the science and social studies standards that are set by the school district to frame this strategic curriculum integration. Each of these requirements could also be linked to the varying topics covered in the forest, and the teachers created a document to show where these Forest Friday topics aligned with their standards. Additionally, non-academic considerations such as gross motor skills and social and emotional development were incorporated into program design to ensure Forest Fridays contributed to holistic student learning and development. The teachers

wanted to ensure that Forest Fridays could capitalize on opportunities to promote non-academic growth because the forest provided many novel situations and environments that could not be found in the classroom or playground.

## **Findings and Recommendations**

Fostering a partnership between educators and the forest manager was integral to the structure and success of this program. Proactive efforts to anticipate student needs in the planning process, such as a consistent location, ensured a productive learning environment that coordinators unanimously agreed fostered student success. Coordinators felt that the program's inaugural implementation was highly successful, and identified key successes and learning opportunities from which others can benefit to inform their own outdoor education partnerships:

- **Leverage partnerships to access new resources and expertise:** Assess the resources, expertise, and skills of staff involved to best leverage differing abilities. Forest Fridays could not have been implemented without a trusting educator-land manager partnership. Working with NAU's forest manager and lead author, who were both program coordinators and involved in the design and implementation of Forest Fridays, introduced access to the excursion location, use of existing outdoor education materials and the PLT training, scientific expertise on the local environment, and increased capacity to seek extramural funding. Identifying a local land manager who has the capacity to support a program like Forest Fridays allows for more comprehensive and successful outdoor education.
- **Develop a robust framework that fosters consistency and flexibility:** Once the framework of three rotating activities was established, coordinators could easily switch topics and activities without creating additional work. The framework also allowed teachers to link activities and lessons from the forest with those they provide in the classroom to build an iterative learning process. An established framework helped promote more efficient use of planning time and provided structure and consistency to help excursions run smoothly. Furthermore, using one consistent outdoor location helps build familiarity and comfort for both the teachers and students. That structure can also provide smoother transitions if new coordinators become involved. However, some flexibility within excursions is needed to help manage disruptions and capitalize on environmental opportunities when they occur. Adaptability within the framework allowed for incremental improvements to be made as the program progressed.
- **Build in time for immediate reflection among program coordinators:** Reflecting briefly after each excursion, particularly in the early days of the program, helped Forest Friday coordinators rapidly identify pivotal moments and areas for improvement to support reflexive adaptation of the Forest Fridays format. Moving forward, the coordinators plan to use the lunch time to build in formal opportunities for reflection to potentially hone the program's format and content to facilitate improved outdoor education experiences.

- **Prioritize effective communication:** Finding ways to improve virtual communication and clearly address everyone's roles, responsibilities, and expectations is crucial when coordinators are both educators and land managers. It became increasingly difficult to set aside time for coordinators to meet, discuss, and plan together as they became busier with other professional demands and responsibilities. As a result, formal face-to-face communication through regular planning meetings gave way to emails and impromptu conversations. Being able to dedicate time each month to in-person meetings can provide structure to the planning process and an opportunity for further discussion.
- **Find a balance between the new program and existing efforts:** Coordinators felt that two excursions per month into the forest was an appropriate balance between Forest Fridays and other demands on classroom time for Kinsey students. The alternating weekly format allowed time for planning the activities for each forthcoming trip to support smoother integration of classroom and Forest Friday topics. However, this structure is not required for other programs; discussions with prospective coordinators at the onset of program design is essential to find the right balance for each context.
- **Improve integration with curricular demands:** The topics and activities covered in Forest Fridays were largely based on the school district's science and social studies standards. However, coordinators expressed a desire to expand into other subjects in the future. The teachers noted that much of the pressure of assessment and student progress lies in mathematics and reading. Establishing clear, common threads between classroom learning and Forest Fridays can foster continuity while reducing the workload of educators and removes perceptions of outdoor education as a stand-alone or peripheral program (MacQuarrie, 2018; Waite, 2009).

## **Conclusion**

Forest Fridays demonstrates how the capacity and cohesion of outdoor environmental education programs can be rapidly expanded by educator-land manager partnerships. This case study provides real-world contextualization for institutions, organizations, and agencies interested in developing similar programs. Most existing research around these programs is conducted from the viewpoint of education and overlooks the role that natural resource management agencies can provide. Natural resource managers are uniquely positioned to provide resources and opportunities to educators to support environmental education programs. Along with expertise, land managers can provide access to natural areas that may not normally be available; this is important as not all schools are situated near outdoor environments like those around Flagstaff. Leveraging the resources and knowledge land managers can offer presents an underutilized pathway to overcoming many of the barriers educators face in implementing and integrating outdoor education into K-12 curricula. Clarity regarding how environmental education can integrate with existing curricula and compulsory education standards will enable outdoor learning to play a greater role in the U.S. education system.

Land managers and educators with an interest or passion for environmental education should proactively seek opportunities to initiate partnerships for outdoor education programs. Initial partnerships need not be large, but it is critical that those interested take advantage when an opportunity presents itself. The first year of the Kinsey Forest Fridays program demonstrated that opportunistic collaboration and consistent communication are key to fostering a productive working relationship using the recommendations provided above. However, it is important to acknowledge that land managers often have limited resources and time to contribute to these partnerships, which may not necessarily align with their position responsibilities. Increased funding to support local educator-agency partnerships can expand collaborative opportunities to benefit children and provide more equitable opportunities for outdoor education. Such partnerships also provide an excellent opportunity to strengthen public-land manager relationships by interacting with new groups of people and diversifying how agencies integrate with, and support, their local communities. Such investments can help children from diverse backgrounds experience the outdoors, help educate the next generation of environmental stewards by nurturing a public that is more knowledgeable about local ecosystems, and build life-long connections to nature through positive land ethics.

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# **Children Need Pocket Parks as Much as Pocket Parks Need Children**

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## **Abstract**

*This article presents the story of the Boa Praça Movement, a Brazilian group that decided to act and occupy, care for and create better public spaces for children and their families in São Paulo, Brazil, the largest megalopolis in Latin America.*

**Keywords:** pocket parks, Brazil, community organizing, outdoor play

What can a green area offer to children? It offers textures, colors, insects and shapes to sharpen their sensibilities. Sun for their bodies to produce essential vitamins. And often a long horizon to exercise their eyes. Children need space to run, play and freely experience their bodies and their limits. And after they use up the energy they have accumulated, they can rest better at night (see reviews by Dankiw et al., 2020 and Sugar, 2021).

In pocket parks<sup>1</sup>, children find leaves, seeds, sticks and other elements that arouse their innate curiosity, explorative spirit, and creativity. They turn these items into objects of for investigation and play. A green area also brings the possibility of socializing with other children, sometimes of different ages and lifestyles. And so, they have fun, learn to resolve conflicts, and to accept and appreciate differences.

A green area often has challenges that can be tested and conquered over time: climbing a tree, lifting a big rock, digging the earth, or mastering the mechanics of a piece of play equipment. This builds confidence and self-awareness. Pocket parks can also offer children the possibility of stillness and contemplation. There they can concentrate on an ant path for as long as their curiosity desires and thus, quiet their body and mind. These are essential benefits. But is it possible to facilitate this contact with nature in a frenzied megalopolis like São Paulo, Brazil, with 12.3 million inhabitants?

Today, 87% of the population of Brazil lives in cities (World Bank, 2020). In most cities, the dispute for territory, disorderly growth and real estate speculation have caused public spaces such as streets, sidewalks, pocket parks and larger parks to decrease year after year (Schteingart, 2007). This problem is compounded by enormous social inequalities, considerable rates of violence, and planning those privileges intense and fast vehicular traffic. Consequently, urban children in Brazil face a cloistered life. Children and teenagers spend more and more time indoors, in front of electronic devices or in guided activities (Meio & Mensagem, 2019). In other words, many children were living in confinement even before the COVID-19 pandemic arrived. This scenario has produced alarming rates of obesity, with one in three children in Brazil overweight or obese (Desiderata, 2018); high medicalization, with Brazil as the second largest consumer of Ritalin, a drug used to treat ADHD (Pereira da Silva et al., 2012); and, numerous cases of early myopia, among other problems. Around the city, access to green areas is rare, and offered inequitably.

A survey by the Municipal Secretariat for Green Spaces and Environment of São Paulo (Prefeitura de São Paulo, 2017) found that only 9 of the 32 districts in the capital had vegetation cover rates equal or above 18 m<sup>2</sup> per inhabitant (including parks, preservation areas and private gardens). In some regions, this number

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<sup>1</sup> Pocket parks offer important opportunities for access to nature in densely populated cities, where children's lives are often confined to their immediate neighborhood and large city parks are often beyond reach. Usually no bigger than a few house lots in size, pocket parks can provide green "breathing spaces" for their surrounding community ([National Recreation and Park Association, n.d.](#)).

reached only 5.22 m<sup>2</sup>/inhabitant. The situation was more dire for public green areas (specifically, pocket parks and parks accessible to all citizens), of which the city of São Paulo had only 2.6 m<sup>2</sup> per inhabitant. The consequences of this lack of green are immense, including very high levels of air pollution, deteriorating human health, recognizable heat islands, difficulty in controlling floods, and very few opportunities for exercising and practicing outdoor activities.

How can parents promote a healthy childhood in such an environment? How can they raise children in a place where the closest nature is a poorly maintained pocket park, often full of garbage and broken play equipment?

In an attempt to respond to some of these concerns, the Boa Praça Movement was established by a group of people who wanted to live in a more humane city. In 2008 when we co-founded the movement, we did not know about the various scientific studies identifying the benefits of contact with nature for children. We did not know anything about laws and rules for the regulation and maintenance of public spaces, but recalling the children we had once been, we sensed that we needed to give our children at least one (or several!) well maintained, "good" pocket parks near home where they could play outside.

### **A Child's Wish Starts a Movement to Bring City Pocket Parks to Life**

The Portuguese expression "Boa Praça" means that someone is a good fellow, a nice companion, a trustworthy and pleasant person. Literally, it also means that a pocket park (praça) is good. This double meaning similarly characterizes good spaces and friendly people, which defines the essence of our movement. Boa Praça was an initiative of a group of people who wanted to know their neighbors and act together for their well-being and for their community. We wanted a city where children could play freely, in green public spaces close to their homes, and connect with nature.

The Boa Praça Movement emerged from the wish of a child. When a young girl was about to turn 4 years old, she asked her mother to throw a birthday party in the pocket park they always passed on their way to school. "This place is all broken up and dirty, you can't have a party here!" said her mother. But the girl replied: "Mom, we can fix it!"

That phrase lit a spark and the mother made the child a proposal: "If you agree to have no gifts this year, we'll ask for the gifts to be given to the pocket park, and then we'll manage to fix it." The girl agreed. The mother then began to speak with those responsible at City Hall, with friends and neighbors, and with local shops and enterprises, asking everyone if they could help.

Before the party, people from City Hall repaired some of the play equipment. For the birthday, they loaned awnings and musician friends came to play. A supermarket nearby donated trash bins and a fitness center offered a trampoline for the children to play on. Some neighbors gave money, while others came to tell stories, photograph the party, make mosaics and plant a garden.

After the birthday party, the neighborhood had a revitalized pocket playground. But beyond a renewed public space, the neighbors' relationships had acquired a new sense of meaning. Once they had met and talked, each one realized that by giving a little, it was possible to make great changes.

**Figure 1. Tables being painted by neighbors<sup>2</sup>**



### **Are Places Abandoned Because Nobody Goes, or Does Nobody Go Because They Are Abandoned?**

Our group of neighbors also realized that a single action would not be enough. If things continued as they were, in a few years, the playground would have to be revitalized again. We thought that it was useless to have a beautiful pocket park if almost nobody used it and nobody took care of it. By often occupying the pocket parks around our houses, we decided to break the vicious cycle of: "Is the place in bad shape because nobody goes, or does nobody go because it is in bad shape?"

We opted for a strategy that was both simple and quite effective: every last Sunday of the month, an open-to-all community picnic would take place in one of the neighborhood pocket parks. During these picnic gatherings, people could get to know each other and promote recreational and educational activities. We

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<sup>2</sup> All photos by Carolina Tarrío / Movimento Boa Praça

established a motto: "to leave the pocket park always better than before." Thus, it was through combining forces that the Boa Praça Movement emerged.

From that moment on, a series of more than 70 picnics were promoted. At first, the talents of friends, such as a musician or a children's story teller, were used to organize activities. As the neighbors came to know each other, many talents appeared, and new activities were scheduled. To date there have been picnics with cinema, theater, dance, music, workshops to build kites and roller carts, painting, bread making, composting, games, fairs for exchanging toys and objects... And, the pocket parks have been improved with plantings, constructed outdoor furniture, renewed playgrounds and signage, rain gardens etc.

The children are always the liveliest at these picnics and engage in collective efforts. They enthusiastically paint, plant, invite neighbors, and give their opinions and ideas about how to improve the parks. Often they offer surprising and very simple but effective ideas. For example, one of the pocket parks we revitalized was located in front of a school and also a public institution where children visited for recreational activities. When consulted, the children indicated that they would like to have tables in the pocket park, so that they could do their homework and study there, because their houses were crowded, noisy and had little space. So, a Boa Praça work group installed the tables.

As a founding member of Boa Praça, I went several times to ring doorbells in my neighborhood, accompanied by my children, who loved to distribute the picnic flyers. Seeing me with my children also helped to ease people's resistance and make them feel more comfortable about our invitations to participate. And, at the same time, when children and young people feel listened to and cared for, they help to conserve places. For example, André Almeida, 8 years old, said,

*In the pocket park, during the picnics, I play with my friends differently than I do at home. We play at finding metals or treasures on the ground, for example. And in the meantime, we help to improve the place: making a path, a table, so that the pocket park becomes nicer.*

The picnics and the improvements that Boa Praça promoted helped to create a community sense around the pocket parks. When I arrived in my neighborhood 16 years ago, I did not know anyone. Today, I don't leave the house without saying at least three "good mornings." And I feel good that way. I know the people around me and I know they will look after my children and me. Recently, neighbors carried out a renovation of the pocket park in front of my house. This was during the pandemic so it was undertaken with masks, social distancing and great care. Later, we received the following testimony from Maria Angélica, whom I did not yet know:

*I would like to talk about my recent experience at Praça Paulo Schiesari. I live very close, but I would go there very rarely. Since the space was revitalized by the Boa Praça Movement, it has become a haven for games and for a breath of fresh air. We are very happy to have helped today to touch up the paint on the pavement! My son enjoyed the climbing adventures*

*installed in the pocket park so much that he even drew a picture of them when he got home.*

**Figure 2. At Paulo Schiesari Pocket Park, we identified that children needed more “adventure” and “challenges,” so this play equipment was built**



Another testimony came from the architect Nina Furukawa, who helped to develop a painting for the amphitheater in the pocket park Amadeu Decome. Nina said:

*As an architect, there is nothing more rewarding than experiencing actions that strengthen recognition among neighbors in a megalopolis. I helped to restore the amphitheater together with the Boa Praça Movement and saw how this gave rise to solidarity, valuing the citizen and allowing the creation of an affective memory of urban life.*

**Figure 3. Planting a palmetto tree at Amadeu Decome Park, in São Paulo**



**Figure 4. Building play equipment at Amadeu Decome Park, in São Paulo**



**The Movement Begins to Spread...**

When the movement became better known and a few newspaper articles were published, requests from other neighborhoods began to arrive: "Can you come here and fix our pocket park?" At the same time, as lead organizers for Boa Praça, we realized that the improvements and actions that neighbors could carry out by themselves were limited. Larger works, like infrastructure or lighting, required investment and expertise that only the government or companies could afford. And we knew, by law, it was the government's duty to perform certain tasks.

**Figure 5. Day of consultation, when Boa Praça organizers exhibit images of different types of play equipment, park uses, and pocket parks around the world, print a map of the pocket park, and ask people to write or draw what they would like to do in different spaces.**



From that point on, we decided we needed to grow in some new directions. Firstly, we offered people from other neighborhoods (and other cities) inspiration and the knowledge we had accumulated so far. We then created our website ([www.movimentoboapraça.com.br](http://www.movimentoboapraça.com.br)), opened an account on Facebook, and developed some manuals to share our story and methods and help other people start their own story of love and care for public spaces.

On another front, we realized we needed a better public policy that would welcome the participation of citizens and invite city hall, institutions, companies, and neighbors to work together. So, in 2013, the Boa Praça Movement joined other

organizations to draft the “Law on Participative Pocket Parks Management.” This law proposes that people who live around a pocket park can form a user committees and act together with the city government to recommend measures, supervise public acts, and revitalize those spaces. The law also provided that the city of São Paulo would map its pocket parks and offer more information about them to citizens. Until that moment, it had been very hard to know how many pocket parks there were in the city and their characteristics and needs. We expected different spaces had different functions, topographies, equipment and dimensions. Some pocket parks were simple flowerbeds between avenues, others were more than 10,000 m<sup>2</sup> in size, but all received the same management by City Hall. (We would suggest they received the same neglect!) Many were poorly maintained, with broken equipment and overgrown bushes, and failed to meet the population’s needs or promote safe and secure play areas.

The law we proposed was approved by the Chamber of Councilors in 2015, but we have not yet managed for it to be included in regulations, which requires an executive power. It seems the City government is not interested in increasing public participation. Yet, even without official regulation, the Boa Praça Movement has been working with several groups of neighbors who take care of spaces throughout the city to register their users’ committees and exchange experiences about how to improve the pocket parks.

Our group continues to function, on a voluntary basis, in our local community. When there are requests from other groups, even without having a legal entity or being organized as an NGO, we manage to assemble an autonomous professional team to offer training, educational projects, consulting and community revitalization processes. These initiatives are funded by charitable foundations, neighbors’ donations, corporate volunteer programs or public notices. We have carried out many revitalization actions including space diagnostics, mapping, mobilization of local actors, planning, and managing contributions by volunteers and local enterprises, as well as lectures, workshops, educational programs, and events like TEDx talks (Instituto Saúde e Sustentabilidade, 2012; Movimento Boa Praça, 2012).

What we always try to do, when we are not in our own neighborhood, is to form a group and engage people who live or work near a pocket park, so the care, occupation and maintenance work will continue after we leave. Some places have strong groups or an institution like a school that continues the work. However, in some places, the group is difficult to maintain, due to people moving away or because they cannot continue to contribute. Recently, we registered our work and gathered data that documented greater park use and an increase in people’s sense of belonging and security after improvements were made.

Notably, the last pocket park we revitalized, Praça Paulo Schiesari, showed a significant increase in use and fulfilled its function of promoting health, well-being, and care for families and children. We were able to carry out this work from November 2020 to February 2021 without any occurrence of COVID-19. The place gained new equipment, furniture, plants with large roots to retain the hills, and fruit trees which already welcome birds! We carried out surveys, using online and offline

participation, and 87% of the 70 people who responded declared that their frequency of visits to the pocket park had increased. Ninety-three percent said the place looked nicer and had better equipment, and 44% said they felt safer after the revitalization. When we compared people's length of stay in the park before and after the revitalization, the time people spent in the park increased by 23% and new ways to use the revitalized park appeared such as reading.

**Figure 6. Little "house of books" installed at Paulo Schiesari Pocket Park in São Paulo, our most recent revitalization project. People can read at the square or take away a book and bring another. The nearby school and children's center also benefit from the "library."**



This last revitalization was funded with money from a parliamentary amendment, organized and executed by the Boa Praça Movement together with neighbors and a partner NGO, and inspected by the sub-city government. We see much potential in this model. But we are still far short of the work necessary to encourage the rise of new groups all over our country, to revitalize the existing areas and create more equitably distributed new green areas, which is an urgent need.

### **International Presentations and Learning**

Our methodology and work gained strength when Boa Praça was presented at international meetings, like FIU (Festival Internacional de Intervenciones Urbanas) in Peru, as well as at different events in Brazil, like Virada Sustentável and TEDx Cidade e Saúde. In our 13 years of experience, we have learned so much! We learned that by mobilizing people, it is possible to make big changes with low costs and high impacts. We learned that when you listen to people and build a place that meets their needs, they start to take care of it, thus interrupting a cycle of abandonment and decay. And, above all, we learned that public spaces are essential and unique. They are unique because, for so many, they are the only available alternatives for meeting, enjoying nature and leisure. And they are unique because they welcome everyone, regardless of social class, interests, gender, age or condition. We are in such need of encounters and dialogues among different people! And, particularly in this pandemic period, we have found that nearby public green spaces are essential for maintaining physical and mental health.

Pocket parks are a great symbol of democracy, a place for citizen engagement like the Greek Agora. We need them to become better citizens. We need them to offer better childhoods to our children, and to teach them how to become better citizens too: citizens who care for nature, their neighborhoods and cities. And the parks need us. When people connect and do things together, a support network emerges, making neighborhoods better places for everyone: more diverse, more humane and more secure. Especially for children!

### **Acknowledgements**

My most sincere thanks to professor emerita Louise Chawla, from University of Colorado Boulder, for her solicitous support during the preparation of this field report.

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# **Exploring the Use of Citizen Science and Technology to Connect Preschool Classrooms at Two University-Based Programs**

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## **Abstract**

*The COVID-19 pandemic and resultant restrictions limited the ability of teachers to collaborate on activities for children attending center-based care. In response to such constraints and to encourage outdoor learning, researchers and teachers at two university-based early childhood programs partnered to simultaneously implement a citizen science project in two preschool classrooms. Teachers and children engaged in Project FeederWatch counts and other bird-related activities influenced by children's interests. The two classrooms participated in virtual meetings to share their birding "research" and observation data. Children were engaged in the birding project for longer than expected and many included their families in birding activities at home.*

**Keywords:** citizen science, collaboration, COVID-19, nature education, outdoor education, social learning, technology in early childhood

## **Introduction**

Responses to the COVID-19 pandemic have necessitated changes in daily routines for many people across the globe. We have adapted to working from home, oftentimes dually managing our children's schooling while non-traditional instruction is instituted. For our youngest children, many childcares and preschools have remained open, often with modified limits on classroom capacity in accordance with social distancing guidelines (Centers for Disease Control & Prevention [CDC], 2020). Further, the intermingling of children across these classrooms has been discouraged to reduce possibilities of exposure to the virus.

While the use of technology in learning has increased because of the pandemic, the use of outdoors as a learning tool may be underemphasized (Siskind et al., 2020). The irony is evident, as the CDC suggests that it is easier to implement group distancing efforts, and virus transmission is less likely, in outdoor settings. Despite the everyday affordances currently unavailable to learners because of the pandemic, another literal door has opened to increased possibilities for outdoor learning. This field report describes one study utilizing a combination of a citizen science project and technological platforms in preschool classrooms, with primary goals of using nature as a learning tool; dual-campus researcher, teacher, and child collaboration; and child socialization via technology.

Citizen science projects allow the observation and/or collection of data for inquiry purposes by all interested individuals (Silvertown, 2009). An adaptable and flexible concept, citizen science frequently involves outdoor, environmental projects. As children are innately curious about the natural world, citizen science provides an opportunity for place-based learning while contributing to a greater environmental cause (Makuch & Acze, 2018).

## **Theoretical Framework**

The theoretical framework for this project was inspired by the Reggio Emilia approach and included documenting children's activities and learning while engaged in emergent and project-based curriculum. Documentation used to track "traces" of learning is a key principle in the Reggio Emilia approach (Wein, 1997). Strategies to document traces of learning include observation, anecdotal records, and samples of children's work (Fyfe, 2012). The Reggio Emilia approach was developed in the municipal system of infant-toddler centers and preschools in Reggio Emilia, Italy. The success of the approach has brought it worldwide attention and it is practiced around the globe (Edwards et al., 1998).

## **Description of Activities**

In a collaboration between researchers, teachers, and children, we implemented the Project FeederWatch citizen science project in two preschool classrooms at university-based early learning centers, one urban and one rural. Project FeederWatch is hosted by the Cornell Lab of Ornithology and includes tallying bird counts over a specified period of time as birds are wintering (Cornell Lab of Ornithology, n.d.). This study utilized design-based research wherein researchers and early childhood educators collaborated on the research design, which remained fluid to accommodate teacher and child input for refinement (Edelson, 2002). Such

collaboration supports positive outcomes for all involved stakeholders (Herrenkohl et al., 2010).

Teachers and children were tasked with choosing classroom activities related to Project FeederWatch. In addition to the respective locale bird counts, children engaged in specific species research, compiled their observances via journals and artwork, and contemplated what diversity means in both the avian and human realms. Teachers used technology to schedule live bird-cam watching in addition to indoor and outdoor observations. Technology was also used for children to communicate across classrooms. Meetings using virtual platforms included children sharing their bird research, bird watch bingo results, and artwork. These meetings served as a time for children to swap stories and further communicate with children at the other campus-based early learning center, thus providing peer socialization outside of their respective classroom “bubbles.”

### **Figure 1. Project activities implemented with children**

- Bird counting
- Making bird feeders/bird feeding
- Bird house design and construction
- Creating 3-D nests using clay and other natural materials
- Observing birds with binoculars
- Studying and imitating bird movement
- Nature hikes to observe birds
- Observing and studying birds using live webcams (e.g., All About Birds Cams at Cornell, Audubon Bird Cams, etc.)
- Reading about birds (narrative and expository)
- Painting with feathers
- Researching bird habitats
- Making hummingbird nectar
- Investigating different beaks

### **Child Engagement and Outcomes**

Teachers from both university-based child development programs collaborated virtually to discuss their own knowledge about birds and share bird-related activities they had implemented in the past. Teachers continued to virtually meet several times throughout the project to discuss ideas and compare children’s engagement in their respective classrooms.

Teachers presented children with activities related to birding and the citizen science project, Project FeederWatch. The teachers initially engaged children in the project by provoking their interest in birds using questioning strategies that included inquiries such as:

- What is a bird? What does a bird look like?
- Where do birds live?
- What do birds eat?

Project FeederWatch provided a context for children in both campus-based programs to participate in many bird-related activities. Congruent with the Reggio Emilia philosophy, activities incorporated loose parts from the natural environment as well as drama, music, sculpting, and painting.

The teachers and children in both programs enjoyed synchronous remote meetings with each other on a weekly basis. They shared the latest news on their bird “tallies”; ideas that included how to build their own nests, how to “dance” like a bird, and fun bird games and activities; read books related to birds; and shared bird-related art projects they had completed. The children and teachers looked forward to the remote meetings. They enjoyed sharing their own activities and ideas in addition to seeing and hearing about the activities completed by children in the other classroom.

Children and teachers learned about citizen science and that being a scientist involves many types of work. The children kept daily tallies of birds that came to their feeders and uploaded that information to Project FeederWatch. They learned that to have good data you need to become a good observer. Children learned about observation and not only observed birds at school, but voluntarily reported on the birds they saw at home in the evenings. Families and caregivers shared with teachers that children came home from school eagerly talking about birds and pointing out different birds on the way to and from school. Throughout the project children experienced using binoculars and were fascinated by the way binoculars work. Over time teachers noticed that engagement in observation was initiated by the children, and they remarked upon birds around them even when engaged in activities unrelated to birds or this project. One teacher indicated:

*As students began learning the names of certain birds, the more fascinated they became with them. Students naturally gravitated to the birds they shared a personal connection with. For example, one student was particularly curious about woodpeckers because he had seen one at his grandparents'. Another child was enamored by hummingbirds because they could beat their wings "as fast as a race car." These conversations helped spark the collaborative art/music activity inspired by real birds and their wings.*

The teacher in the urban setting stated, “I was surprised by the level of students’ engagement. Students in our classroom remained interested in birds for at least six weeks. However, I was shocked to learn how many different kinds of birds lived by our school building.”

**Figure 2. Using binoculars during a nature walk**



Though teachers provided some provocation, the children led the activities and projects based on their interests. One program spent weeks building and discussing 3-D nests and one program spent weeks designing, making, and dancing with bird wings representing different species. These projects inspired other smaller projects such as the study of paper airplanes, and the behavior of squirrels.

**Figure 3. Child's cardinal wings created for movement activity**



Many bird-specific misconceptions were resolved during this project. The children in this study were fascinated to learn that all birds do not fly, that birds do not live in the same place they eat, that all things with wings are not birds, and that birds look very different when they are born versus when they are ready to fly on their own. Teachers had opportunities to resolve these misconceptions during art, dancing, observation, and circle time discourse.

Throughout the project children were presented with a variety of new vocabulary words from the discourse that teachers initiated, as well as both narrative and expository texts that were used in the classrooms. Some child misconceptions and prior "funds of knowledge" (Gonzalez et al., 2005) children brought to the project surprised the teachers. For example, children's knowledge about birds at the inception of the study was "very superficial." Most children thought birds' vocalizations were limited to "tweet-tweet," and did not know what kinds of foods birds consumed. Many children replied, "I don't know" to the latter query, and additional replies included "cantaloupe," "leaves," "eggs," and "gingerbread men." When asked these questions at the end of the study, children spoke about specific species of birds, including woodpeckers ("he has some beaks and pecks the tree sometimes"), macaws, hummingbirds, doves, blue jays, cardinals, and toucans. In addition to "tweet-tweet," children shared that birds said "coo-coo-coo," "peck peck peck peck," and "birdie-birdie-birdie." At the end of the project children reported that birds ate seeds, fish, bugs, and worms. In addition, children could now describe different types of bird beaks and could demonstrate how they function by manipulating common household tools and utensils (e.g., turkey baster (Figure 4), pliers (Figure 5), and child-sized tweezers (Figure 6)). The majority of children at the inception of the project indicated that birds had "mouths." Very few children initially mentioned the term "beak."

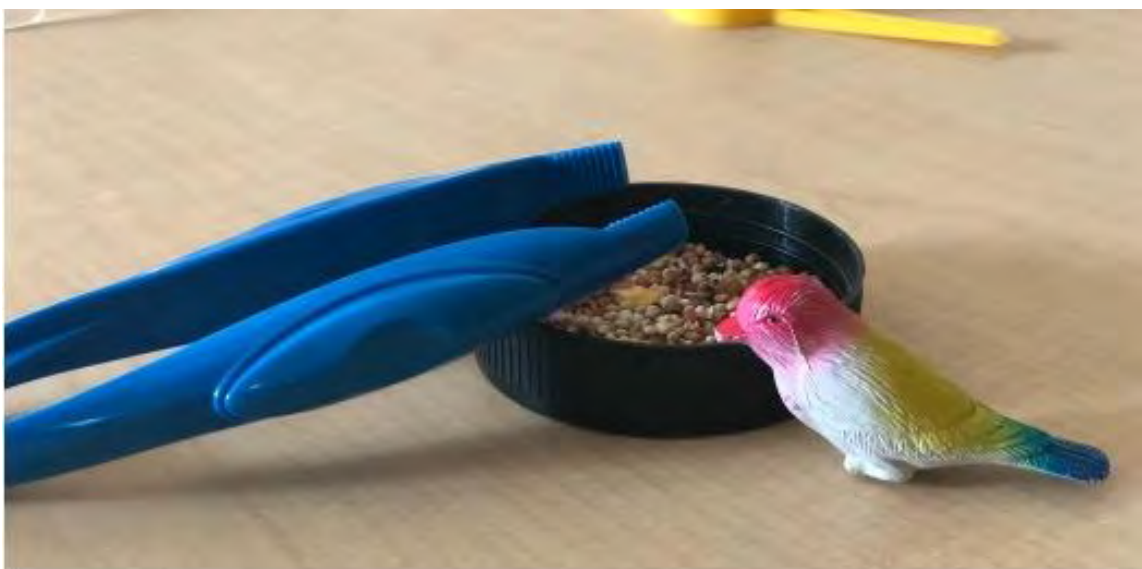
**Figure 4. Turkey baster to represent extracting nectar like a hummingbird**



**Figure 5. Pliers to represent the grasp and reach of a toucan bill**



**Figure 6. Child tweezers to represent eating like insectivorous and small seed eating birds**



### Recommendations for Practice

Teachers responded to project conclusion questions and shared what did/did not go well, what children most enjoyed, and study limitations. Based on children's interest and capacity for learning, inviting an ornithologist to the classroom would be something both teachers would recommend for future science projects related to birds. Though they could not have visitors due to COVID-19 rules, in retrospect, setting up a virtual meeting with an ornithologist or other expert would have benefitted the project. Teachers from both programs indicated that additional prior research about birds and birding in general would have been helpful to each of them. They were surprised by the complexity of birding and birds in general. Children in both programs were very interested in using binoculars, even the cardboard ones they created. Teachers agreed they would like to have actual, working binoculars for each child to use or enough sets for two children to share while birding. A large part of the project involved observation, whether on walks or on the playground, so the importance of having binoculars to see things that change and quickly move is important.

**Figure 7. Sharing "binoculars" with children in collaborating center via virtual meeting platform**



Regarding technology, teachers in both classrooms reported that the children wanted to be the ones who shared/talked on camera during virtual meetings rather

than listen to their peers. This provided opportunities for teachers to talk with children about the value of listening to others, both in-person and while communicating virtually. Rather than utilizing the mute option during a virtual meeting, teachers can use such occasions to allow children to practice patience, turn-taking, and other social skills.

## **Conclusion**

Researchers and classroom teachers from two university-based early childhood programs partnered to implement a citizen science project in preschool classrooms. The children remained interested in birds and birding for much longer than teachers anticipated. This project demonstrates that young children can engage in, and understand, complex science activities such as those found in citizen science opportunities. Citizen science projects are ideal for launching an activity that begins in the classroom, but easily extends into the learners' home environments.

Additionally, projects like the bird study described in this field report engage teachers and children in place-based learning, which fosters both child and family engagement while increasing the relevancy of learning for children (Connolly, 2020).

Restrictions in place due to the pandemic prohibited community birding experts from visiting classrooms. In retrospect, teachers realized they could have planned for such a visit to occur virtually to further learn about birds. The project demonstrated that collaboration done remotely can be as beneficial and engaging as learning side-by-side in the classroom. One teacher stated, "by participating in this study, classroom teachers were able to expand the children's understanding of birds by providing *meaningful* and *quality* learning opportunities rather than theme-related activities."

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## **The Necessity of Urban Green Space for Children's Optimal Development: A Discussion Paper**

Suchitra Sugar (2021)

New York: UNICEF, 44 pages

Available as a free download at <https://www.unicef.org/documents/necessity-urban-green-space-childrens-optimal-development>

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A new discussion paper from UNICEF, *The Necessity of Urban Green Space for Children's Optimal Development*, signals UNICEF's attention to a large and rapidly growing body of research on the importance of access to safe green spaces for people's health and happiness. The paper calls on national, state and local governments and organizations of civil society to review how they are implementing the Convention on the Rights of the Child in order to include promoting access to nature for all children, simultaneously achieving multiple economic, health and environmental benefits. In addition to reducing costs for public health, green infrastructure in cities reduces urban heat, sequesters carbon, improves air quality, and provides flood protection and a refuge for biodiversity. The paper covers its topics concisely, in an attractive format that includes vivid images of children around the world enjoying green spaces of different kinds.

In 1989, when the United Nations General Assembly adopted the Convention on the Rights of the Child, the number of studies that demonstrated that people need greenery and green spaces near them for their health and wellbeing could be counted on one hand, and none of these pioneering studies involved children. In the 1990s, a cluster of new studies appeared. Since 2000, research on the benefits of including nature in the places where people live, work and play has become a robust field of study, with its own textbook (van den Bosch & Bird, 2018), conferences that convene people from across the globe, and many reviews of this burgeoning research, including studies involving newborns, early childhood, middle childhood, and adolescence. *The Necessity of Urban Green Space for Children's Optimal Development* assembles a compelling case that it is time to integrate the implications of this research into urban policies and programs. With this paper, UNICEF takes a step in this direction; at the same time, it provides a substantial resource that can be used by any organization that works to increase young people's wellbeing or to increase green land surface in cities.

The author, Suchitra Sugar, presents findings related to children, nature and health through concise research summaries, a table, and extensive citations. She begins with benefits for newborns, who are more likely to be born with a healthy weight when their mothers have greenery around their homes and nearby green spaces that they can visit. She proceeds through early childhood, middle childhood and adolescence, summarizing benefits for physical, mental and social development, as well as the development of concern and care for nature. When children have nature nearby, physical benefits include more physical activity and better balance and motor coordination. Greenery around schools and homes is associated with better cognitive development in terms of improved concentration, attention, working

memory, and academic performance. Time in nature reduces hyperactivity, and access to nearby nature is associated with less stress, fewer social and behavioral problems, and lower rates of depression and other psychiatric disorders.

Because children in high-income families are more likely to have greenery around their homes and well-maintained parks nearby, Sugar only cites correlational studies that were conducted in low-income neighborhoods or that controlled for family income. She also draws on experimental, quasi-experimental and observational studies. She observes that most research has been carried out in Western countries but introduces a number of studies from East Asia and the Global South. She points out that some studies measure physiological changes that occur while in nature, including reduced levels of stress hormones and blood pressure; these are involuntary biological reactions that are likely to be consistent in children everywhere.

After this review, Sugar highlights the implications of these findings for local communities, institutions like schools and child-care centers, municipal governments, national governments, and organizations like UNICEF that respond to humanitarian crises. To ground her recommendations in the realities of difficult circumstances, she interviewed experts who are seeking to connect children to nature even under the conditions of slums, refugee settlements, or life on the street. She shares stories that suggest that access to nature can be an important source of resilience for children in difficult circumstances.

Sugar itemizes barriers that limit children's safe access to nature, such as the health risks of pesticide use in parks and other green spaces—to which children are especially vulnerable, as well as risks of crime, bullying, air pollution, waste, and disease vectors, which are most likely to affect green spaces in low-income communities. She notes that even when safe green spaces exist, children are often barred from their use by entrance fees or rules that prohibit active play, or excluded because they represent a marginalized group. For example, one of the experts whom Sugar interviewed, Sudeshna Chatterjee, shares a story from her research with slum children in India, who begged her not to improve a vacant lot where they played. If the site were beautified, they explained, people with power would no longer allow slum children to use it. Sugar observes that children with disabilities and girls often face the highest barriers to access. She advocates joint ownership and stewardship of green spaces by local communities as a way to ensure safety and maintenance of the spaces, and non-discriminatory community monitoring to deter anyone who threatens children's safety or attempts to bar access.

Sugar defines "green spaces" to include nature at every scale: not just parks, playgrounds and agricultural land, but also home and community gardens, overgrown vacant lots, street trees, roadside verges, and green roofs. This point deserves repeating, because as Chatterjee's story shows, small pieces of nearby nature can be most accessible. In her research with children in slums of Indonesia and India, Lyndsey Deaton found that because children were often expected to stay close to home—and this was especially the case for girls—small pockets and edges

of nature were essential for their access. She warns against exporting Western definitions of access, such as a park within a 10 minutes' walk, when what matters in many children's lives are places to gather under street trees or in gardens or small green lots in their immediate neighborhood (Deaton, 2021). It also bears repeating—and Sugar herself makes this point repeatedly—that children should be included in evaluating, designing and maintaining green spaces that serve them.

*The Necessity of Urban Green Space for Children's Optimal Development* is a visually attractive tool that individuals and groups of all kinds can use in advocating for the inclusion of nature in children's lives. It can be used to encourage greening initiatives in schools and child-care centers, to introduce nature into humanitarian responses like refugee settlements, and to approach governments at every level. Given the global recognition of UNICEF's name, this document can add weight to any initiative to connect children with nature.

Review by Louise Chawla  
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## **The Youngest Citizens: Children's Rights in Latin America**

Amy Risley (2020)

New York & Abingdon, Oxon, U.K.: Routledge, 138 pages

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In this excellent book, Amy Risley provides a comprehensive analysis of the state of children's rights in Latin America. In nine well-referenced chapters, the author casts a contrasting spotlight on the strategies employed by child rights activists to augment the safety, protection, and empowerment of children and the array of ongoing ideological and structural barriers that remain to be overcome. In the first chapter she offers a synopsis of significant advances in children's rights that have occurred throughout Latin America, largely the result of the combined impact of an influential global regime on childhood and the advent of strong domestic child rights movements and alliances. This has led to a "tectonic shift" in discourse away from the idea of children as passive "minors" wholly dependent on family or other forms of institutional authority to that of children as "young citizens" capable of articulating their own interests and exercising agency both independently and collectively. The author admits to "cautious optimism," however, by acknowledging that changes in discourse, and the policy reforms and enactment of progressive legislation that have ensued, are nonetheless confronted with deep-seated structural constraints. In so doing she lays out the book's central argument concerning the integral connection between the struggle for children's rights and the challenges that must be overcome for the long-term wellbeing and stability of societies as a whole.

The author begins the second chapter by examining the historiography of childhood and the incremental manner in which theories of *human rights* gradually vanquished the unfounded assumptions concerning childhood as a natural state of unformed development necessitating close adult oversight and direction. In the wake of the Industrial Revolution in Europe and North America, advocacy for children as rights holders slowly emerged and progressed through three "waves," beginning in the 19<sup>th</sup> century with an emphasis on saving children from abuse and exploitation, followed throughout much of the 20<sup>th</sup> century by concerns for child protection, and into the contemporary era with heightened attention directed towards children's empowerment. This latter wave has been stimulated by a flurry of studies that came to be known as the "new sociology of childhood" and by wide-ranging advocacy and negotiations by governmental and nongovernmental actors alike that culminated in the adoption and near-universal ratification of the UN Convention on the Rights of the Child (CRC). As Risley points out as she concludes the chapter, the CRC represented a "giant step forward" that has been particularly influential in the promotion of children's rights throughout Latin America.

In the third and fourth chapters, Risley offers a detailed analysis of successful strategies of child rights advocacy, focusing specifically on the examples of NGO-led mobilization in Argentina and Uruguay. In both countries advocacy included the promotion of international child rights principles as encapsulated in the CRC, but in

ways that resonated with the specific historical, economic, and socio-cultural realities of each country. Rather than accentuating international trends that might suggest that foreign ideas and norms were being foisted on Latin American countries by external forces, NGO campaigns have commonly "framed" children's rights as being aligned with national priorities and values. In Argentina, for example, emulating the strategies of previous Argentinian social movements that addressed serious human rights violations of the past, child rights organizations have formed alliances with other national social advocacy groups, and with Argentinian researchers, journalists, and supportive legislators. Accordingly, they have been able to bring high-profile attention to the gaps that exist between internationally accepted principles of children's wellbeing and the realities of Argentina's unmet social obligations for destitute children. This dual approach of framing children's rights as an Argentinian cause around which national alliances can be developed has helped to reduce misguided perceptions concerning poor children as a social menace living in "irregular situations," and has thereby generated landmark reforms designed to strengthen children's rights.

In other countries as well, notably Brazil, alliances connecting the private sector, labor unions, NGOs, universities, mass media, and government departments have proven to be effective in adopting a shared "master frame" for the advancement of children's rights. Nevertheless, as Risley observes, alliance building is often painstaking and fraught with the need for compromises that may result in less than optimum outcomes. In Uruguay, with its longer history of liberal democracy and social welfare policies, NGOs were able to advocate for policy reforms and collaborate with the central government in promulgating a new Code of Childhood and Adolescence in 2004. Yet the new Code was less rigorous in its stipulated reforms than had originally been proposed by leading child rights advocates. In addition, while discursive framing and alliance building can be highly effective in augmenting shared understanding of children's rights and in stimulating the formulation of corresponding policy reforms, the focus on framing and alliances tends to be much less effective in redressing the structural underpinnings of socio-economic inequality and injustice that effectively impede the advancement of children's rights.

This cautionary note serves as a segue to the fifth and sixth chapters, which focus, respectively, on child labor and poverty, and on the pernicious phenomena of child soldiery and sexploitation. These are malignant issues that are rooted in pervasive socio-economic inequality and skewed power structures that have been sustained by neoliberal policies and the globalization of capital markets. For these very reasons they are also issues that are complex and require multiple strategies if they are to be overcome. In contexts of endemic poverty, a distinction frequently has to be made between exploitative child labor and income-generating work that is done by children through their own volition, often as a means to support their impoverished households. For child rights advocates and child workers themselves the goal is often not to eliminate child labor altogether, but rather to ensure that conditions be in place that guarantee the right to work in safety and for fair wages, to unionize and lobby for fair working practices, and to have access to education and health services. In Bolivia, such stipulations led to reforms in the country's

Code of Childhood and Adolescence, notably in assuring provisions for minimum wages, yet the reforms fell short of clarifying the distinction between exploitative work and legitimate labor. This underscores two points of contention that often arise. While accepting the virtue of children's rights and paying lip service to international agreements, governments too often pass legislation that lacks clear terminology, or incorporates ambiguous statements that are open to different interpretations, thereby weakening prospects of implementation and enforcement. Consequently, while child rights advocacy is critical, NGOs must also continually monitor state actions and hold governments officials and the services they administer to account.

In contrast to child labor, there is no ambiguity about the exploitative severity of sex trafficking and the recruitment of children as armed combatants for political insurgencies and gang-related turf wars. As Risley argues, while international attention is commonly centered on the victims of systemic child-centered violence, governments and the public at large often pay less attention to underlying structural factors such as acute poverty, gender inequity, domestic violence, and government corruption that constitute fertile ground for these forms of child exploitation. For many young children and youth growing up in hazardous and impoverished conditions, these highly organized forms of child abuse may initially appear to be less dangerous and potentially more beneficial than languishing in impoverished and abusive homes and communities. This underscores the urgency for states to undertake significant steps towards reducing the stark socio-economic disparities that are commonplace throughout Latin America.

In the seventh chapter, Risley shifts the focus away from Latin America onto a critical assessment of U.S. immigration policy which, she argues, has exacerbated the plight of Latin American children who flee north to escape toxic environments in their home countries. Rather than providing young people with necessary refuge, U.S. law and immigration policy has too often treated them as illegal aliens, either exiling those identified as erstwhile gang members back to their countries of origin or turning away children, some unaccompanied by family members, at the border. These actions serve to reinforce the longstanding detrimental impact that U.S. policies have had in fostering instability and insecurity in the Northern Triangle states of Central America. To a very real extent, impoverished children are hapless victims of the geopolitical machinations of the U.S. and its southern neighbors.

In her closing chapter, Risley states that although the global regime on childhood has helped to spur alliances and strategies that have led to the passage of rights-based policies and legislation in Latin America, these must be regarded as "works in progress." In too many countries the rule of law is tenuous, perceptions of poor children as potentially disruptive remain ingrained, and inequalities and injustices that are embedded in society are too often exacerbated by the global economic system. The gap between what Risley refers to as "parchment" rights and the actual protection of rights and empowerment of children is still wide. Nevertheless, ending on what this reviewer regards as perhaps an overly optimistic view of children's resilience and capacity to mobilize as "young citizens," Risley concludes that the struggle for child rights in Latin America has made significant gains in

terms of heightened collective awareness and movement on policy and legislative fronts. What remains essential, however, are continually widening alliances, close NGO and international monitoring of successful or promising initiatives to ensure their sustainability, and strong political leadership to undertake major structural changes that directly address the blights of poverty, corruption, and underinvestment in social services for children and youth. In pointing out these directions, this highly readable and informative book is a valuable addition to the literature on children's rights in Latin America.

Review by Richard Maclure  
*Faculty of Education, University of Ottawa*

## **The Necessity of Urban Green Space for Children's Optimal Development: A Discussion Paper**

Suchitra Sugar (2021)

New York: UNICEF, 44 pages

Available as a free download at <https://www.unicef.org/documents/necessity-urban-green-space-childrens-optimal-development>

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A new discussion paper from UNICEF, *The Necessity of Urban Green Space for Children's Optimal Development*, signals UNICEF's attention to a large and rapidly growing body of research on the importance of access to safe green spaces for people's health and happiness. The paper calls on national, state and local governments and organizations of civil society to review how they are implementing the Convention on the Rights of the Child in order to include promoting access to nature for all children, simultaneously achieving multiple economic, health and environmental benefits. In addition to reducing costs for public health, green infrastructure in cities reduces urban heat, sequesters carbon, improves air quality, and provides flood protection and a refuge for biodiversity. The paper covers its topics concisely, in an attractive format that includes vivid images of children around the world enjoying green spaces of different kinds.

In 1989, when the United Nations General Assembly adopted the Convention on the Rights of the Child, the number of studies that demonstrated that people need greenery and green spaces near them for their health and wellbeing could be counted on one hand, and none of these pioneering studies involved children. In the 1990s, a cluster of new studies appeared. Since 2000, research on the benefits of including nature in the places where people live, work and play has become a robust field of study, with its own textbook (van den Bosch & Bird, 2018), conferences that convene people from across the globe, and many reviews of this burgeoning research, including studies involving newborns, early childhood, middle childhood, and adolescence. *The Necessity of Urban Green Space for Children's Optimal Development* assembles a compelling case that it is time to integrate the implications of this research into urban policies and programs. With this paper, UNICEF takes a step in this direction; at the same time, it provides a substantial resource that can be used by any organization that works to increase young people's wellbeing or to increase green land surface in cities.

The author, Suchitra Sugar, presents findings related to children, nature and health through concise research summaries, a table, and extensive citations. She begins with benefits for newborns, who are more likely to be born with a healthy weight when their mothers have greenery around their homes and nearby green spaces that they can visit. She proceeds through early childhood, middle childhood and adolescence, summarizing benefits for physical, mental and social development, as well as the development of concern and care for nature. When children have nature nearby, physical benefits include more physical activity and better balance and motor coordination. Greenery around schools and homes is associated with better cognitive development in terms of improved concentration, attention, working

memory, and academic performance. Time in nature reduces hyperactivity, and access to nearby nature is associated with less stress, fewer social and behavioral problems, and lower rates of depression and other psychiatric disorders.

Because children in high-income families are more likely to have greenery around their homes and well-maintained parks nearby, Sugar only cites correlational studies that were conducted in low-income neighborhoods or that controlled for family income. She also draws on experimental, quasi-experimental and observational studies. She observes that most research has been carried out in Western countries but introduces a number of studies from East Asia and the Global South. She points out that some studies measure physiological changes that occur while in nature, including reduced levels of stress hormones and blood pressure; these are involuntary biological reactions that are likely to be consistent in children everywhere.

After this review, Sugar highlights the implications of these findings for local communities, institutions like schools and child-care centers, municipal governments, national governments, and organizations like UNICEF that respond to humanitarian crises. To ground her recommendations in the realities of difficult circumstances, she interviewed experts who are seeking to connect children to nature even under the conditions of slums, refugee settlements, or life on the street. She shares stories that suggest that access to nature can be an important source of resilience for children in difficult circumstances.

Sugar itemizes barriers that limit children's safe access to nature, such as the health risks of pesticide use in parks and other green spaces—to which children are especially vulnerable, as well as risks of crime, bullying, air pollution, waste, and disease vectors, which are most likely to affect green spaces in low-income communities. She notes that even when safe green spaces exist, children are often barred from their use by entrance fees or rules that prohibit active play, or excluded because they represent a marginalized group. For example, one of the experts whom Sugar interviewed, Sudeshna Chatterjee, shares a story from her research with slum children in India, who begged her not to improve a vacant lot where they played. If the site were beautified, they explained, people with power would no longer allow slum children to use it. Sugar observes that children with disabilities and girls often face the highest barriers to access. She advocates joint ownership and stewardship of green spaces by local communities as a way to ensure safety and maintenance of the spaces, and non-discriminatory community monitoring to deter anyone who threatens children's safety or attempts to bar access.

Sugar defines "green spaces" to include nature at every scale: not just parks, playgrounds and agricultural land, but also home and community gardens, overgrown vacant lots, street trees, roadside verges, and green roofs. This point deserves repeating, because as Chatterjee's story shows, small pieces of nearby nature can be most accessible. In her research with children in slums of Indonesia and India, Lyndsey Deaton found that because children were often expected to stay close to home—and this was especially the case for girls—small pockets and edges

of nature were essential for their access. She warns against exporting Western definitions of access, such as a park within a 10 minutes' walk, when what matters in many children's lives are places to gather under street trees or in gardens or small green lots in their immediate neighborhood (Deaton, 2021). It also bears repeating—and Sugar herself makes this point repeatedly—that children should be included in evaluating, designing and maintaining green spaces that serve them.

*The Necessity of Urban Green Space for Children's Optimal Development* is a visually attractive tool that individuals and groups of all kinds can use in advocating for the inclusion of nature in children's lives. It can be used to encourage greening initiatives in schools and child-care centers, to introduce nature into humanitarian responses like refugee settlements, and to approach governments at every level. Given the global recognition of UNICEF's name, this document can add weight to any initiative to connect children with nature.

Review by Louise Chawla  
*Program in Environmental Design*  
*University of Colorado Boulder*

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## **The Youngest Citizens: Children's Rights in Latin America**

Amy Risley (2020)

New York & Abingdon, Oxon, U.K.: Routledge, 138 pages

\$160.00 USD (hardcover), \$46.95 USD (softcover), ISBN 9781138745438

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In this excellent book, Amy Risley provides a comprehensive analysis of the state of children's rights in Latin America. In nine well-referenced chapters, the author casts a contrasting spotlight on the strategies employed by child rights activists to augment the safety, protection, and empowerment of children and the array of ongoing ideological and structural barriers that remain to be overcome. In the first chapter she offers a synopsis of significant advances in children's rights that have occurred throughout Latin America, largely the result of the combined impact of an influential global regime on childhood and the advent of strong domestic child rights movements and alliances. This has led to a "tectonic shift" in discourse away from the idea of children as passive "minors" wholly dependent on family or other forms of institutional authority to that of children as "young citizens" capable of articulating their own interests and exercising agency both independently and collectively. The author admits to "cautious optimism," however, by acknowledging that changes in discourse, and the policy reforms and enactment of progressive legislation that have ensued, are nonetheless confronted with deep-seated structural constraints. In so doing she lays out the book's central argument concerning the integral connection between the struggle for children's rights and the challenges that must be overcome for the long-term wellbeing and stability of societies as a whole.

The author begins the second chapter by examining the historiography of childhood and the incremental manner in which theories of *human rights* gradually vanquished the unfounded assumptions concerning childhood as a natural state of unformed development necessitating close adult oversight and direction. In the wake of the Industrial Revolution in Europe and North America, advocacy for children as rights holders slowly emerged and progressed through three "waves," beginning in the 19<sup>th</sup> century with an emphasis on saving children from abuse and exploitation, followed throughout much of the 20<sup>th</sup> century by concerns for child protection, and into the contemporary era with heightened attention directed towards children's empowerment. This latter wave has been stimulated by a flurry of studies that came to be known as the "new sociology of childhood" and by wide-ranging advocacy and negotiations by governmental and nongovernmental actors alike that culminated in the adoption and near-universal ratification of the UN Convention on the Rights of the Child (CRC). As Risley points out as she concludes the chapter, the CRC represented a "giant step forward" that has been particularly influential in the promotion of children's rights throughout Latin America.

In the third and fourth chapters, Risley offers a detailed analysis of successful strategies of child rights advocacy, focusing specifically on the examples of NGO-led mobilization in Argentina and Uruguay. In both countries advocacy included the promotion of international child rights principles as encapsulated in the CRC, but in

ways that resonated with the specific historical, economic, and socio-cultural realities of each country. Rather than accentuating international trends that might suggest that foreign ideas and norms were being foisted on Latin American countries by external forces, NGO campaigns have commonly "framed" children's rights as being aligned with national priorities and values. In Argentina, for example, emulating the strategies of previous Argentinian social movements that addressed serious human rights violations of the past, child rights organizations have formed alliances with other national social advocacy groups, and with Argentinian researchers, journalists, and supportive legislators. Accordingly, they have been able to bring high-profile attention to the gaps that exist between internationally accepted principles of children's wellbeing and the realities of Argentina's unmet social obligations for destitute children. This dual approach of framing children's rights as an Argentinian cause around which national alliances can be developed has helped to reduce misguided perceptions concerning poor children as a social menace living in "irregular situations," and has thereby generated landmark reforms designed to strengthen children's rights.

In other countries as well, notably Brazil, alliances connecting the private sector, labor unions, NGOs, universities, mass media, and government departments have proven to be effective in adopting a shared "master frame" for the advancement of children's rights. Nevertheless, as Risley observes, alliance building is often painstaking and fraught with the need for compromises that may result in less than optimum outcomes. In Uruguay, with its longer history of liberal democracy and social welfare policies, NGOs were able to advocate for policy reforms and collaborate with the central government in promulgating a new Code of Childhood and Adolescence in 2004. Yet the new Code was less rigorous in its stipulated reforms than had originally been proposed by leading child rights advocates. In addition, while discursive framing and alliance building can be highly effective in augmenting shared understanding of children's rights and in stimulating the formulation of corresponding policy reforms, the focus on framing and alliances tends to be much less effective in redressing the structural underpinnings of socio-economic inequality and injustice that effectively impede the advancement of children's rights.

This cautionary note serves as a segue to the fifth and sixth chapters, which focus, respectively, on child labor and poverty, and on the pernicious phenomena of child soldiery and sexploitation. These are malignant issues that are rooted in pervasive socio-economic inequality and skewed power structures that have been sustained by neoliberal policies and the globalization of capital markets. For these very reasons they are also issues that are complex and require multiple strategies if they are to be overcome. In contexts of endemic poverty, a distinction frequently has to be made between exploitative child labor and income-generating work that is done by children through their own volition, often as a means to support their impoverished households. For child rights advocates and child workers themselves the goal is often not to eliminate child labor altogether, but rather to ensure that conditions be in place that guarantee the right to work in safety and for fair wages, to unionize and lobby for fair working practices, and to have access to education and health services. In Bolivia, such stipulations led to reforms in the country's

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Review by Richard Maclure  
*Faculty of Education, University of Ottawa*