Article

ecr

Journal of Early Childhood Research
1–18

DOI: 10.1177/1476718X261439022
journals.sagepub.com/home/ecr
Sage

'There are so many good things outside, let me tell you': Children's qualitative perspectives of outdoor play affordances at early learning and child care

Rachel Ramsden[1], Emily Jenkins[1], Sally Thorne[1], Ian Pike[1] and Mariana Brussoni[1]

Abstract

Outdoor play in early childhood supports physical, emotional, cognitive and social development. Early learning and child care (ELCC) environments offer important opportunities for outdoor play not otherwise experienced in a home or community setting. This study aims to understand children's perspectives of outdoor play affordances at two ELCC centres in the Greater Vancouver region of British Columbia, Canada, participating in the PROmoting Early Childhood Outside study (*PROmoting Early Childhood Outside trial registration: NCT05073380)*. It also seeks to engage young children in a participatory planning process to examine their own ELCC environment. Twenty children aged 3–5 years participated in observations, semi-structured interviews, child-led tours and map-making. Inductive thematic analysis identified emergent themes, outlining relationships between children's play behaviours and outdoor affordances. Results from this analysis identified children's affordances for play through four thematic categories: physical play, social play, imaginative play and nature play. The findings highlight the importance of actualised outdoor affordances that incorporate accessible sensory elements and encompass varied challenges. It also further supports the integration of traditional and natural play features to maximise children's diverse play experiences. This research substantiates young children as capable research participants and strengthens the application of affordance theory to children's outdoor play.

Keywords

qualitative research, affordance theory, outdoor environments, early childhood education, perception

Introduction

Children's early experiences influence long-term health and development outcomes (Maggi et al., 2010). Participation in outdoor play in early childhood is associated with many health and developmental benefits, including enhanced cognitive, physical, emotional and social development

[1]University of British Columbia, Vancouver, BC, Canada

Corresponding author:
Rachel Ramsden, Department of Pediatrics, University of British Columbia, F513, 4480 Oak Street, Vancouver, BC V6H3V4, Canada.
Email: rramsden@bcchr.ca

(Bento and Dias, 2017; Brussoni et al., 2015). As such, Article 31 of the United Nations Convention on the Rights of the Child (UNCRC) includes the Right to Play (United Nations General Assembly, 1989). However, recent trends in children's outdoor time and chosen activities demonstrate declines in outdoor play in comparison to previous generations (Mullan, 2019; Solomon-Moore et al., 2018). This decrease in children's outdoor play can be attributed to the changing landscape of neighbourhoods, increased time spent on screens and structured activities, societal safety concerns and shifting family priorities (Holt et al., 2016; Mullan, 2019). While many studies have reinforced the positive impact of play on child development, health and wellbeing, the influence of outdoor environments on young children's play remains an evolving area of inquiry.

Apart from the home, early learning and child care (ELCC) centres are the most important setting in many children's lives and can provide opportunities for outdoor play not otherwise experienced (Copeland et al., 2016). While characteristics of outdoor spaces at ELCC are important in determining the frequency, duration, quality and type of play in which a child will participate (Brussoni et al., 2017), these spaces may not always offer optimal settings to stimulate outdoor play (Herrington and Studtmann, 1998). Gibson's (1977, 1979) theory of affordances outlines that components of the physical environment, also known as affordances, offer different benefits to each child. Affordances invite children to participate in a given action or behaviour, and in reciprocity, environmental properties also influence the individual and shape environmental perceptions (Gibson, 1977, 1979; Lombardo, 1987). Affordances will be viewed differently depending on the child, their preferences and capabilities, and how they view the physical environment on a given day. The perceptual information individuals derive from their environment forms the basis of environmental preferences, as people are generally drawn to environments that afford opportunities for action (Gibson, 1979). While potential affordances are theoretically infinite, only those that are actualised through children's actions and expressed preferences become meaningful (Heft, 1989). Preferences thus emerge from the interplay between environmental features and children's functional activities, underscoring how physical characteristics influence action, exploration, and engagement (Kyttä, 2004). The consideration of affordances, as unique to each child, is important when considering how outdoor spaces at ELCC settings are designed.

The early childhood education landscape in Canada is governed by provincial or territorial licencing regulations, including requirements for outdoor play space, time spent outside and educator qualifications. In British Columbia, licenced ELCC centres must provide a minimum of 6 m^2 of outdoor play space per child, ensure at least 60 minutes of active outdoor play each day and employ educators who hold valid early childhood educator certification (Government of British Columbia, 2007, 2025). Paedagogy is further framed by the provincial *Early Learning Framework* which emphasises play-based, inquiry-oriented, and land-connected approaches (Government of British Columbia, 2023). While ELCC centres must comply with applicable licencing requirements, they retain discretion in the design and utilisation of their outdoor spaces, a feature broadly consistent across Canadian provinces and territories. This regulatory structure provides a basis for critically examining outdoor play affordances and exploring how they can be effectively facilitated through ELCC design, particularly within comparable geographic and political contexts.

Children's play space design has routinely prioritised novelty through fabricated, fixed structures (Frost, 2012) and increased safety regulations in response to societal fears of injury (Frost, 2012; Herrington and Nicholls, 2007). Although recent research has emphasised the need for play environments that include natural features (Torkar and Rejc, 2017), portable equipment (Flannigan and Dietze, 2018; Loebach and Cox, 2022) and support structures that offer additional play affordances, such as natural shade (Kennedy et al., 2021; Loebach and Cox, 2022), many ELCC centres continue to rely on fixed equipment to facilitate children's play (Frost, 2012; Sandseter et al., 2022). Existing literature identifies outdoor features commonly found in ELCC centres

across developed countries, including dedicated open areas, climbing structures, sandboxes, gardening areas and structured tricycle tracks (Bai et al., 2023; Moore et al., 2021; Olsen and Smith, 2017). These playscapes are frequently designed to provide gross motor play opportunities and do not consider the diverse play types that comprise a child's outdoor play experience, including sensory and restorative play forms (Herrington and Studtmann, 1998). Societal emphasis on safety considerations can also limit diverse forms of risky play to transpire within children's play experiences, such as playing at heights, at speed, with dangerous tools or elements, or in rough-and-tumble (Hansen Sandseter, 2007; Jerebine et al., 2022).

To fully realise children's rights, spaces and places must consider the youngest citizens through active and reciprocal planning and design tools (Ataol et al., 2019). Capturing children's perspectives using a participatory planning approach allows children to experience, learn, evaluate, act and improve their own environments (Özdemir, 2019), and considers them as meaning makers and active participants in a wider decision-making process (Ataol et al., 2019). Children's preferences, shaped through interactions with their environment, reveal how affordances for play are realised in action. Environments became preferred when they enable children to act on otherwise inaccessible possibilities, making preference a critical lens for assessing the functional and experiential realisation of affordances (Kyttä, 2004). To date, there is limited research examining children's perspectives and preferences related to outdoor affordances in ELCC environments. Therefore, the aim of this study is to explore children's perspectives of outdoor affordances, focussing on preferences for play and actualised behaviour, at two urban ELCC centres in Greater Vancouver, Canada.

Methods

Study design

This study was designed as an exploratory, participatory action research study guided by the mosaic approach (Clark and Moss, 2001) and is embedded within the PROmoting Early Childhood Outside (PRO-ECO) study, a randomised control trial that implements and evaluates a comprehensive outdoor play project at eight ELCC centres in the Greater Vancouver region of Canada. Two ELCC centres (Centre 1 and Centre 2) were selected to take part in qualitative data collection with children due to their readiness to participate and the representativeness of their outdoor play environments in relation to other licenced ELCC centres in urban Canadian cities. Qualitative data collection at these two centres occurred prior to implementation of the PRO-ECO outdoor play project to inform the built environment modifications that took place as part of the PRO-ECO study. Further details of the PRO-ECO study have been described elsewhere (Ramsden et al., 2022). Ethics approval was received from the University of British Columbia (UBC) and the Children's and Women's Health Centre of British Columbia Research Ethics Board (H20-03912 and H21-02825).

Early learning and child care centres

The two participating ELCC centres are operated by the YMCA, a non-profit organisation and Canada's largest child care provider (YMCA Canada, 2024). Both Centre 1 and Centre 2 are located within municipally-owned facilities, and offer conventional ELCC centre play features, including open areas, tricycle paths, gardening beds and planters, sandboxes, and climbing structures (Table 1). Centre 1 features a ground-level outdoor play space that is defined by concrete pathways mixed with natural soil and wood chip surfacing (Figure 1). In contrast, Centre 2 is located on the sixth floor of a high-rise building, integrates rubberised surfacing and

Table 1. Baseline characteristics of ELCC centres.

Attribute	Centre 1	Centre 2
Outdoor space size (m^2)	320	270
Location	At-grade building in a medium density urban neighbourhood	Above-grade high-rise in a high-density urban neighbourhood
Climbing features	Wood cubes, balance logs, wood stumps	Traditional, fixed structure (slide, climbing wall, ladder)
Gross motor path	Concrete tricycle path; gravel path	Concrete tricycle path
Surfacing materials	Concrete, wood chips, natural soil, grass, gravel	Concrete, rubber, wood decking
Gardening area	Garden beds, raised concrete planters	Raised concrete planters
Water feature	Water pump and trough (fixed)	Water table (portable)
Sandbox	Yes	Yes
Mud kitchen	No	Yes
Table area	Yes	Yes

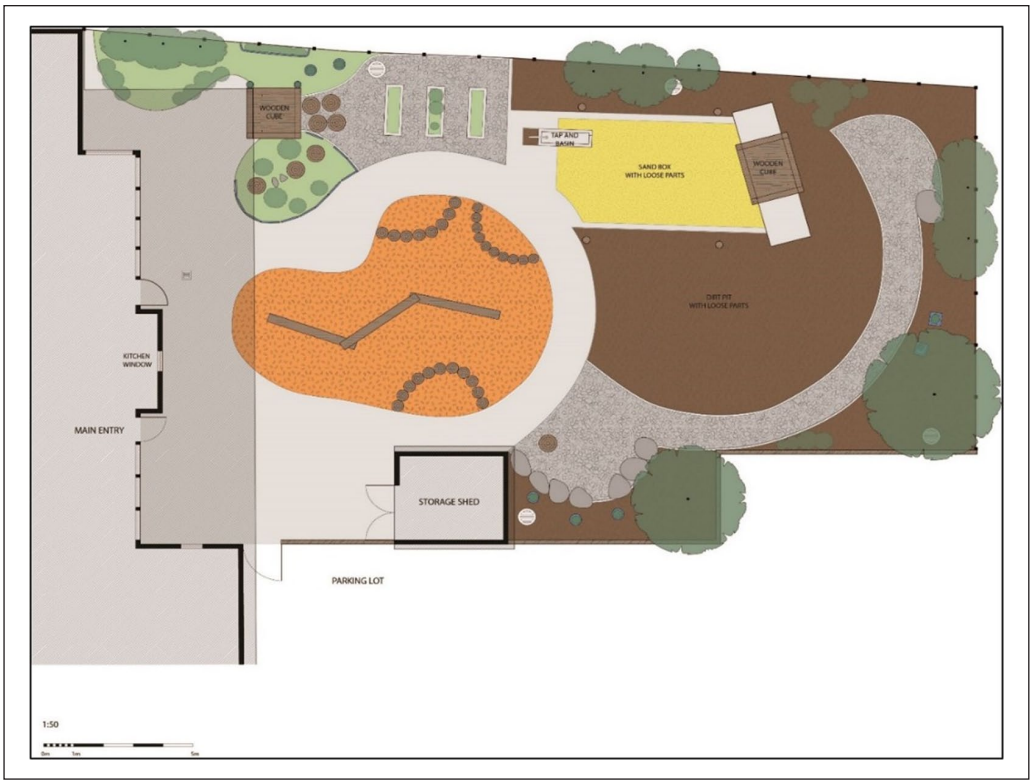

Figure 1. Centre 1 site plan.

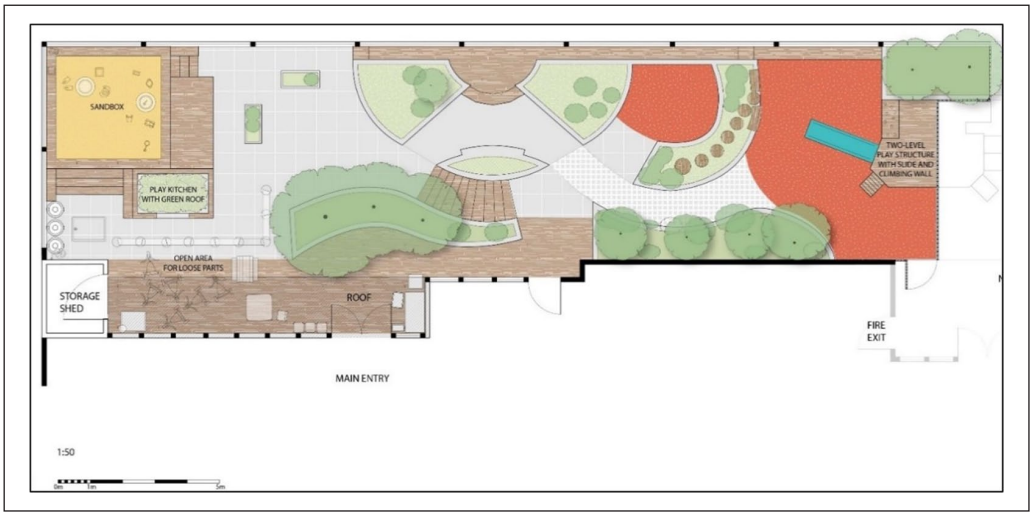

Figure 2. Centre 2 site plan.

includes a traditional, fixed climbing structure, characterised by its slide, ladder, and climbing wall (Figure 2).

Recruitment and data collection

Children aged 3–5 years and already consented in the PRO-ECO study were recruited through early childhood educators (ECEs) at each participating ELCC centre. Additional consent was received from parents for their children to participate in qualitative data collection and children were asked for verbal assent prior to participating in each data collection session. Data collection occurred between February and May 2022. Multiple data collection tools, including observations, semi-structured interviews, child-led tours and map making, were used to facilitate a comprehensive understanding of children's perspectives on their outdoor ELCC spaces and play affordances. Member checking occurred with children and ECEs through a series of follow-up discussions to showcase and verify the findings discovered by the research team. Further information on the data collection guides and questions are provided in Supplemental Material 1.

Analysis

Audio recordings from all narrated observations, child interviews, child-led tours and map making exercises were transcribed verbatim and checked for accuracy by another member of the research team. ELCC centres and participating children were given unique identifiers to ensure confidentiality. Transcripts, field notes and images of the maps created by each child were imported into NVivo (Version 14) [software] (Lumivero, 2023) to facilitate data management and analysis.

Thematic analysis followed an inductive, iterative and reflexive approach (Braun et al., 2023). Familiarisation with the data occurred through the transcription process and descriptive review of each participant's map. Initial themes were derived from children's narrative accounts of their play

Table 2. Child participant overview, by age and gender.

Child participant	Age	Gender
Centre 1		
C1	3	Girl
C2	3	Girl
C3	3	Boy
C4	3	Boy
C5	4	Boy
C6	3	Girl
C7	3	Girl
C8	5	Girl
Centre 2		
C9	4	Boy
C10	3	Girl
C11	3	Boy
C12	3	Boy
C13	3	Boy
C14	3	Girl
C15	4	Girl
C16	4	Boy
C17	3	Girl
C18	4	Girl
C19	4	Girl
C20	3	Boy

rather than relying upon pre-determined codes or structures. Children's maps were triangulated with initial codes identified from the transcribed data to assist theme definition. As themes were constructed related to children's outdoor play preferences, relationships between children's play behaviours and the associated outdoor affordances were identified. Children's narrative accounts were transcribed, analysed and presented to the best of the research team's ability, however they often had to be paraphrased to enhance clarity due to the young age of the children. While this study strived to prioritise children's viewpoints at all stages of the research process, initial themes were adult-derived. Member checking with children aimed to ensure accuracy of the themes generated from the research team and were refined where required.

Results

A total of 20 children (8 children at Centre 1; 12 children at Centre 2) participated in this study (Table 2). The majority of participating children were 3 years old (65%) and spoke English most often at home (75%; Table 3).

Overview of thematic findings

From children's voiced perspectives, four types of play were derived as important themes: physical play; social play; imaginative play; and nature play. Environmental features that contributed to play affordances for children, included sandboxes, tricycle paths, gardening areas,

Table 3. Baseline characteristics of participating children.

Demographic characteristic	*N* (%)
Total	20 (100%)
Age in years	
3	13 (65%)
4	6 (30%)
5	1 (5%)
Centre	
Centre 1	8 (40%)
Centre 2	12 (60%)
Gender	
Boy	9 (45%)
Girl	11 (55%)
Ethnicity[a]	
Western European	7 (35%)
Chinese	6 (30%)
Filipino	2 (10%)
Eastern European	2 (10%)
Other[b]	5 (25%)
Language spoken most often at home	
English	15 (75%)
Cantonese	3 (15%)
Other	2 (10%)
Extra support needs	
Yes	1 (5%)
No	19 (95%)
Household income	
Less than $60,000	3 (15%)
$60,000 to $100,000	6 (30%)
$100,000 to $140,000	4 (20%)
Greater than $140,000	4 (20%)
Prefer not to answer	2 (10%)

[a]Respondents could select multiple ethnicities.
[b]Other includes Indigenous First Nations, Japanese, Latin American, South Asian and Other/Unknown responses.

playhouses, climbing structures, water features, and stumps and logs. Insights on specific outdoor affordances for each play type are outlined below and an overview of preferred play features, as expressed through children's map making, is provided for each centre in Supplemental Material 2.

Affordances for physical play

Children described running, jumping, biking and climbing as important components of their outdoor play. Physical play behaviours were enhanced when children had access to challenging outdoor affordances, such as running fast around the tricycle path, jumping from large rocks, stumps or boulders, or climbing high on the play structures. These experiences provided risky and physical play opportunities that evoked feelings of nervousness and thrill.

Figure 3. Centre 1's wood cube play structure.

At Centre 1, a wood cube structure at the edge of the sandbox offered two jumping heights, allowing children to choose a challenge they felt comfortable with (Figure 3). C2 preferred starting with a lower height before attempting the higher one, stating, *'I wait for this [smaller] one and then jump'*. Having multiple height options not only supported individual comfort but also encouraged children to observe peers taking on greater challenges, fostering vicarious risky play. Similarly, the play structure at Centre 2 presented varying levels of challenge with a numbered wall, a ladder or a slide to reach the top (Figure 4). On rainy days, the ladder was preferred due to the slide and number wall being too slippery. Children were more likely to climb up the slide when in a peer group and without an ECE present, prompting the thrill of interacting with a play element contrary to its common use and purpose.

Children identified tricycle paths, referred to as the '*round road*' or '*circle path*', as key areas for playing at speed; these concrete paths looped around the outdoor space, providing a clear route for movement. As stated by C8 '*running really fast on the path*' was exciting and a preferred activity because their friends would chase them. However, observations revealed that the tricycle paths were often congested and closely supervised by ECE's to prevent collisions or falls, which limited children's ability to travel at higher speeds in these areas. Although ECE's did not enforce a travel direction, children naturally followed an unwritten rule of moving in one direction. C6 stated that *'the running, running, running in a circle. [You] have to do it the right way to ride the bikes'*. Centre 2's concrete tricycle path featured a small, elevated wooden ramp that children identified as a preferred place to run, ride tricycles or scooters, and escape from a '*monster at the bridge'*. The ramp also introduced a mild physical challenge, where younger children tested their abilities by pedalling, walking, or running over the incline. C12 was observed '*walking [the tricycle] with their feet through the bike path and over the bridge, which is a bit harder for them because it has a bit of an incline*'.

Figure 4. Centre 2's traditional play structure.

Rainy days brought declines in outdoor physical play as children hesitated to use equipment they perceived as off-limits when wet. These unwritten restrictions did not appear to be implemented by educators, though they were frequently expressed amongst the children. For example, C15 stated that '*the trikes are not supposed to go in the water*' even though the educators would bring out the tricycles for use when puddles were present on the tricycle path. Children specified that tricycle paths, play structures, and wood stumps or logs were slippery in the rain, evoking feelings of nervousness or caution when considering if they could be used. At Centre 2, children said that they were not allowed to climb up or slide down the wet slide. This was seen within the child observations where children would wait for someone to wipe the slide before use following a day of rain. On a rainy day, C12 was observed '*pointing to the slide that they would like to go down and stating 'it's wet though"*, determining it was not possible to use.

Circulation that supported access to outdoor affordances was critical for the facilitation of physical play. Children at Centre 1 eagerly ran into the sandbox or jumped from the wood cube, enjoying multiple entry points that encouraged more dynamic play (Figure 5). In contrast, Centre 2's sandbox had limited access through two narrow stairways, restricting children's ability to enter quickly and consequently reducing their opportunities for physical play in connection to the sandbox (Figure 6). Children rarely identified open spaces as important for physical play and these areas were observed to be primarily used for circulation rather than gross motor activities.

Affordances for social play

Sandboxes and play structures were outdoor play features that children expressed as important social play spaces. Social play was characterised by collaborative interactions most often occurring

Figure 5. Centre 1's sandbox.

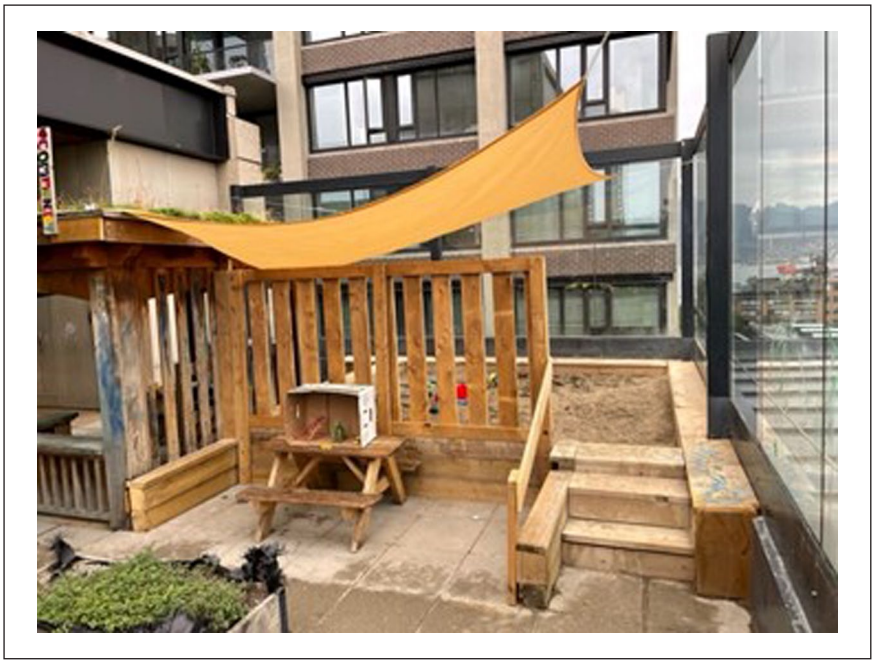

Figure 6. Centre 2's sandbox.

between peers, although social play was also observed between children and ECE's. C8 outlined that their outdoor play space at ELCC was important to them because *'there [are] no friends for you to play with at home'.*

Sandboxes were among the most commonly used spaces for social play, however, children appeared to be drawn to the sand and its diverse play possibilities, rather than the actual sandbox. As observed, '*C2 is standing in the sandbox, scooping [the sand] up and then their friend scrapes it down. She runs to the other side of the sandbox to show their other friend'*. At Centre 1, the sandbox was a central meeting point for social play due to its proximity to the open space, the wood cube structure and the water trough (Figure 5). Children would spin around the posts bordering the sandbox or fill up the water levels in the trough to raise floating toy boats and watch them spill into the sand. A storage shed and playhouse adjacent to the sandbox at Centre 2 invited the frequent use of loose parts, transportation of sand and participation in sociodramatic play (Figure 6). Children worked together to scoop sand from the sandbox using measuring spoons and carry it back to the playhouse to place into a large water jug.

Children identified play structures as important spaces to meet friends. The wood cube structure at Centre 1 (Figure 3) was a gathering point where groups of children would collect sand, sand toys and additional loose parts. This structure was also used for cooperative games; children were observed walking on the wood cube without touching the inner concrete bottom to avoid the '*lava*' on the surfacing. The play structure at Centre 2 (Figure 4) provided opportunities for social games and pretend play with friends due to its diverse elements, including the platform up top and the hiding space at the bottom. The top platform was identified as a gathering spot for groups to socialise or participate in sociodramatic play, such as pretending the play structure was a castle. C18 stated that *'on top of the climber we play long lost sisters'*, when outlining their favourite activity.

In addition to sandboxes and play structures, children regularly gathered near fences to observe their surroundings. At Centre 1, the adjacent walking path made the fence a popular spot to wave at passersby. On an observation day, children ran to the fence to observe two dogs being walked along the path and excitedly yelled '*puppies*' to one another. Children at Centre 1 occasionally tossed objects over the fence, hoping for playful interactions with pedestrians. C8 explained that '*every time something's over the fence then we ask them to bring it back over'.* At Centre 2, located seven stories above ground, the high glazed fence presented opportunities for groups of children to observe construction cranes, tall buildings and the fire trucks passing by on the roads below.

Affordances for imaginative play

Children's imaginative play took the form of sociodramatic play, such as pretending to cook in the playhouse, fantasy play, such as mimicking a favourite superhero, or symbolic play, such as using a stick as a sword. Imaginative play and social play often occurred simultaneously, where children naturally created '*pretend play*' experiences through their social interactions with peers. The sandbox, playhouse, tricycle path and natural plantings were frequently identified by children in their descriptions of imaginative play.

Sand, and the many properties that it could assume when mixed, poured or sifted, provided opportunities for imaginative play. At both centres, the sandbox was used as a pick-up zone to collect sand for imaginative play activities, while the play itself took place in the surrounding areas, such as the wood cube (Centre 1) or the playhouse (Centre 2). Children would commute from these structures to the sandbox to gather materials, including sand and sand play toys, to transport back into their make-shift kitchens. Muffin tins, mixing bowls and spoons supported the creation of baked items from the sand. As noted in an observation of C2, *'they are scooping [the sand] up and making cupcakes'*. The addition of water was essential to enhance children's imaginative play as it

Figure 7. Centre 1's wood stumps (left); Centre 2's wood stumps (right).

fostered further diverse uses for sand by turning it into mud. At Centre 2, children were observed serving *'hot chocolate'* to their peers from the playhouse, creating a water-sand mixture for distribution in cups. C18 described the sandbox as being '*together with the playhouse'* to make recipes, indicating the interconnectedness between these two play features.

At both participating centres, the tricycle path supported fantasy play, allowing children to embody superheroes or dinosaurs through movement. C20 at Centre 2 eagerly explained that dinosaurs regularly traversed across the play space, pointing to the imaginary footprints on the concrete tricycle path. *'The [T-rex] we're talking about is kind of like baby T-rex. I would hide it in the little [play] house'*. At Centre 2, children gathered sticks from underneath a large rose tree, and, as C18 explained, '*we pretend that the sticks are swords!'* On another day, two children were observed picking roses off the rose tree. They rubbed the roses on each other's cheeks and C15 asked, *'can we have fake make-up? [The roses] are the blush'*. The wood stumps at Centre 2 nurtured imaginative play activities due to their elevated placement on a concrete planter (Figure 7). Children enjoyed the added height, using the stumps for daring jumps onto the surfacing below. C20 excitedly demonstrated '*flying*' off a wood stump by saying *'it's easy to fly you just bend your knees and jump'*. Imaginative play experiences on the wood stumps at Centre 1 were limited, likely due to described ease of navigating the steps.

Affordances for nature play

Children's nature play was primarily facilitated through garden areas, including at-grade garden beds and raised planter boxes. Centre 1 had three raised concrete planters and some at-grade garden beds along the fence, however, these were overgrown or sparsely planted, with no medium or large trees. In contrast, Centre 2 featured only raised planters and most contained medium or large trees. The addition of natural loose parts, including leaves, sticks, and stones, nurtured nature play experiences in other areas, including play structures, playhouses and the sandbox.

Raised concrete planters at both centres provided important opportunities for nature play to occur in conjunction with other forms of play. Children often climbed inside the planters, balanced along the edges, jumped between planters, and interacted with the soil, leaves and insects contained inside. C11 was observed *'crawling along the planter box on their tummy and touching the grass with their fingers'*. During these activities, children would instinctively interact with the loose soil in the planters by running their hands through the dirt or shovelling it using sand toys. At

Centre 2, children were observed using crafting scissors to trim the blades of grass in the planters. *'We're giving the grass a haircut*', explained C17.

Participating children reported that bugs were easy to locate and find in the planting areas. The raised planters supported catching *'the bugs and the caterpillars'* (C19) and *'the worms when it is raining'* (C16). The raised nature of the planters allowed children to notice bugs directly within eye sight even when participating in other activities. At Centre 1, a child riding around the tricycle path came to an abrupt halt and exclaimed '*I found a bug*!', eagerly abandoning the tricycle to look at the bug in the planter box. At Centre 2, children preferred finding insects under the play structure, as it provided a secluded space for close observation. This privacy allowed for individual connections with insects, whereas larger groups often led to disputes over proximity and interaction. C15 pointed to the tunnel under the climber and explained, *'this is where the bugs go, the mosquitoes, the honey bees'*.

Water played a significant role in encouraging nature play due to its capacity to turn sand into mud. On one occurrence, C3 was observed *'using a milk jug and putting it on the spout of the water pump. But the water is coming out really slowly so they switch to using the cap of the milk jug to fill that up with water and pour that into the jug'*. The water pump at Centre 1 was often challenging to use and limited the regular use of water in play activities. In contrast, more water play occurred at Centre 2 even though the ECE's had to bring in water in buckets for the children. An observed group interaction at the playhouse noted, '*C16 is sticking their whole hand into the water bin and C9 is pouring sand on their hand and they're laughing like it's a game, making mud'*.

At Centre 2, the rose tree fostered opportunities for nature play through climbing, picking flowers, leaves and branches, and engaging with the surrounding terrain. On an observation day, two children sat underneath the bloomed rose tree and waited for the flowers to fall. '*We need to wait for them'*, stated C19 and explained that they shouldn't pick the roses from the tree. The following week, the children had bags filled with rose petals they had plucked from the ground. As said by C19, *'There are so many good things [outside], let me tell you. There are roses that you can pick from the rose garden'*. At Centre 1, children expressed that when the pumpkins were pulled out the previous fall season, nothing else went into the garden space and they wished for other foods to be planted. C4 stated, *'there are some white flowers over there that are starting to come in. But [I would add] more plants and seeds - watermelon!'*

Discussion

The findings of this study emphasise the critical role of outdoor affordances in supporting diverse play experiences for children in ELCC settings. Children's preferences for play were shaped by the opportunities their outdoor environments provided, reflecting the relational and transactional nature of their engagement with these spaces. Climbing structures, sandboxes, and gardening areas offered overlapping forms of play that simultaneously supported physical, social, imaginative, and nature-based experiences. These features within the ELCC environment encouraged children to engage with the outdoors through emergent play, rather than responding passively to static structures. Actualised affordances were influenced by environmental constraints, including weather and spatial configuration. Rain reduced the usability of play features, and shaped children's choices and engagement, while play features with ample circulation space encouraged dynamic, integrated interactions.

Building on Kyttä's (2004) work, this study examined actualised affordances as indicators of children's play opportunities. Children were naturally drawn to outdoor play features that supported multiple functions; for example, climbing structures offered physical challenges alongside social interactions, while gardening areas enabled nature exploration in conjunction with imaginative play. These actualised affordances materialised in response to children's abilities and

intentions. Similarly, Olsen et al. (2025) observed that children actualised and engaged with affordances in dynamic, flexible environments, where opportunities for choice outweighed the influence of fixed features. Previous research has further highlighted that open-ended and interconnected play spaces provide more affordances than environments dominated by fixed, pre-defined equipment and rigidly zoned areas with narrowly prescribed uses (Herrington and Lesmeister, 2006; Morrissey et al., 2017; Wishart et al., 2019).

Actualised affordances were also realised when fixed outdoor features (e.g. climbing structures, playhouses, raised planters) were located in close to sensory elements including sand, water and leaves. The proximity and accessibility of natural loose parts were critical to their integration with fixed structures; loose sensory elements rarely moved across large distances, which created restricted ranges for their use. At Centre 2, educators ensured water was available near the playhouse and sandbox, creating opportunities for children to blend sensory components into their play experiences. In contrast, at Centre 1, water was accessible only through a child-operated pump, which often proved difficult to use and limited its incorporation into play. While the literature acknowledges the benefits of natural, loose materials in conjunction with structured features (Herrington and Lesmeister, 2006; Olsen et al., 2025), institutional restrictions frequently limit the inclusion of these elements (Sandseter et al., 2022). When these elements are tightly controlled and cannot be transported across a play space into different play zones, the affordances for outdoor play are negatively impacted (Herrington and Lesmeister, 2006).

Findings from this study also highlight the importance of diverse challenges in encouraging the actualisation of affordances beyond physical play. Play features that presented a range of challenges supported children to engage in negotiation, imagination, social conversations, and peer observations. Outdoor affordances were preferred when they offered graded challenges so that both the neophyte and the experienced can engage meaningfully and continue to push their limits, a phenomenon also found by Little and Eager (2010). This was evident at Centre 1, where children used the wooden cube structure for vicarious risky play, performative actions (e.g. 'flying'), and using the sand below to attempt jumps from greater heights over time. Children also expressed preferences for graduated challenges that supported their decision-making processes. Providing varying levels of challenge, and different forms of challenge, supports children to select experiences that match their comfort levels and developmental needs (Merewether, 2015; Yurt and Keleş, 2021). Research consistently emphasises the importance of these risks in children's outdoor play (Little and Wyver, 2008; Wiseman et al., 2019), as well as the value of diverse affordances to encourage thrill-seeking experiences (Kleppe, 2018). Consistent with prior research (Herrington and Lesmeister, 2006; Wishart et al., 2019), this study highlights how heightened challenges, such as uneven and unpredictable surfaces, varying terrain, diverse heights, and inclusion of slopes, support actualised affordances for play.

The findings of this study underscore the intensive yet critical contribution that participatory methods with children provide to child-related research. They also affirm that children are inherently capable and motivated participants in scientific inquiry. By offering new insights into the consideration of outdoor affordances as described through child preferences for play, this study challenges how research traditionally studies environments designed by adults but primarily used by children.

Strengths and limitations

This study highlights the unique ways children perceive and interpret outdoor play affordances, contributing deeper insights than those presented by quantitative studies or research engaging adults as representatives of children's perspectives. The triangulation of data collection tools

contributed towards a rigorous qualitative research approach with young children. In addition, the research team members were able to easily facilitate conversations as they had gotten to know children before data collection as part of the PRO-ECO project. This study also considered variation in outdoor play spaces, both geographically and structurally, by capturing data at two ELCC centres in different geographic communities. Limitations to this study included the potential for peer influence, interview approaches, or the age of participants to influence responses. At times, researchers had to infer or deduce children's responses due to their young age and level of verbal development. The use of multiple data collection tools and member checking strived to minimise any potential researcher and social bias.

Participating ELCC centres were reflective of licenced ELCC centres in urban Canadian cities due to their design features, ground surfacing, and overall spatial layout. Notably, the outdoor play spaces at both Centre 1 and Centre 2 exceeded provincial licencing size requirements, which may be attributed to operations in a municipally-owned facility. These findings may be generalisable to other developed nations, particularly within ELCC centres that deliver licenced, centre-based programmes situated in municipally-owned infrastructure. While this study sought to prioritise children's agency in research, the unique identifiers assigned to each participant were adult-imposed and research oriented. Future research would benefit from children self-selecting their own pseudonym as a respectful and child-friendly approach to humanising the research results.

Conclusion

The available and actualised affordances within an outdoor environment can enhance or inhibit children's outdoor play. Investing in healthy built environments that support children's outdoor play is critical to providing a foundation for long-term health. The findings of this study highlight how actualised outdoor affordances that are perceived and acted upon by children are enhanced when sensory elements are accessible and challenges are varied. The results further support the integration of traditional and natural play features, demonstrating how the environment can scaffold multiple, overlapping possibilities for action and diversify children's play experiences.

Collecting qualitative data with young children can be performed successfully even with society's youngest citizens. Children's voices can effectively be a primary data source if data collection approaches for all developmental levels, including non-verbal children, are considered, multiple data tools are employed, and member-checking is incorporated into the data collection, analysis and interpretation process. By foregrounding children as capable research participants, this study contributes to a deeper understanding of how affordance theory operates in early childhood outdoor play contexts, emphasising the interplay between children's perceptual abilities, intentions, and the material environment.

Acknowledgements

The authors are grateful to the YMCA of Greater Vancouver for their partnership on this study and the members of the Outside Play Lab that supported data collection and transcription throughout the PRO-ECO study to inform this manuscript.

ORCID iDs

Rachel Ramsden https://orcid.org/0000-0003-0741-3951
Emily Jenkins https://orcid.org/0000-0003-4649-2904
Sally Thorne https://orcid.org/0000-0002-1156-9425
Mariana Brussoni https://orcid.org/0000-0002-1495-816X

Ethical considerations

Ethics certification was approved by the University of British Columbia Children's and Women's Health Centre of British Columbia Research Ethics Board (H21-0282).

Consent to participate

Written parental consent was obtained for all subjects involved in the study. Verbal child assent was obtained from children prior to each data collection time point.

Author contributions

Conceptualisation of the study was performed by RR and overseen by MB. Project administration and funding acquisition was done by MB as primary investigator of the PRO-ECO study. Data collection and transcription was conducted primarily by RR with support from other members of the Outside Play Lab at the University of British Columbia. Data analysis, including software use, data investigation and thematic analysis, was completed by RR. Methodological components of this study were reviewed by all co-authors. The original draft of the manuscript was prepared by RR. Multiple draft versions were reviewed and edited by EJ, ST, IP and MB. All authors have read and agreed to the published version of the manuscript.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

Declaration of conflicting interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Data availability statement

The data and materials necessary to reproduce the analyses presented here are not publicly accessible due to the sensitive nature of this research work that includes qualitative data with young children. Interview guides used to collect the data are provided in Supplemental Material 1.

Supplemental material

Supplemental material for this article is available online.

References

Ataol O, Krishnamurthy S and van Wesemael P (2019) Children's participation in urban planning and design: A systematic review. *Children Youth and Environments* 29(2): 27.

Bai P, Schipperijn J, Rosenberg M, et al. (2023) Where are preschoolers active in childcare centers? A hotspot analysis using GIS, GPS and accelerometery data. *Children's Geographies* 21: 660–676.

Bento G and Dias G (2017) The importance of outdoor play for young children's healthy development. *Porto Biomedical Journal* 2(5): 157–160.

Braun V and Clarke V. (2023) Thematic analysis. In: Cooper H, Coutanche MN and McMullen LM (eds) *APA Handbook of Research Methods in Psychology: Research Designs: Quantitative, Qualitative, Neuropsychological, and Biological*, 2nd edn. American Psychological Association, pp.65–81.

Brussoni M, Gibbons R, Gray C, et al. (2015) What is the relationship between risky outdoor play and health in children? A systematic review. *International Journal of Environmental Research and Public Health* 12(6): 6423–6454.

Brussoni M, Ishikawa T, Brunelle S, et al. (2017) Landscapes for play: Effects of an intervention to promote nature-based risky play in early childhood centres. *Journal of Environmental Psychology* 54: 139–150.

Clark A and Moss P (2001) *Listening to Young Children: The Mosaic Approach*. National Children's Bureau.

Clark C and Uzzell DL (2006) The socio-environmental affordances of adolescents' environments. In: Spencer C and Blades M (eds) *Children and Their Environments: Learning, Using and Designing Spaces*, vol. 14, Cambridge University Press, pp. 176–195.

Copeland KA, Khoury JC and Kalkwarf HJ (2016) Child care center characteristics associated with preschoolers' physical activity. *American Journal of Preventive Medicine* 50(4): 470–479.

Flannigan C and Dietze B (2018) Children, outdoor play, and loose parts. *Journal of Childhood Studies* 42(4): 53–60.

Frost J (2012) Evolution of American playgrounds. *Scholarpedia* 7(12): 30423.

Gibson JJ (1977) The theory of affordances. In: Shaw R and Bransford J (eds) *Perceiving, Acting and Knowing: Toward an Ecological Psychology*. Erlbaum, pp.67–82.

Gibson JJ (1979) *The ecological approach to visual perception*. Houghton Mifflin.

Government of British Columbia (2007) Director of licensing standards of practice: Safe play space. Available at: www2.gov.bc.ca/assets/gov/health/about-bc-s-health-care-system/child-day-care/safe_play_space.pdf (accessed 19 August 2025).

Government of British Columbia (2023) British Columbia early learning framework. Available at: https://www2.gov.bc.ca/assets/gov/education/early-learning/teach/earlylearning/early_learning_framework.pdf (accessed 19 August 2025)

Government of British Columbia (2025) Community care and assisted living act: Child care licensing regulation. Available at: www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/332_2007 (accessed 19 August 2025)

Hansen Sandseter EB (2007) Categorising risky play—how can we identify risk-taking in children's play? *European Early Childhood Education Research Journal* 15(2): 237–252.

Heft H (1989) Affordances and the body: An intentional analysis of Gibson's ecological approach to visual perception. *Journal for the Theory of Social Behaviour* 19(1): 1–30.

Herrington S and Lesmeister C (2006) The design of landscapes at child-care centres: Seven C's. *Landscape Research* 31(1): 63–82.

Herrington S and Nicholls J (2007) Outdoor play spaces in Canada: The safety dance of standards as policy. *Critical Social Policy* 27(1): 128–138.

Herrington S and Studtmann K (1998) Landscape interventions: New directions for the design of children's outdoor play environments. *Landscape and Urban Planning* 42(2-4): 191–205.

Holt NL, Neely KC, Spence JC, et al. (2016) An intergenerational study of perceptions of changes in active free play among families from rural areas of Western Canada. *BMC Public Health* 16(1): 829.

Jerebine A, Fitton-Davies K, Lander N, et al. (2022) "All the fun stuff, the teachers say, 'that's dangerous!'" Hearing from children on safety and risk in active play in schools: A systematic review. *International Journal of Behavioral Nutrition and Physical Activity* 19(1): 72.

Kennedy E, Olsen H, Vanos J, et al. (2021) Reimagining spaces where children play: Developing guidance for thermally comfortable playgrounds in Canada. *Canadian Journal of Public Health* 112(4): 706–713.

Kleppe R (2018) Affordances for 1- to 3-year-olds' risky play in early childhood education and care. *Journal of Early Childhood Research* 16(3): 258–275.

Kyttä M (2004) The extent of children's independent mobility and the number of actualized affordances as criteria for child-friendly environments. *Journal of Environmental Psychology* 24(2): 179–198.

Little H and Eager D (2010) Risk, challenge and safety: Implications for play quality and playground design. *European Early Childhood Education Research Journal* 18(4): 497–513.

Little H and Wyver S (2008) Outdoor play: Does avoiding the risks reduce the benefits? *Australian Journal of Early Childhood* 33(2): 33–40.

Loebach J and Cox A (2022) Playing in 'The Backyard': Environmental features and conditions of a natural play space which support diverse outdoor play activities among younger children. *International Journal of Environmental Research and Public Health* 19(19): 12661.

Lombardo T (1987) *The Reciprocity of Perceiver and Environment: The Evolution of James J. Gibson's Ecological Psychology*. Lawrence Erlbaum Associates.

Maggi S, Irwin LJ, Siddiqi A, et al. (2010) The social determinants of early child development: An overview. *Journal of Paediatrics and Child Health* 46(11): 627–635.

Merewether J (2015) Young children's perspectives of outdoor learning spaces: What matters? *Australian Journal of Early Childhood* 40(1): 99–108.

Moore D, Morrissey AM and Robertson N (2021) 'I feel like I'm getting sad there': Early childhood outdoor play spaces as places for children's wellbeing. *Early Child Development and Care* 191(6): 933–951.

Morrissey AM, Scott C and Rahimi M (2017) A comparison of sociodramatic play processes of preschoolers in a naturalized and a traditional outdoor space. *International Journal of Play* 6(2): 177–197.

Mullan K (2019) A child's day: Trends in time use in the UK from 1975 to 2015. *British Journal of Sociology* 70(3): 997–1024.

NVivo (Version 14) [software] Lumivero (2023). Available at: www.lumivero.com

Olsen A, Tangen S, Sando OJ, et al. (2025) Toddlers' actualization of affordances during free exploration in a varied natural environment. *International Journal of Play* 14(1): 99–113.

Olsen H and Smith B (2017) Sandboxes, loose parts, and playground equipment: A descriptive exploration of outdoor play environments. *Early Child Development and Care* 187(5-6): 1055–1068.

Özdemir A (2019) An approach on children's experiences of participatory planning. *Cities* 93: 206–214.

Ramsden R, Han CS, Mount D, et al. (2022) An intervention to increase outdoor play in early childhood education centers (promoting early childhood outside): Protocol for a pilot wait-list control cluster randomized trial. *JMIR Research Protocols* 11(7): e38365.

Sandseter EBH, Storli R and Sando OJ (2022) The dynamic relationship between outdoor environments and children's play. *Education 3-13* 50(1): 97–110.

Solomon-Moore E, Emm-Collison LG, Sebire SJ, et al. (2018) "In my day. . ."- parents' views on children's physical activity and screen viewing in relation to their own childhood. *International Journal of Environmental Research and Public Health* 15(11): 2547.

Torkar G and Rejc A (2017) Children's play and physical activity in traditional and forest (natural) playgrounds. *International Journal of Educational Methodology* 3(1): 25–30.

United Nations General Assembly (1989) *Convention on the Rights of the Child*, vol. 1577. Social Policy and Administration.

Wiseman N, Rossmann C, Lee J, et al. (2019) "It's like you are in the jungle": Using the draw-and-tell method to explore preschool children's play preferences and factors that shape their active play. *Health Promotion Journal of Australia* 30 (1): 85–94.

Wishart L, Cabezas-Benalcázar C, Morrissey AM, et al. (2019) Traditional vs naturalised design: A comparison of affordances and physical activity in two preschool playscapes. *Landscape Research* 44(8): 1031–1049.

YMCA Canada (2024) YMCA child care. Available at: www.ymca.ca/what-we-offer/child-care (accessed 19 August 2025).

Yurt Ö and Keleş S (2021) How about a risky play? Investigation of risk levels desired by children and perceived mother monitoring. *Early Child Development and Care* 191(5): 749–759.