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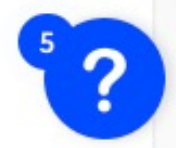
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Study of perception of parents and their children about day-to-day outdoor play spaces

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ABSTRACT

The day-to-day environment surrounding the child influences its physical, social, and emotional wellbeing. The study was conducted to understand how the perception of children and their parents about the outdoor play spaces influences their outdoor participation. Face-to-face interviews with parents, a walk-along interview with children and audit of public open space were conducted in different neighbourhoods in the city of Pune (India) which differed in social and spatial characteristics. This paper suggests a conceptual framework that defines the setting of participation and factors influencing the motivation of participation in the outdoor environment. The quantitative study of parents' interviews and qualitative analysis of children's sketches highlight different aspects like play and mobility range, open space visitation, activities of children, spatial qualities of the open space and perception of children and their parents. The findings brought forth difference in parents and children's perception of risk in open spaces.

Introduction

A child's environment on daily basis is its exposure to home, playgrounds, and child-orientated institutions (Bronfenbrenner, 1979). Outdoor play space is considered as 'fourth environment,' where the child without an accompanying adult explores the outside setting (Chaudhury, Oliver, Badland, & Mavoa, 2015). The residential open spaces or neighbourhood open spaces are also visited by children on a day-to-day basis. The Neighbourhood unit concepts put forth by Clarence Perry and others focused on central thought for designing for ease of children's walkability to their nearby destinations.

Function, form and variability of urban open spaces have an effect on users' physical, social and psychological behaviour and wellbeing, especially the children (Woolley, 2003). Jean Piaget's theory of Intellectual development describes child's environment to be a key factor in his/her physical, psychological, social, and emotional development. Piaget defines the development through different age groups according to their cognitive developmental stages. According to Piaget, *'Children from about 7–11 years of age are both capable of constructing hierarchical classifications and of comprehending details'* (Ginsburg & Opper, 1988). Piaget suggests that the age of 7 years to 11 years of age falls under the category of Concrete Operational stage. This is the stage of their age in which children are able to take a decision about the actions and also they understand the reactions of their actions. This research studied the age group of 6 years to 12 years which differs from the suggested bracket of Concrete Operational stage. In the Indian education system, a child starts school from the age of 6 years where a more formal schedule of schooling is followed. At this stage, the environment

of school is experienced by the child without parents being around. The child from hereon gets to see how other children react, interact, and emote to different situations, and thus, a new learning impacts their perceptions. The age of 12 is a threshold for children after which they turn into teenagers and this tagline shift itself gets in a lot of confidence to take decisions for their actions more independently. This age group is also a threshold, where child move to High school from Primary school.

Being able to do physical activity while playing games helps children to be physically healthy. Social benefits include making friends during outdoor play, learning from peers are key take away of engaging in open spaces. Applying and developing creative abilities enhance self-esteem adding to the psychological wellbeing of the children.

Children's independent mobility and outdoor play participation are associated with different attributes of the environment, like physical characteristics of the open spaces, availability of affordances, the social attributes, and perception factors considered by the parents and children (Aziz & Said, 2012; Chauvla, 2016; Freeman, Van Heezik, Stein, & Hand, 2015; Humpel, Owen, & Leslie, 2002). During play, children explore and discover their abilities. The achievements during this process build their confidence which is necessary for their continuity of mental and physical development. It is established that children respond more readily to an enriched environment (Bhan, 2006).

This paper intends to understand the factors, the physical characteristics of the environment and its quality, the factors affecting the perception of the space which may influence child's outdoor play and how the above two are associated. Further, the paper brings forth and compares the perception about risks and benefits with respect to open spaces of parents and children.

Children's environment

'Two-fifths of the children played on roads, in front of garages, or on adjoining pavements—a figure significantly higher than for those who played in gardens, play areas or on paved areas' (Woolley, 2003). It is found that children between the ages of 6–10 years may not be able to visit parks, playgrounds, etc. without any adult accompanying them; hence most of the children explore the environment around their home range. Children play in the most of the active spaces around their residence where there is an anxious feeling of being a part of something happening (Gehl, 2011).

Content of the space, organization of the space, spatial disposition and context of the space and the physical envelop of the space define the physical characteristics of the open spaces (Natu, 2007). Outdoor spaces that are experienced by children majorly include gardens, playgrounds, open space around their residence in the premise, open parking spaces, and sports ground which are used for organized play and also, kids play area with swings, slides and alike. Even though the areas around and in between the residences are private or semi-private they are termed as open public spaces as they serve to large number of users like children (Said, 2007).

The greenery, good quality of streets, less traffic, safety, amenity, accessibility, sociability, attractiveness and walkability, availability of facilities and amenities like parks and community play grounds, etc. allow children to be more independent in terms of their mobility in the surroundings ((Chaudhury et al., 2015; Lestan, Eržen, & Golobič, 2014; Veitch, Salmon, & Ball, 2007; Zhang & Li, 2012).

Neighbourhood aesthetics has also been an important aspect of the physical characteristics which influence the perception of safety in the neighbourhood and indirectly makes in effect on children's outdoor participation (Croucher, Myers, Jones, & Ellaway, 2007; Ferguson, Cassells, MacAllister, & Evans, 2013; Handy, Boarnet, Ewing, & Killingsworth, 2002; Nunes & Vale, 2015; Zhang & Li, 2012). The comfort of the child to be able to play in an outdoor environment relies on certain aspects like way finding, enclosure defined by buildings around, different activities that take place in and around that place like passing by people either walking or on vehicles, etc. (Aziz & Said, 2012; Chaudhury et al., 2015; Othman & Said, 2012; Villanueva et al., 2016). An environment with high variability

provides better sense of attachment (Freeman et al., 2015) and a challenge to the children with an opportunity to feel accomplished. Such variability in the elements of the play space environment encourages children to have diverse opportunities of creative play (Croucher et al., 2007; Giusti, Svane, Raymond, & Beery, 2018; Kuo, Bacaicoa, & Sullivan, 1998; Zhang & Li, 2012). Parks and play-ground mostly offer pre-defined way of use and thus fail to be occupied through the time (Lestan et al., 2014) whereas street scenes which include elements like utility poles and light poles, street furniture, trees and shrubs, curbs, pathways, buildings and landscaping (Fyfe, 2006) add to the variety of spatial experience and use for children during free play. Having similar age group children to play and explore is considered an important factor of motivation for open space visitation (Gehl, 2011; Hart, 1979). The affordances that a child get in such an enriched environment provide more social opportunities, engaging surroundings and better health (Brooks & Sorin, 2011; Chaudhury et al., 2015; Kyttä, 2003).

The characteristics of elements present in an environment are either perceived as risky or harm-less. The context of element(s) causing a harm to oneself by physical injury, mental stress or impact-ing one's social participation is analysed by the individual and that further determines the level of participation. Factors which are elemental decision of participation are: human experience (ergo-nomics of elements in open spaces), comfort and relaxation, personal space and privacy (defensible space), safety and security, boundaries, architectural character, navigation and movement (affected by density, crowding and traffic), spatial experience, attractiveness and physical affordance assigned to the place. These attributes can have beneficial effects or may pose risk on physical, social and emotional wellbeing of the children (Brooks & Sorin, 2011; Chawla, 1992; Salama & Azzali, 2015). These factors determine parental licence for their children's participation in outdoor open spaces. Also, children's perception about the play spaces either motivates or poses a setback in participation. It becomes vital to study, understand, and further compare the perceptions of both parents and their child regarding risks associated with spatial characteristics of play areas which govern their participation.

Perception of parents and children

Gibson (Gibson, 2014) states '*The affordances of the environment are what it offers the animal, what it provides or furnishes, either for good or ill*'. The theory of Affordances states that the environment around the organism provides opportunities for desired activities. Children perceive affordances differently in different ages which correspond to their bodily qualities, functional demands of on-going activity, and to their intensions at that moment (Kyttä, 2003).

Children's perception of the environment is diverse. They interpret the setting in terms of func-tion and/or by form (the visual appearance) (Kaplan & Kaplan, 1989). The function, here, is defined as an opportunity of spontaneous activity that the open space provides; and by form, it refers to a three-dimensional void which may or may not include man-made features which can be termed as spatial enclosure (Said, 2007). One of the models to understand child and its environmental associ-ation is place attachment theory. Chawla (1992) defines childhood place attachment as 'children are attached to a place when they show happiness at being in it and regret or distress at leaving it, and when they value it not only for the satisfaction of physical needs but for its intrinsic qualities'.

Different layers which construct the sense of place categorized into themes like social dimension (framed by encounters with adults and peers), sensory dimension (defining boundary and secrete places, personal places), pragmatic (awareness of safety issues and challenges), imaginative (creative perception through meaningful exchange and learning from multiple everyday settings) and impor-tantly place friendship (place familiarity and engaging) are suggested in research defining a child's perception of everyday spaces (Bourke, 2017; Hart, 1979; Ramezani & Said, 2009; Shabak, Norouzi, Abdullah, & Khan, 2015).

The pull and push theory of migration was first coined by Ravenstein of England for migration theory (Mohamed & Abdul-Talib, 2020). The push and pull theories are used to understand the

factors of motivation which state that the end goal become driving force as either a push (motivators) or pull (provides incentives) factor.

The factors that affect children's outdoor play participation are parental licence for active and independent travel, accompaniment status, use of mobile phone technology, safety in the open spaces, availability and types of affordances, past experiences (Chaudhury, Hinckson, Badland, & Oliver, 2019). It is also found that parental license is granted conditionally with prior knowledge of 'time and location' provided by their child (Tyagi & Raheja, 2020). Some of the common barriers listed which hinder the open space experience are lack of facilities, incivilities, stray animals, safety and psychological issues (not wanting to go alone), concerns about environmental quality, access issues and personal issues (preference, children the park has now been replaced by the television and by computer games, parental restrictions on children's movements, etc.) (Dunnett, Swanwick, & Woolley, 2002; Pitsikali & Parnell, 2019).

The conceptual model (Figure 1) tries to understand child's participation in open spaces through motivational factors and perception. The social and physical characteristics of the open space motivate the child to move out of the home environment and go in the outdoors for various activities. An experience is generated through participation which develops perception about the open space. The hypothesis is that perception of parents and their child varies and the mitigated perceptions which are accepted both by parents and the child become the deciding factor of either completing the loop of participation again and again. The perception over here is the *'pull'* factor which determines the degree of participation as either a motivator or as a setback. Motivation would be encouraged thorough positive perception. Interestingly, the setback in the participation has different meanings. Opposite meanings like harmful and challenge both can be noticed as two sides of a coin. The study is investigating the definition of PULL as a factor of participation from both perspectives, beneficial and risky.

The sense of safety is on priority list of any parent while choosing a play setting space. The sense of safety is dependent on factors including traffic, stranger danger, crime, fear of stay animals, or hazards from the elements present in the setting (Zhang & Li, 2012). With respect to defining safety associated with elements in the physical setting of play space, the perception of safety
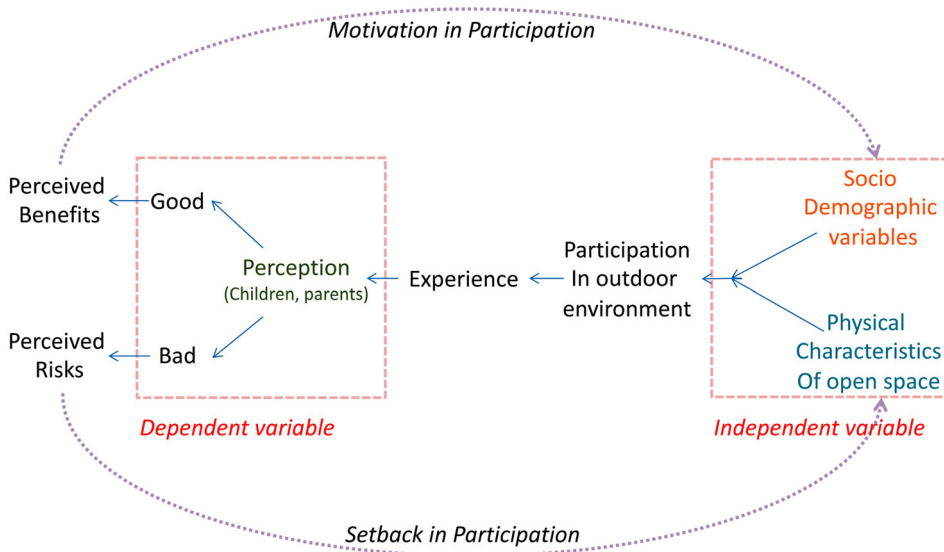
Figure 1. Conceptual framework defining the setting of participation and factors influencing the motivation of participation in outdoor environment.

varies from parent to parent. Climbing a tree may be considered as risk for one parent, but the other may consider it as an adventure offering physical benefit (Slaghekke, 2017).

The spatial activity done by children, outdoors, depends on the parent's defined home range. This home range has shown to increase with age advancement. Children develop place knowledge by direct experience of the environment. Place recognition and naming the ones which are frequently visited, build on to the confidence of the children to negotiate on the home range boundary extension.

As the benefits of participating in outdoor play include improving physical wellbeing of the child, improving self-regulation, promoting cognitive development and improving confidence, etc. (Cooper, 2015). The effects of perceptions of risk control a child's outdoor play timings, area, and accompaniment. Risk perception of the caretakers and participating child may vary. As a reaction to the density increases, parents are getting more vigilant and want their children in the radius of their vigilance. The time spent outdoors gets more controlled with the presence of adults.

Risk is all about thoughts, beliefs, and constructs (Sjöberg et al., 2004). Children learn to develop strategies to negotiate bad places and to read the environment for plausible risks. These risk management strategies include travelling with a friend, sibling or adult, carrying a cell phone to call someone in the event of an emergency, knowing the location of community resources (such as churches) where children can get help and walking with a dog (Wridt, 2010). With risky play, children get exposed to the sensations of fear promoting the development of competencies to manage the potential risks, challenges, and stress associated with life as an adult. Literature suggests that physical activity increases with the challenges that risky plays offer (Bento & Dias, 2017; Obee, Sandseter, & Harper, 2020).

The research related to children and their environment is extensively done in the western countries, especially from Global North like USA, Europe, etc. whereas very few studies are done in Global south countries. The Asian countries like China and India have highest populations in the world. India has the highest population density which makes its case different from other countries. The urban development pattern and policies in India itself are one of the major reasons on how the open space requirement vary from other countries. Few studies done in India have focused on slum areas, whereas this study focuses on general open spaces where all strata of people can access it.

India's children population aged below 14 years of age is 37.71 crore urban areas (Government, 2018). It is vital to understand the relation between child development and child's behaviour in their corresponding surroundings like open spaces (Aziz & Said, 2012; Christensen & O'Brien, 2003) in countries like India where urbanization is rapidly densifying and increasing and how it impacts children's day-to-day play environments.

The study has been done to understand the perception of open spaces from children and their parent's point of view. Children's play participation is dependent on the perceptions which evaluates benefits and risks from elements present in the open spaces. The study also finds the association of the benefits and risks with the open space characteristics.

Study area and methodology

The study was carried out in the city of Pune, Maharashtra, India (Figure 2). Pune is one of the top 10 urbanized cities in India, with fast growing and expanding boundaries. India being second most populated country in the world, and about 3 lakh children below the age of 6 years live in Pune alone (Government, 2011).

Pune is constantly transforming as old properties are getting redeveloped and the density is growing drastically. The case of Pune is a representative case of metro cities in India where the open spaces around the children are getting compromised in their size and quality.

The study has been done across the city by selecting children using Random Stratified cluster from five zones, i.e. North-West, North-East, South-West, South-East and Central (Figure 3). The parents, whose children aged between 6 and –12 years, were approached and were presented

Figure 2. Map of India (Source: Standard 10 Geography book by Maharashtra State Bureau of Textbook Production and Curriculum Research, Pune.)

the schedule. Questionnaire schedule for 90 parents and face to face interviews with 90 children were conducted.

The questionnaire schedule was presented to the parents in which they had to select appropriate choices. The schedule had three different sections: the first section enquired about the demographic details of their child, standard in which their child is studying. Second section enquired about the open space visited by the child in his/her day-to-day including spaces like terrace or garden in and/or around their house and open space that the child visits outside the house. Out of six options, which were derived from the literature and exploratory survey, parents had to select only one frequently visited space. Questions regarding the distance of the open space and accompaniment were asked to understand mobility and time spent in the open space would tell us about how much free time the children would get for outdoor participation. The parents had to choose the type of elements present in that open spaces and the type of activities their child there. The elements would determine the physical characteristics of open spaces. If the open space child
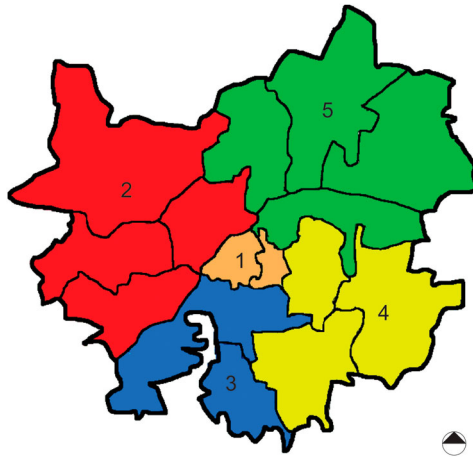
Figure 3. Map of City of Pune indicating broad clusters of sampling (Source: Pune Municipal Corporation).

frequently visited was away from home and the child had to travel to that place, the set of questions about lighting, surface quality, traffic, safety, cleanliness would help determine the perception of parents about the route. Next question enquired about variety of landscape elements, maintenance and quality of the landscape setting, lighting, and adequacy of play space and safety and security of that open space.

The third section was about the rating about the perception of their child's participation in open space for playing which enquired about how it is contributing/affecting in gaining benefits. The next set enquired about risky perception which may discourage parents from sending their child to play outdoors. The rating questions were asked with a five-point Likert scale from 'very much' to 'not at all'. The last section enquired about details about their family like number of members and specifically children in the house and lastly about parent's demographics.

After seeking permission from the parents, their children were requested to sketch two scenarios. Drawing as a medium to express outdoor environments has been used as a tool to interact with children in alike researches. Drawing is known to the children and this activity provides another language of communicating (Merewether & Fleet, 2014). The first scenario sketch was asked to show elements that they find around their day-to-day outdoor play spaces that make them feel happy and playful and the other situation sketch was about elements which make them feel scared and/or has harmed them from their day-to-day outdoor play spaces. These sketches were collected on white paper and were made to be sketched with pencil only to save on time. The time given for sketching was limited to half an hour so the children can give their first impressions which they can immediately think off. After the sketches were done, the children were asked to describe their sketches where they indicated by drawing the elements directly or any incident related to the elements in the open spaces. The notes were taken during the interviews, which further were converted into coding list.

Analysis of the data – thematic presentation

Parent's perception data analysis

Different open spaces that children visited for their day-to-day playing were identified through literature survey and further ratified through a pilot study. Six types of open spaces found in and around the residential areas were (Figure 4): (1) Public Garden which are developed by the government for a neighbourhood; (2) Parking spaces, usually open spaces in and around residences that may be found
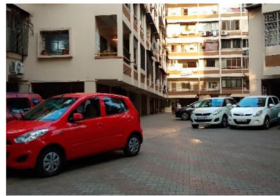
Garden

Playground

Sports

Kids Play Area

Parking

Open space around the building

Figure 4. Types of open spaces and open spaces used by children (photos taken by author for the study).

in and out of the premise of the residence; (3) Playground, open maidans which specifically have only open space for sports activities and may or may not have children's play area like slides, swings, etc.; (4) Sports area, open spaces dedicated for sports activities only, primarily having entry only for those enrolled and mostly used for organized sports activities; (5) Kids play area, space which has swings, slides, jungle gyms, sand pit, etc.; (6) Open space around the building, not defined by function as the space may have multiple functions live internal road, parking areas, set back with landscape, etc. The photos in 'Figure 4' show different types open spaces and percentage of children visiting these types of open spaces. Amongst the sample population ($N = 90$), about 42% children played 'around the building', followed by 17% of 'playground' and 14% visiting public gardens (refer Table 1).

While looking at the time spent by the children in playing outdoors, it was observed that more than 50% of children spend between 1 and –2 h and 33% of the children spent more than 2 h playing outdoors.

About 66% of children mostly play in open spaces which are in and around their residence and about 20% travel about 100 m from their residence to open space play visitation. Relatively fewer children travel more than 100 m from their residence for open space play visitation.

Perception of benefits: The factor analysis of benefits (Table 2) showed three common groups as Social Benefits, Physical Benefits, and Emotional Benefits. The first one was the *Social Benefits* group comprising of peer bonding, group activities, being social as a part of the group. All these aspects suggest that when child has friends to play with itself makes the child more socially active. The second, *Physical Benefits* group comprising of active lifestyle, physical strength and being fit as a

Table 1. Type of open spaces around residences and number of children using them in percentage.

Sr. No.	Type of open space around the residences	Children's visitation (in %)
1	Garden	9
2	Playground	17
3	Sports area	9
4	Kids play area	14
5	Parking	9
6	Around the building	42

Table 2. Factor analysis benefits.

	Rotated component matrix			
		Components		
Benefits	1	2	3	
Benefits_Peer Bond	0.895			Social benefits
Benefits_Grp Activities	0.830			
Benefits_Social	0.815			
Benefits_confidence	0.707	0.435		
Benefits_Responsible	0.657			
Benefits_Active Lfstyle		0.797		Physical benefits
Benefits_Nature Conn		0.739		
Benefits_Phy Strength		0.739		
Benefits_happiness	0.439	0.681		
Benefits_Being fit		0.569	0.455	
Benefits_Risk Taking			0.737	Psychological benefits
Benefits_Conscious of Surr			0.675	

part of the group. And the last group, *Emotional Benefits* comprised of risk taking ability and being conscious about surrounding which suggests that participating in the independent open space activities increases.

Perception of Risk: The risk perception of the parents regarding their child's open space participation showed three groups (Table 3) heading Route Characteristics, Unkempt Landscape Aspects, and Injurious Elements. The *Route Characteristics* included crowding, distance of open space from home, traffic on the road, fear of child getting lost, and anti-social elements. The *Unkempt Landscape Aspects* included bad surface where the chid is playing, poor lighting or darkness, unkempt facilities like broken play equipment, unclean surroundings, etc. and stray animals. The third group *Injurious Landscape Elements* included Wild Plants, Unclean open space and Dangerous elements like electric poles, etc. The route characteristics were primary group of concern considered as risky by the parents. This is followed by Unkempt Landscape aspects and Injurious Landscape elements in that order.

Children's sketches

A coding system was implemented where the elements making a happy impact were listed under 'Positive Aspect' and the elements which made a scary impact were listed as 'Negative Aspect'. These aspects were further clubbed to broad categories. The Positive Aspects included Animals, Lawn and Vegetation (including all nature related indications), Hard scape (including play courts, play grounds, streets, etc.), Amenities (seating spaces, water elements, covered spaces), Safety

Table 3. Factor analysis of risks.

	Rotated component matrix			
		Components		
RISKS	1	2	3	
Risk_Crowding	0.890			Route characteristics
Risk_OS Distance	0.855			
Risk_Traffic	0.773			
Risk_Getting Lost	0.744			
Risk_Anti Social	0.653	0.589		
Risk_Bad Surface		0.785		Unkempt landscape aspects
Risk_Poor lighting		0.754		
Risk_Unkempt facilities		0.727	0.442	
Risk_Stray Animals	0.522	0.554		
Risk_Wild plants			0.856	Injurious landscape elements
Risk_Unclean OS			0.826	
Risk_Dangerous Elements	0.431		0.624	

Table 4. Coding and categorizing children's sketches of positive aspects and their frequency of responses in percentage.

Children's sketches indicating *Positive Aspects*	Broad categories of *Positive Aspect*	Response frequency in %
Animals	Animals	6
Lawn and Vegetation	Lawn and Vegetation	19
Free space	Hard scape surfaces	46
Parking area		
Play court		
Playground		
Slope		
Street		
Surface		
Level Difference		
Paved areas		
Covered spaces	Amenities	6
Seating Space		
Tracks		
Water elements		
Surveillance	Safety	2
Fencing		
Peer bonding	Social	5
Play Equipments	Play Equipments	16

(surveillance, fencing), Social (friends, peers) and Play equipment. The Negative aspects included Anti-Social (strangers, bullying people), Maintenance (unclean, unkempt facilities, etc.), injurious elements (service poles, stray animals, etc.), Space adequacy (crowded, lack of space, etc.), Traffic (parking, speeding vehicles), Poor Lighting (darkness).

The positive aspects identified from the likes of elements in the open spaces frequented *Hard Surfaces* suggesting a surface which would allow different types of activities like cycling, sports, etc. as most appreciated, for playing. The second most frequented was *Lawns and Vegetation* suggesting the presence of trees, shrubs, green patches, etc. suggesting nature connectedness. Most free play was denoted around these elements. The third most frequented aspect was *Play Equipments* suggesting elements allowing activities for playing on swings, slides, etc. was drawn in almost all drawings (as shown in Table 4 and Figure 5).

The negative aspects identified from dislikes of elements in the open spaces were indicated as *Maintenance* drawn through bad surfaces, unclean surroundings, unkempt facilities, water puddles, and growth of wild vegetation. Second aspect was *Injurious Elements* indicated by steep slopes, service elements like open manholes, any electric poles and presence of stray animals like dogs which were scaring children from playing. The presence of heavy *Traffic and Parking* of Vehicles was another indicating aspect which suggested fear in children's outdoor participation (as shown in Table 5 and Figure 6).

Figure 5. Children's sketches of positive aspects.

Table 5. Coding and categorizing children's sketches of negative aspects and their frequency of responses in percentage.

Children's sketches indicating *Negative Aspects*	Broad categories of *Negative Aspect*	Response frequency in %
Anti social elements	Anti social aspects	16
No surveillance		
Stranger		
Surface	Maintenance	39
Unclean		
Unkept facilities		
Water elements		
Wild vegetation		
Slope	Injurious Elements	19
service elements		
Stray animals		
Crowded	Space Inadequacy	3
Lack of play space		
Level difference		
Traffic	Traffic	17
Parking area		
Poor lighting	Poor lighting	6

Discussion

The children are observed to play around their residence like open space within the compound, gardens, parking spaces, and playground. The knowledge that the children gather by participating in these outdoor play spaces contributes to their social, physical, and psychological development through aspects like peer bonding, physically challenging activities, and assuring confidence by continuous participation in various activities. A new knowledge is constructed with these experiences thus motivating children for day-to-day visitation to open spaces.

Figure 6. Children's sketches of negative aspects.

Parent's perception about participation in open spaces showed that their children gain perceived benefits from social aspects more than physical aspects. Having accompaniment to participate in open space was ranked high and was perceived as a strong motivation for children's outdoor participation. Whereas for children social aspect was ranked low at only 5%. The most important aspect from children's perspective is having hard scape surface which allows children to play any kind of activities. Hard surfaces like internal roads, streets, and open parking spaces around the building were most commonly used spaces for playing. Hard surfaces seem to be to play activities which give good grip to run, jump, play ball games, do cycling and play on wave/skateboards. The hardness of the surface gives good gripe and toughness increasing required physical agility, balance, composure thus building confidence to participate in activities. The second aspect which is highlighted in children's sketches was 'lawn and vegetation' which includes trees, shrubs, and lawns. Children indicated passive activities and object playing on the lawns and around trees and shrubs.

The physical activities add benefits to the physical wellbeing of the children. Parent's perception next most important aspect indicates that physical wellbeing of their child is benefited through open space activity participation. The outdoors allow more space, variability of surfaces and facilities, and much more qualities to do activities that exerts physical strain, thus contributing to physical wellbeing. Nature connectedness and being happy are also associated with Physical benefits as perceived by the parents.

The most frequented response for play space elements were green areas like lawns, vegetation, kids play area, playground, and free play space around the building comprising of internal road, set-backs, etc.

The independent mobility range was found to be wider as per increasing age, but still it would be in surveillance range of family and friends. The type of facilities available in the surrounding open space did not restrict children from playing in open spaces. If nothing, they would play informal games in which just a space which is open enough to run around to play games like catch–catch, hide and seek, etc. If the available space was wide enough, the children were found to play cricket, cycling, badminton, etc. Play equipments were not found to be a necessity for play, but parents surely made a point of suggesting having a variety of play space in the walking range for better play experiences.

Fear of strangers, stray animals, fast-moving vehicles, and fear of empty/quiet roads are perceived risks stated by parents. Few parents stated perceived risks of bad company and fear of dark spaces as two major concerns. Although traffic is most highlighted as risk aspect by both children and parents, children would manage to find a spot with less vehicular movement and would play in those spaces. To get accustomed to the fear of traffic, children were found to travel in groups. This would give them sense of a team and safety. Older children above the age of 11 years were allowed to travel a relatively larger distance with prior knowledge of traffic rules. In denser areas, like old city, children would travel wider range of distance. Living in dense areas, made children more use to seeing people and traffic, making children more accustomed and adjusting to surrounding scenarios. On the contrary, children till the age of 12 years and below, living in gated communities like bungalow society and/or apartment were always accompanied by elders out of their premise. Denser areas played a vital role in children's understanding of their surroundings, their conscious of what is around them, and making decisions based on the same.

Maintenance and quality of elements in the open space was another aspect in which parents and children raised their concerns unanimously. Risk with respect to physical injury was highlighted if lawns were not mowed, benches or flooring were broken, wires were left to be dangling or open, presence of debris, etc. The unkempt facilities would restrict children's active participation in the outdoor play spaces sometimes by their choice or even by restriction of parental license.

The presence of vegetation was observed more, wherever the risk aspects were less highlighted. This suggests that the presence of vegetation makes children and parents more comfortable with the play spaces that children visited. The presence of lawns, trees and/or shrubs lined on the edge of spaces defined the playing area. It not only defined a visual boundary but also made parents feel more secured about that space. This positive impact of the presence of vegetation is well versed in the literature.

Lighting was another aspect that related to benefits if lighting in the play space was good and to risks if the space was dark or badly lit.

Risk factors are relatively easy to identify through physical characteristics. It is rather challenging to identify characteristics that offer benefits. By using the Push–Pull theory (Mohamed & Abdul-Talib, 2020), the study is categorising the beneficial aspects as Push and Pull factors. The PUSH factor in the study can be found in aspects like social motivators which include friends and the activities that are played in groups. Other Push factor is the affordance the space offers. The presence of surface and space which allows to do various activities is a major incentive that Pushes children from their home to step out and play outdoors. The Pull factors can be defined as retainers which motivate children to keep visiting the day-to-day open spaces for their play. With nature in form of trees, lawns and other vegetation children have called them as 'refreshing' and also indicated as 'feel comfortable' to play around it. Literature suggests the association of nature and comfort for people's participation and the study indicates it as one of the Pull factors. Another retainer is the presence of Play Equipments. Children of about 6–8 years have shown play equipments in their drawings more than children above that age group. According to Piaget, the children till age of 8 years are 'egocentric' suggesting that they are still exploring play and playing in group is a little difficult for them (Ginsburg & Opper, 1988). This was seen in the study that Play equipments can be used by themselves and children don't necessarily need company to play in that zone. The older children's drawings show more group activities and less of play equipments. They are playing sports like football, cricket and badminton. Here the study indicates that the social aspect is both push and pull factor for children's outdoor play participation.

Although the environment is perceived negatively or positively, the children have found to be happy playing outdoors if more social benefits are available. Having friends around is most important and which also suggest like presence other affordances is not necessary all the time for children to go out and play. With the availability of facilities, the variability of playing/activity scenarios increases and hence motivation to play in the same space is positive. According to parents, the places which offer high benefits, more variability, more social benefits suggest a positive impact on their child's physical, social, and psychological development, adding to their physical wellbeing, socially active and making them more confident.

Conclusion

This study aimed to understand children's play space and independent mobility range with perceived risks and benefits about day-to-day play spaces in outdoors. The walk-along interviews with children showed their creative use of the outdoor space. Even though the case of informal neighbourhood lacked in quality and availability of facilities, the positive social qualities (Chauvla, 2016) like integrated community and availability of other children to play were two primary reasons of children's outdoor experience satisfaction.

One does observe the difference in perception between parents and children, especially the risk perception. Children define environment on mobility range which is sometimes not acceptable to the parents thus affecting parental licence. The analysis of data suggests that parenta licence is dependent on overcrowding and high vehicular traffic, which reflects in their fear about child's safety. The urban level policy needs to review for possible decluttering of vehicular traffic and crowding. One of ways to improvise is, by reworking on vehicular movements within neighbourhood. Thorough traffic should be diverted away from neighbourhood which may positively impact on sense of safety and comfort in parents and children and thus increasing the play range and independent mobility range. The urban design policy and planning need to cater to needs of the children of outdoor play spaces. Outdoor play spaces which are easily accessible, secured, ergonomically usable, well maintained, etc. are the rights of the children.

Neighbourhood with multi-storeyed buildings which are visually disconnected with the open spaces from their homes made surveillance difficult. Here, despite availability of open spaces, the perceived risk was discouraging factor to allow child to play.

The motivation to participate in outdoor activities is strongly associated with social and physical characteristics of the open space. The participation is encouraged only with positive experiences which are built upon perceptions which may be good or bad. Good perceptions are always encouraging, but participation in activities with risk perception may have a setback. Most often it is observed that risk factor is challenged and faced again and again to build upon the confidence of using the space in continuity.

The research gives pointers urban designers, planners, and government agencies to make amends in policies for in the neighbourhoods to accommodate perceptions of children and parents hence making child-friendly neighbourhoods and cities.

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Disclosure statement

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References

Aziz, N. F., & Said, I. (2012). The trends and influential factors of children's use of outdoor environments: A review. *Procedia-Social and Behavioral Sciences*, *38*, 204–212. doi:10.1016/j.sbspro.2012.03.341

Bento, G., & Dias, G. (2017). The importance of outdoor play for young children's healthy development. *Porto Biomedical Journal*, *2*(5), 157–160. doi:10.1016/j.pbj.2017.03.003

Bhan, R. (2006). Designing Play Environment Journal of the Indian Institute of Architects.

Bourke, J. (2017). Children's experiences of their everyday walks through a complex urban landscape of belonging. *Children's Geographies*, *15*(1), 93–106. doi:10.1080/14733285.2016.1192582

Bronfenbrenner, U. (1979). *The ecology of human development*. Cambridge, MA: Harvard University Press.

Brooks, T., & Sorin, R. (2011). "All the places I've been to [in the tropics] are not really a special place": Investigating children's place attachments through collage and stories. *Etropic: Electronic Journal of Studies in the Tropics*, *10*, 119–130. doi:10.25120/etropic.10.0.2011.3413

Chaudhury, M., Hinckson, E., Badland, H., & Oliver, M. (2019). Children's independence and affordances experienced in the context of public open spaces: A study of diverse inner-city and suburban neighbourhoods in Auckland, New Zealand. *Children's Geographies*, *17*(1), 49–63. doi:10.1080/14733285.2017.1390546

Chaudhury, M., Oliver, M., Badland, H. M., & Mavoa, S. (2015). Public open spaces, children's independent mobility. *Play, Recreation, Health and Well Being, Geographies of Children and Young People*, *9*, 315–335.

Chauvla, L.. (2016). *Growing Up in an Urbanizing World* (pp. 219).

Chawla, L. (1992). Childhood place attachments. In S. Low & I. Altman (Eds.), *In Place attachment* (pp. 63–86). Boston, MA: Springer.

Christensen, P., & O'Brien, M. (2003). *Children in the city. Home neighbourhood and community*. Routledge.

Cooper, A. (2015). Nature and the outdoor learning environment: The forgotten resource in early childhood education. *International Journal of Early Childhood Environmental Education*.

Croucher, K., Myers, L., Jones, R., & Ellaway, A. (2007). Health and the physical characteristics of neighbourhoods: A critical literature review.

Dunnett, N., Swanwick, C., & Woolley, H. (2002). *Improving urban parks, play areas and Green spaces*. London: Department for Transport, Local Government and the Regions.

Ferguson, K. T., Cassells, R. C., MacAllister, J. W., & Evans, G. W. (2013). The physical environment and child development: An international review. *International Journal of Psychology*, *48*(4), 437–468. doi:10.1080/00207594.2013.804190

Freeman, C., Van Heezik, D. Y., Stein, A., & Hand, K. (2015). *Natural neighbourhoods for city children: Report on research findings*. Dunedin: Department of Geography, University of Otago.

Fyfe, N. (2006). *Images of the street: Planning, identity and control in public space*. London: Routledge.

Gehl, J. (2011). *Life between buildings: Using public space*. Washington, DC: Island Press.

Gibson, J. J. (2014). *The ecological approach to visual perception: classic edition* (1st ed.). New York: Psychology Press.

Ginsburg, H. P., & Opper, S. (1988). *Piaget's theory of intellectual development*. Chevy Chase, MD: Prentice-Hall, Inc.

Giusti, M., Svane, U., Raymond, C. M., & Beery, T. H. (2018). A framework to assess where and how children connect to nature. *Frontiers in Psychology*, *8*, 1–20. doi:10.3389/fpsyg.2017.02283

Government, I. (2011). Census 2011.

Government, I. (2018). *Children in India, 2018*. New Delhi: Government of India.

Handy, S. L., Boarnet, M. G., Ewing, R., & Killingsworth, R. E. (2002). How the built environment affects physical activity: Views from urban planning. *American Journal of Preventive Medicine*, *23*(2), 64–73. doi:10.1016/S0749-3797(02)00475-0

Hart, R. (1979). Children's experience of place: Irvington.

Humpel, N., Owen, N., & Leslie, E. (2002). Environmental factors associated with adults' participation in physical activity: A review. *American Journal of Preventive Medicine*, *22*(3), 188–199. doi:10.1016/S0749-3797(01)00426-3

Kaplan, R., & Kaplan, S. (1989). *The experience of nature. A psychological perspective*. CUP Archive.

Kuo, F. E., Bacaicoa, M., & Sullivan, W. C. (1998). Transforming inner-city landscapes: Trees, sense of safety, and preference. *Environment and Behavior*, *30*(1), 28–59. doi:10.1177/0013916598301002

Kyttä, M. (2003). Children in outdoor contexts. Affordances and independent mobility in the assessment of environmental child friendliness.

Lestan, K. A., Eržen, I., & Golobič, M. (2014). The role of open space in urban neighbourhoods for health-related lifestyle. *International Journal of Environmental Research and Public Health*, *11*(6), 6547–6570. doi:10.3390/ijerph110606547

Merewether, J., & Fleet, A. (2014). Seeking children's perspectives: A respectful layered research approach. *Early Child Development and Care*, *184*, 897–914. doi:10.1080/03004430.2013.829821

Mohamed, M.-A., & Abdul-Talib, A.-N. (2020). Push–pull factors influencing international return migration intentions: A systematic literature review. *Journal of Enterprising Communities: People and Places in the Global Economy*, *14*(2), 234–246.

Natu, A. (2007). *Exploring the association between the physical characterisitics and use of formal community open spaces in urban residentail developments (Ph.D.)*.

Nunes, D. V., & Vale, D. S. (2015). *Physical characteristics that influence urban design qualities of Livable and walkable urban places: Lessons from Portuguese cities*. Paper presented at the 52nd International making cities livable conference.

Obee, P., Sandseter, E. B. H., & Harper, N. J. (2020). Children's use of environmental features affording risky play in early childhood education and care. *Early Child Development and Care*, *Latest article*, 1–19. doi:10.1080/03004430.2020.1726904

Othman, S., & Said, I. (2012). Affordances of cul-de-sac in urban neighborhoods as play spaces for middle childhood children. *Procedia-Social and Behavioral Sciences*, *38*, 184–194. doi:10.1016/j.sbspro.2012.03.339

Pitsikali, A., & Parnell, R. (2019). The public playground paradox:'child's joy'or heterotopia of fear? *Children's Geographies*, *17*(6), 719–731. doi:10.1080/14733285.2019.1605046

Ramezani, S., & Said, I. (2009). Children's perception of place friendliness in an urban neighborhood in Shiraz, Iran.

Said, I. (2007). Architecture for children: Understanding children perception towards built environment.

Salama, A. M., & Azzali, S. (2015). Examining attributes of urban open spaces in Doha. *Proceedings of the Institution of Civil Engineers Urban Design and Planning*, *168*(2), 75–87. doi:10.1680/udap.14.00011

Shabak, M., Norouzi, N., Abdullah, A. M., & Khan, T. H. (2015). Children's sense of attachment to the residential common open space. *Procedia Social and Behavioral Sciences*, *201*, 39–48. doi:10.1016/j.sbspro.2015.08.117

Sjöberg, L., Moen, B.-E., & Rundmo, T. (2004). Explaining risk perception. *An evaluation of the psychometric paradigm in risk perception research*, *10*(2), 665–612.

Slaghekke, J. (2017). *Learning outdoors benefits – Risks*. Nature Play, South Australia: Government of South Australia.

Tyagi, M., & Raheja, G. (2020). Indian parents' perception of children's independent mobility in urban neighbourhoods: A case study of Delhi. *Children's Geographies*, *19*(2), 390–406.

Veitch, J., Salmon, J., & Ball, K. (2007). Children's perceptions of the use of public open spaces for active free-play. *Children's Geographies*, *5*(4), 409–422. doi:10.1080/14733280701631874

Villanueva, K., Badland, H., Kvalsvig, A., O'Connor, M., Christian, H., Woolcock, G., … Goldfeld, S. (2016). Can the neighborhood built environment make a difference in children's development? Building the research agenda to create evidence for place-based children's policy. *Academic Pediatrics*, *16*(1), 10–19. doi:10.1016/j.acap.2015.09.006

Woolley, H. (2003). *Urban open spaces*. London: Taylor & Francis.

Wridt, P. (2010). A qualitative GIS approach to mapping urban neighborhoods with children to promote physical activity and child-friendly community planning. *Environment and Planning B: Planning and Design*, *37*(1), 129–147. doi:10.1068/b35002

Zhang, H., & Li, M.-J. (2012). Environmental characteristics for children's activities in the neighborhood. *Procedia Social and Behavioral Sciences*, *38*, 23–30. doi:10.1016/j.sbspro.2012.03.320