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Children's Perspectives of Neighbourhood Spaces: Gender-Based Insights From Participatory Mapping and GIS Analysis

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Abstract

Although several urban design and planning features, such as community spaces, green infrastructure, and traffic measures that prioritise pedestrians and children, have been identified as important characteristics of child-friendly cities and neighbourhoods, there remains a gap in our understanding regarding the specific elements of children's daily environments that influence their experiences. This study focuses on the everyday activity spaces of children (aged 9–12) living in physically and socially diverse neighbourhoods of low-to-average income in Ankara, Turkey. Drawing on findings from thematic and qualitative GIS-based analyses of 40 participatory map-based focus groups with 217 children, this study aims to understand how neighbourhood design influences children's everyday experiences across different neighbourhood types and genders. By visualising children's perceptions of their neighbourhoods and activity spaces, and thematically analysing their comments related to neighbourhood design features that may facilitate positive and negative experiences, this child-centred study contributes to the limited research on children's experiences of place. Our findings revealed key neighbourhood design features influencing children's experiences and highlighted gender-based differences. While natural settings were valued across settings and genders, boys reported more physical activities in open spaces while girls more frequently emphasised the need for accessible playgrounds and natural settings. Children in urban neighbourhoods frequented streets, parks, and local shops more often, while those in suburban and sprawling areas preferred amenities near their homes. The study demonstrates that children's positive everyday experiences can be supported by modifying the neighbourhood design, providing valuable insights for practitioners and policymakers on developing more child-friendly neighbourhoods.

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1. Introduction

In the context of global urbanisation, more children are being born and raised in urban environments each year, with 70% of children and youth projected to live in cities by 2050 (UNICEF, 2022). The structure of urban forms can significantly influence children's health and lifestyles (World Health Organization, 2020). Various urban design and planning practices, such as creating community spaces, green infrastructure, and traffic measures that prioritise pedestrians and children, have been recognised as essential components of child-friendly cities and neighbourhoods. According to the United Nations International Children's Emergency Fund, a child-friendly city enables children to "live in a safe, secure and clean environment with access to green spaces, participate in community and social life, meet friends and have places to play and enjoy themselves" (UNICEF, 2018, p. 10). However, a comprehensive understanding of neighbourhood design characteristics that support child-friendly environments and provide opportunities for children to meet their physical and social needs, promoting health and well-being, remains lacking. This is due, in part, to a lack of understanding of children's experiences and perceptions of their environments, as most available material is adult-centric. Children's perceptions and use of their neighbourhood's built environment may differ significantly from those of their parents. Given that urban contexts in which children live, learn, and play can offer significant health benefits, understanding their experiences could provide an additional perspective to the existing knowledge regarding environmental barriers to and enablers of children's use of these spaces.

Scholars, including McAllister (2008), have long argued that creating child-friendly environments requires urban planners and designers to understand the factors influencing children's experiences of place. However, evidence on specific neighbourhood design features—particularly those related to their everyday activity spaces—that can encourage children to actively engage with the outdoor environment remains limited (Kyttä et al., 2012). Recent decades have seen an increase in research aimed at understanding the characteristics of children's everyday activity places where children spend their daily lives, to develop policies that support child-friendly neighbourhoods (Chawla, 2002; Manouchehri et al., 2021; Tayefi Nasrabadi et al., 2021). However, most of our understanding of children's experiences, primarily based on Western studies, fails to encompass diverse geographical settings (Malone & Rudner, 2017). Likewise, whilst research on how gender and location influence these experiences is increasing (Morrow, 2006; Porter et al., 2021; Reimers et al., 2018; Valentine, 1997), significant gaps still persist in developing countries (Severcan, 2023). Furthermore, the lack of child-centric research and insufficient child participation in urban planning hinder the development of child-friendly cities worldwide, with these challenges being particularly prominent in developing and underdeveloped nations (Derr & Kovács, 2017; Severcan, 2015).

In addressing these research gaps, this study adopts a participatory, child-centred approach to exploring the daily activity spaces of 9–12-year-olds across diverse urban and gender groups in Ankara, Turkey—a city in the developing world. Grounded on the premise that gender may shape experiences within different neighbourhood contexts, the study focuses on how children's positive and negative experiences vary by neighbourhood characteristics and gender, and how these experiences relate to specific neighbourhood design features.

The remainder of this article is divided into four main sections: an overview of the theoretical background and research gaps (Section 2), the study design and methodology (Section 3), detailed findings contextualised within existing literature (Section 4), and a conclusion (Section 5) summarising key findings, limitations, and implications for policy and practice.

2. Theoretical Background

Individuals' interactions with their local outdoor environments are based on multiple factors, often conceptualised within socio-ecological models (e.g., Sallis & Owen, 2015). In these models, the individual, social, and physical environments are regarded as key factors for driving behaviours, which in turn affect individuals' place experiences (Derr, 2002; Moore & Young, 1978). While extensive research highlights the built environment's role in motivating children to explore and engage with their surroundings (Veitch et al., 2006; Zhao et al., 2023), existing evidence regarding the role of specific neighbourhood design features in children's place perception and use remains indeterminate.

Previous research has revealed that neighbourhood environmental aspects influence how children experience and behave in them (Bao et al., 2021; Castonguay & Jutras, 2009; Hart, 1979). Objective urban form features that have been shown to promote outdoor physical activity within neighbourhoods include higher residential density, diverse land-use, well-connected street network, and neighbourhood greenness (Panter et al., 2008; Tilt et al., 2007). Some studies have concluded that safe, densely built neighbourhoods enhanced by accessible green spaces facilitate outdoor activities that promote child health, well-being, and development (Kyttä et al., 2012; Li & Seymour, 2019). Many studies have examined street-design features associated with children's neighbourhood physical activity and place perception and use, underscoring safety as an important feature that supports children's interactions with their local environments (Carroll et al., 2015; Castonguay & Jutras, 2009). Aarts et al. (2012), for instance, found a correlation between children's outdoor play in the Netherlands and traffic safety, as measured by the presence of pedestrian crossings, traffic lights, and speed bumps. More social opportunities, such as playing with friends and interacting with neighbours, have also been identified as important factors influencing children's outdoor play (Witten & Ivory, 2018). Safe and accessible routes to local destinations are associated with increased independent mobility (Villanueva et al., 2013), while areas with physical features associated with danger and antisocial behaviour, such as graffiti, litter, and poor lighting, negatively affect children's place use (Loukaitou-Sideris, 2003).

Despite considerable evidence on the role of neighbourhood design in children's physical activity and socialisation, a significant gap remains in understanding the specific elements of children's daily environments that influence their experiences, especially in developing countries (Severcan, 2023). This gap can be attributed in part to a lack of local researchers with expertise in child-focused participatory research (Driskell et al., 2001) and the limited number of studies exploring children's place experiences from an urban design perspective (Çakırer Özservet, 2015). Additionally, the complexity of factors influencing children's place experiences contributes to this gap, as research findings often vary across different contexts due to various factors including gender and place of residence.

Child-centred research methods prioritise children's active participation in the research process and are designed to accommodate their abilities, fostering inclusivity, rapport, trust, and confidence, unlike traditional methods like questionnaires (Barker & Weller, 2003). Scholars like Derr and Kovács (2017)

emphasise the importance of directly engaging children through methods such as group or individual interviews (Egli et al., 2019) and participatory mapping (Wilson et al., 2019) to better understand why children frequent specific urban settings. In his guide on participatory methods for children, including tools like guided tours and focus groups, Driskell (2002) highlights the multiple benefits of these methods, including listening to others, respecting diverse opinions, finding common ground, and fostering critical thinking, evaluation, and reflection, all while becoming more aware of their environments.

Additionally, there is limited focus in the literature on how gender influences children's use of places (Morrow, 2006). While findings vary due to differences in parenting culture, safety concerns, and the availability of child-friendly facilities, the literature suggests that girls (especially those in inner-city neighbourhoods) often spend more time in residential settings than boys (Severcan, 2023). This is attributed to expectations to assist with domestic tasks and perceptions of vulnerability (Morrow, 2006; Valentine, 1997). Typically, girls aged 9–12 use nearby spaces like home yards and parks, while boys frequent farther recreational areas like playgrounds and basketball courts (Matthews, 2003; Tezel, 2011). Studies show that boys aged 9–12 typically access a wider range of land-uses and activity spaces than girls, due to their greater independence (Hart, 1979; Porter et al., 2021). However, when allowed to explore their environments, girls often prefer spending more time in commercial places than boys (Wridt, 2004). Scholars such as Moore and Young (1978), van Vliet (1981), and Severcan (2023) have demonstrated that the place experiences of suburban and inner-city boys and girls can differ due to the opportunities and constraints of their respective contexts (such as the diversity of land-uses available).

Our understanding of what boys and girls tend to like or dislike, or what they prefer to do or avoid in their everyday places across different neighbourhood contexts, is even more limited. In her study conducted in Metropolitan Los Angeles, USA, Loukaitou-Sideris (2003) found that boys and girls in this age group share a similar preference for nature-like elements (such as greenery, trees, and flowers) in public open spaces. Contrary to studies indicating significant differences between the activities of boys and girls in public spaces (Furlong & Cartmel, 1997), Loukaitou-Sideris and Stieglitz (2002) found no significant differences in the levels of participation in sports, biking, and active recreation among 9–12-year-old boys and girls in Los Angeles parks. However, Porter et al. (2021) discovered that girls were significantly more likely than boys to mention concerns related to security and safety, specifically the presence of dangerous people in public spaces, whereas boys more frequently identified traffic, unsafe junctions, and polluted or unmaintained environments as disliked aspects of their neighbourhoods.

Drawing upon a socio-ecological framework and data from participatory map-based focus groups with children, this study addresses the above-mentioned research gaps by mapping the spatial distribution of children's activity spaces and thematically discussing how specific neighbourhood design features influence children's experiences in various urban settings within a Turkish context. The primary objectives are to (a) identify children's experiences within their activity spaces across different neighbourhood types and genders, and (b) explore how these experiences relate to specific design features of the neighbourhoods.

3. Datasets and Methods

To meet the above-listed objectives, this study used a cross-sectional, mixed-methods design including field surveys, thematic analysis, and qualitative GIS analysis. To capture children's actual neighbourhood experiences, the study design adopted child-centred participatory methodologies.

3.1. Study Area

This study was conducted in a city in a developing country: Ankara, Turkey, and its selected neighbourhoods. The city is the second largest in Turkey with a population of approximately 5.6 million, over 1 million of which are school-year-aged children aged 6–18 (Turkish Statistical Institute, 2023). We employed the transect planning model developed by Duany and Talen (2002) to classify the rural-to-urban transect into different zones based on characteristics of urban form, including street network layout, building density, land-use mix, retail density, and neighbourhood greenness. We then selected four neighbourhood types: urban core, general urban, planned suburb, and urban sprawl (Figure 1). The lack of up-to-date land-use or building density data at the building, parcel, or block level in Ankara limited our capacity to objectively categorise and randomly select neighbourhoods by urban form attributes.

The urban core neighbourhood is characterised by moderate street connectivity and retail density with several large-scale urban parks. The general urban neighbourhood features a higher land-use diversity and street connectivity, yet also a scarcity of green spaces. The planned suburban neighbourhood, featuring a mix of high-rise gated communities and low-rise houses with yards, has low street connectivity and retail density centralised at its centre. Public green open spaces are primarily found within gated communities, with a few small neighbourhood parks. Conversely, the unplanned urban sprawl neighbourhood features more green spaces, primarily within gated communities, and higher street connectivity than the suburban area but has lower building density with predominantly low-rise multi-family and high-rise residential buildings. All neighbourhoods were selected from low (US$0–550) to medium-low (US$550–800) income levels based on data reported by Uğurlar and Eceral (2014) to control for the effect of income on children's place experiences.
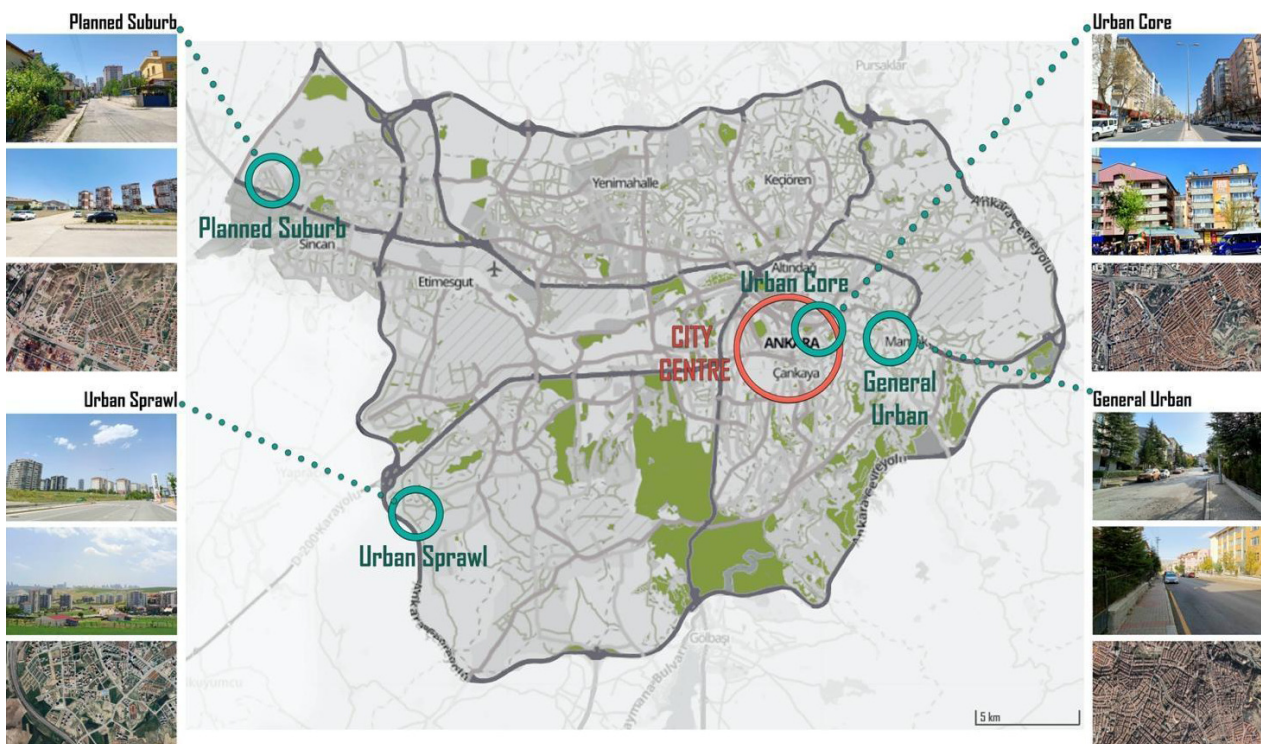
Figure 1. Case study neighbourhoods in Ankara, Turkey.

3.2. Sampling and Instrumentation

This study focused on children aged 9 to 12, a group that is beginning to travel to school independently and is capable of reporting their perspectives on neighbourhood environments (Li & Seymour, 2019). Five public schools were selected from these neighbourhoods, and three to five classes from the targeted age group (3rd- to 6th-graders) were invited to participate in the study based on their availability, as determined by school administrators. A total of 217 children, who provided the necessary consent/assent, participated in the map-based focus group activity. Children were asked to locate their homes on a pre-specified large-format satellite map, which covered a 1-km radius around their schools. They were then instructed to mark the streets they used for travelling to/from school, pinpoint places they frequently used, liked, or disliked using coloured stickers, and discuss the reasons for their preferences and dislikes. Moderators used smartphones to verify, and if necessary, correct children's reported locations. Researchers only assisted students who had difficulty orienting themselves, directing them to their schools on the map. This approach minimised any researcher bias and power imbalance between researchers and participants. A total of 40 focus groups were conducted, each consisting of four to seven children and lasting approximately 1.5 hours. These sessions produced two thematic maps per group: one depicting the places children frequented and liked, and another showing the places they disliked. All activities were conducted within the children's schools during the school days. The focus group discussions were audio-recorded, and moderators took notes simultaneously. Finally, children's homes and their activity spaces were geo-coded into ArcGIS and categorised as positive/liked and negative/disliked, with explanations for why they liked/disliked these activity spaces. Of the total children, 53 were from the urban core (62% girls), 55 from the general urban (54% girls), 48 from the urban sprawl (50% girls), and 61 were from the planned suburb (44% girls). All focus group participants ($n = 217$) indicated that their homes were located within a 1-km radius of their schools.

3.3. Measuring Neighbourhood Design

Due to the lack of recent GIS data providing accurate information on the urban form characteristics of children's neighbourhoods—particularly regarding land-use mix, building density, and neighbourhood greenness—local government datasets were updated for areas within a 1-km radius around children's schools. This update, aligned with the map boundary areas provided to children during focus groups, was achieved through field surveys and manual analysis of the latest aerial photographs following neighbourhood selection. The limited number of researchers and time constraints prevented the authors from updating larger map areas. The 1-km threshold distance was selected based on findings from earlier studies on children's walking behaviour to school (e.g., Yelavich et al., 2008), and the requirement in Turkey that children enrol in public schools close to their registered home address. All data were collected at the finest-resolution spatial units (i.e., land-use variables were measured at the building-level while street connectivity was measured at the segment-level). The urban form characteristics of children's neighbourhood environments (defined as 400-metre radial buffers around homes located within 1 km of the school) were evaluated through four GIS-based objective measures: land-use mix, urban density, street connectivity, and neighbourhood greenness. The 400-metre buffer distance was selected in line with previous studies that defined children's immediate neighbourhood environments (or home environments; Loebach & Gilliland, 2016; McMillan, 2007). Building density was calculated by dividing the total built-up area by the buffer area. Land-use mix at the building-level was computed using the entropy index, where 1 represents a perfectly mixed-use environment (Frank et al., 2004), across eight categories: residential,

mixed-use residential, mixed-use non-residential, commercial, educational, cultural, institutional, and other. Retail density was determined by dividing the ground floor retail area by the total land-use area within the buffers. Street connectivity was assessed using the syntactic "global angular integration," which measures how accessible each street is within the system (Yamu et al., 2021). A neighbourhood greenness index was derived from Landsat 8 satellite sensor data, with numbers closer to 1 indicating increased greenness (Shankhwar et al., 2021). Neighbourhood urban form (i.e., averages of objective measures) varied significantly by neighbourhood type (see Ozbil Torun et al., 2022).

In addition, detailed field observations using Google Street View and site visits were conducted prior to the focus group activity to document street-level design characteristics (e.g., vehicular versus pedestrianised streets, traffic crossings, and sidewalk availability) of children's neighbourhoods. The moderators utilised these data to double-check the accuracy of the children's responses during the focus groups, asking them additional questions where necessary to reduce recall bias.

3.4. Analysing the Data

To meet our aim of spatially investigating children's everyday experiences, children's comments on their activity spaces and related neighbourhood design features were transcribed and thematically analysed. Participants' comments were imported as open-ended responses into MAXQDA and coded into categories under the main themes of "positive" and "negative," with the gender and home neighbourhood of children who mentioned them noted. The thematic analysis was both deductive, using themes previously documented in the literature, and inductive, with themes emerging from children's responses. The codes were then visualised in charts, organised by frequency, to examine potential associations between themes and neighbourhood types, as well as between themes and genders. In line with our research questions and previous cross-sectional studies highlighting differences in children's neighbourhood evaluations based on gender and place context (see e.g., Moore & Young, 1978; Severcan, 2023), we presented the frequency distributions for each theme, grouped by our two explanatory variables: gender and type of neighbourhood. The analysis of a total of 1,197 responses revealed seven themes: physical activities (27%), amenities/land-uses (13%), nature (7%), quality of the built environment (19%), safety and security (23%), accessibility and mobility (4%), and social ties (7%). To gain insight into the spatiality of children's place perceptions of their neighbourhood environments, children's activity spaces linked with their positive and negative experiences were then mapped using ArcMap, and the Kernel Density tool was used to depict these emerging geo-spatial locations. These geovisualizations contextualised children's everyday experiences by revealing significant hot-spots across different neighbourhood types in relation to neighbourhood design features.
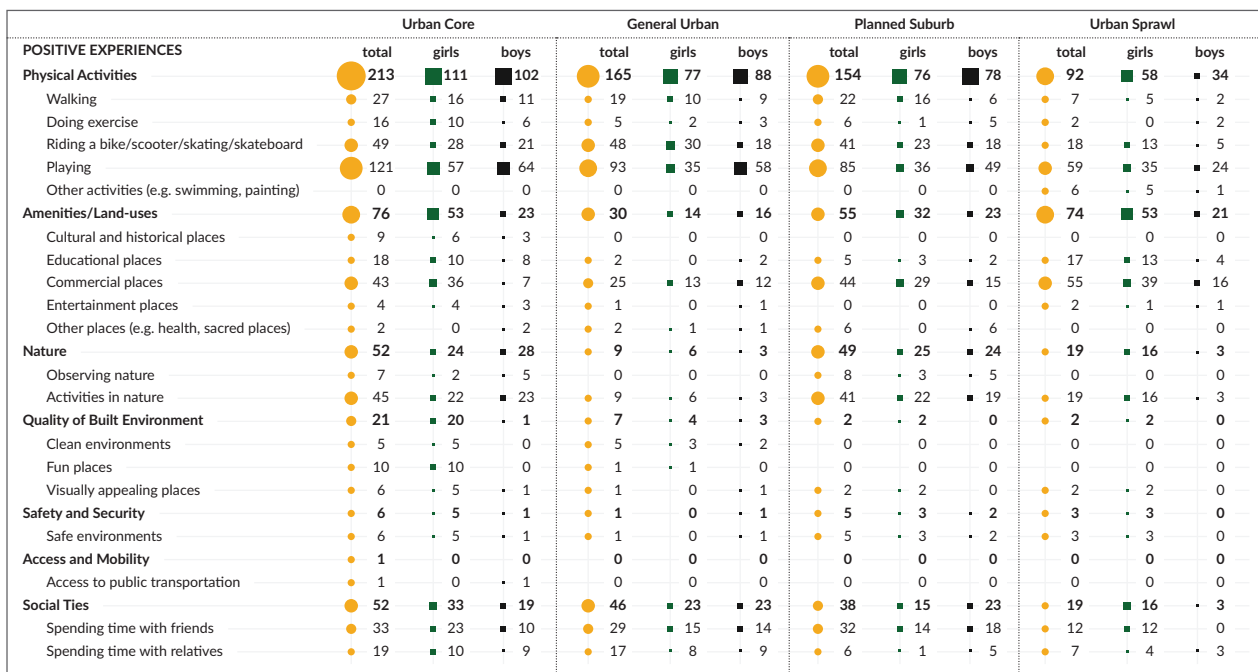
4. Results and Discussion

4.1. Children's Positive Experiences Across Neighbourhood Types and Genders

Figure 2 depicts the emerging themes and their frequencies related to children's positive experiences across neighbourhood types and gender groups along with selected children's comments. Overall, the two most often highlighted themes were related to physical activities, and amenities/land-uses across all neighbourhoods, while responses concerning safety and security, as well as access and mobility, were

comparatively limited. Thematic analysis of focus groups revealed notable gender differences in community space experiences, with boys mentioning physical activities more frequently (58.1%) than girls (48.2%), aligning with some studies (Coakley & White, 1992; Furlong & Cartmel, 1997) but not others (Loukaitou-Sideris & Stieglitz, 2002). Conversely, girls more often discussed amenities/land-uses, quality of the built environment, and safety and security compared to boys. Themes related to nature, access and mobility, and social ties were mentioned equally by both genders, consistent with research showing no gender differences in satisfaction with nature-like elements (Loukaitou-Sideris, 2003).

Of the five sub-themes of physical activities reported by children in their liked places, playing was mentioned more often across all neighbourhoods, followed by biking/scootering/skating/skateboarding. Urban children—children living in the urban core and general urban neighbourhood—often played in parks and streets, as reported by a boy (Ç.G.) from the urban core: "First of all, I love playing games in the 50.

POSITIVE EXPERIENCES	Urban Core			General Urban			Planned Suburb			Urban Sprawl		
	total	girls	boys	total	girls	boys	total	girls	boys	total	girls	boys
Physical Activities	213	111	102	165	77	88	154	76	78	92	58	34
Walking	27	16	11	19	10	9	22	16	6	7	5	2
Doing exercise	16	10	6	5	2	3	6	1	5	2	0	2
Riding a bike/scooter/skating/skateboard	49	28	21	48	30	18	41	23	18	18	13	5
Playing	121	57	64	93	35	58	85	36	49	59	35	24
Other activities (e.g. swimming, painting)	0	0	0	0	0	0	0	0	0	6	5	1
Amenities/Land-uses	76	53	23	30	14	16	55	32	23	74	53	21
Cultural and historical places	9	6	3	0	0	0	0	0	0	0	0	0
Educational places	18	10	8	2	0	2	5	3	2	17	13	4
Commercial places	43	36	7	25	13	12	44	29	15	55	39	16
Entertainment places	4	4	3	1	0	1	0	0	0	2	1	1
Other places (e.g. health, sacred places)	2	0	2	2	1	1	6	0	6	0	0	0
Nature	52	24	28	9	6	3	49	25	24	19	16	3
Observing nature	7	2	5	0	0	0	8	3	5	0	0	0
Activities in nature	45	22	23	9	6	3	41	22	19	19	16	3
Quality of Built Environment	21	20	1	7	4	3	2	2	0	2	2	0
Clean environments	5	5	0	5	3	2	0	0	0	0	0	0
Fun places	10	10	0	1	1	0	0	0	0	0	0	0
Visually appealing places	6	5	1	1	0	1	2	2	0	2	2	0
Safety and Security	6	5	1	1	0	1	5	3	2	3	3	0
Safe environments	6	5	1	1	0	1	5	3	2	3	3	0
Access and Mobility	1	0	0	0	0	0	0	0	0	0	0	0
Access to public transportation	1	0	1	0	0	0	0	0	0	0	0	0
Social Ties	52	33	19	46	23	23	38	15	23	19	16	3
Spending time with friends	33	23	10	29	15	14	32	14	18	12	12	0
Spending time with relatives	19	10	9	17	8	9	6	1	5	7	4	3

Urban Core Neighbourhood

"I skate on the rink of Kurtuluş Park. There is a skateboarding track over there…I have a mountain bike, we race on slopes and hills with my friends, it is very enjoyable." (E.K., boy)

"I like cycling in the neighbourhood. I cycle with me friends. I also ride a bike in the park." (D.D.Y., boy)

General Urban Neighbourhood

"First of all, I love playing games in the 50. Yıl Park. Then I play in Kartaltepe Park and on the street with my friends." (Ç.G., boy)

"There is one ice cream parlour there and also a market. I like to go there and have ice cream and food." (D.S., girl)

Planned Suburb Neighbourhood

"Sometimes we play games in the social facility…and we hang out in the [community] site." (E.S.K., girl)

"I always cycle on our site because I enjoy it and it is safe." (H.M., boy)

Urban Sprawl Neighbourhood

"Since the site is safe, we play games until midnight. We play hide and seek… We hide in the bushes." (N.N.Y., girl)

"We have a stationary shop on-site, I love shopping there." (Z.K., girl)

Figure 2. Children's positive experiences of their everyday activity spaces as thematically coded across neighbourhoods along with selected quotes. The sizes of circles and squares represent the frequency (reported in numbers), with larger ones indicating a higher number of mentions.

Yıl Park. Then I play in Kartaltepe Park and on the street with my friends." On the other hand, those living in the planned suburb and urban sprawl used home gardens or gated outdoor areas, which were deemed safer: "Sometimes we play games in the social facility...in the community space" (E.S.K., a girl from the planned suburb). Urban areas also saw children enjoying biking in their local streets and skating in neighbourhood parks. Children living in the urban core frequently walked to friends' homes, stores, schools, and other destinations. On the other hand, children living in the urban sprawl engaged in these physical activities to a notably lesser extent. A gender-focused analysis of physical activity sub-themes revealed that boys consistently reported higher engagement in playing across all neighbourhoods. While there were no consistent gender trends for these physical activities across settings, in the urban core both genders reported similar levels of participation in walking, biking/scootering/skating/skateboarding, and exercising.

Amenities/land-uses was another recurring theme. Unlike previous research findings (Hart, 1979; Wridt, 2004), access to commercial activities, such as groceries and shops, was valued by children across all neighbourhoods regardless of gender. Urban children recognised local shops, particularly around their schools and homes as well as along their school route, as a positive aspect of their everyday experiences, as highlighted by a girl (Z.E.G.) in the urban core: "There are lots of restaurants, coffee shops, and stores here. The food is great in these restaurants and the stationary stores sell colourful school supplies." On the other hand, those residing in the planned suburb and urban sprawl reported enjoying time at shopping malls and local markets within their gated communities, often with family or friends: "I buy snacks with my friends, and we hang out on the site" (A.D.A., a boy from the planned suburb); "There is a market on the community grounds, I love going there" (A.K., a girl from the urban sprawl). The school was a favoured place for socialising, playing, and having fun across the entire sample: "I have many friends here. We love to play football in the schoolyard" (B.G., a boy from the planned suburb).

Children also mentioned features of nature, including neighbourhood parks, playgrounds, and local green spaces, as their liked neighbourhood places. Since playgrounds in Ankara are typically found inside local parks, we combined playgrounds and parks. However, this theme accounted for only 11% of all responses regarding liked locations, with children from both the planned suburb and urban core where natural elements are more present most frequently citing natural elements. Spending time in parks and other open green spaces and observing plants and animals within the green areas emerged as positive aspects of children's everyday activities across all neighbourhoods, particularly among children in the urban core and planned suburb: "This is the place where I feed the animals" (A.N.A., a girl from the planned suburb); "I feel happy when I hear the singing of birds in this park" (A.A., a girl from the urban core). Except for children in the urban core, spending time in parks and other green open spaces was more frequently mentioned by girls than by boys in all neighbourhood contexts.

Comparatively, quality of the built environment and safety and security were less often mentioned themes among children's positive places/experiences, accounting for only 3% and 1% of participant responses, respectively. Children living in the urban core reported a significantly greater number of related responses (65% for the quality of the built environment and 50% for safety and security), referring positively to features like clean, enjoyable, and visually appealing locations in their neighbourhoods, as well as environmental features connected to personal safety. Boys and girls equally characterised their activity spaces as safe in all contexts.

Children from the same neighbourhood type, regardless of gender, identified similar neighbourhood design features. For example, only children in the urban core, where there is a relatively higher-quality active travel infrastructure (i.e., with a denser street network as well as a continuous sidewalk system), associated accessibility and mobility with positive experiences: "I like walking along these streets…they are entertaining. There are many shops and restaurants" (E.K., a girl from the urban core). These children appreciated "a variety of ways to access basic amenities," "quiet local streets to walk and cycle," and "streets with commercial activities," underscoring the importance of route options and street connectivity. Conversely, children from the suburban neighbourhood with fewer route options preferred using shortcuts in their daily urban navigation: "I like crossing inside this park on my journey to school. It is a shortcut and has a nice playground " (A.A., a girl from the planned suburb).

Aligning with the existing literature (Egli et al., 2019), our analyses revealed that social ties emerged as a major theme in children's positive everyday experiences. Notably, children in the general urban neighbourhood more frequently mentioned "spending time with friends/family" as a key part of their positive experiences (18%), compared to their peers in the urban sprawl (9%).

4.2. Children's Negative Experiences Across Neighbourhood Types and Genders

When negative neighbourhood experiences expressed in focus groups were thematically coded, safety and security, along with the quality of the built environment, emerged as key concerns among children of all genders (Figure 3). These two themes accounted for 45% and 35% of all responses, respectively, in terms of disliked locations/negative experiences. While there were no notable gender differences in safety concerns across contexts—contrary to Porter et al.'s (2021) findings in inner-city suburbs of Melbourne, Australia—girls were more likely than boys to cite issues with the quality of the built environment (e.g., unmaintained environments). Other themes accounted only for about 0.2%–9.0% of all responses. The most noted negative physical activity-related experiences were mainly linked to a lack of playgrounds and sports fields. Linked to this, the most prevalent sub-themes associated with nature were a lack of densely vegetated parks and green areas, especially among children living in the planned suburb and urban sprawl neighbourhoods. These children cited "the shortage of parks and trees/tree canopies" and "the presence of vacant plots as opposed to local parks and playgrounds" as negative aspects of their everyday experiences. Comments related to green spaces cited not only their scarcity but also their poor quality: "The nearby [parks] are not well-maintained" (K.K., a boy from the planned suburb); "The park has an empty and derelict space" (A.N., a girl from the planned suburb); "I wish there was extensive tree cover within these empty lots" (D.M.Y., a girl from the urban sprawl). A girl (A.Y.) from the urban core noted: "You know that empty green space next to our house, right? Well, they dump a lot of trash there, it's littered everywhere. It's supposed to be a green space, but there's always garbage." Contrasting prior studies (Matthews, 2003; Tezel, 2011), our Ankara research found that girls consistently emphasised the need for accessible playgrounds and natural settings across all neighbourhoods.

As regards safety and security, children's concerns centred on perceived traffic-related and personal safety threats. Children indicated that they felt unsafe due to "speeding cars" and "traffic infringements," and they mentioned "crossing the street" and "parked cars on sidewalks" as aspects of discomfort during their everyday activities within their neighbourhoods. Girls specifically cited unsafe streets/roads as negative experiences across neighbourhoods besides the urban core. Approximately half of the children from the planned suburb

NEGATIVE EXPERIENCES	Urban Core			General Urban			Planned Suburb			Urban Sprawl		
	total	girls	boys	total	girls	boys	total	girls	boys	total	girls	boys
Physical Activities	5	3	2	2	2	0	3	2	1	1	1	0
Lack of sport fields	0	0	0	0	0	0	2	1	1	0	0	0
Lack of playgrounds	5	3	2	2	2	3	1	1	0	1	1	0
Amenities/Land-uses	12	7	5	22	10	12	15	8	7	20	6	14
Lack of access to basic services	0	5	4	0	0	0	1	1	0	0	0	0
Empty spaces	3	2	1	22	10	12	14	7	7	20	6	14
Nature	1	1	0	11	5	6	24	6	18	7	7	0
Lack of parks	1	1	0	11	5	6	1	1	0	0	0	0
Lack of green areas	0	0	0	0	0	0	23	5	18	7	7	4
Quality of Built Environment	102	66	36	75	48	27	183	108	75	47	32	15
Polluted and unmaintained environments	82	53	30	67	41	26	139	77	62	42	30	12
Crowded places	16	11	5	7	6	1	2	1	1	13	1	2
Visually unpleasant places	4	2	2	1	1	0	42	30	12	2	1	1
Safety and Security	129	62	67	133	72	61	200	98	102	56	37	19
Traffic	22	11	11	34	9	25	38	24	14	4	0	4
Inadequate lighting	1	0	1	0	0	0	11	10	1	6	6	0
Unsafe streets/roads	11	5	6	15	10	5	14	10	3	10	9	1
Presence of dangerous people	71	31	40	52	30	22	67	19	48	8	4	4
Access and Mobility	7	4	3	3	3	0	12	4	8	1	0	0
Street dogs and other dangerous animals	17	11	6	29	20	9	59	31	28	27	18	9
Traffic infringements	31	17	24	21	7	14	46	21	25	6	4	2
Unsafe junctions	5	2	3	5	3	2	2	2	0	6	4	2
Nonpermeable/inacessible places	23	14	9	14	4	10	20	13	7	0	0	0
Lack of sidewalks	2	1	1	2	0	2	17	4	13	0	0	0
Lack of pedestrian crossings/overpasses	1	0	1	0	0	0	7	2	5	0	0	0
Social Ties	0	0	0	0	0	0	0	0	0	2	1	1
Being lonely	0	0	0	0	0	0	0	0	0	2	1	1

Urban Core Neighbourhood

"At the intersection, there is traffic and noise pollution." (Z.E.G., girl)

"There is a big area in Kurtulus Park with trash bins. It smells really bad there most of the time. It's a dirty place, like a total mess." (A.A., boy)

General Urban Neighbourhood

"Crossing the road at this location is challenging due to cars parking on the sidewalks." (S.Ç., girl)

"I dislike walking along these streeta to my school because the sidewalks are narrow." (N.A.A., boy)

Planned Suburb Neighbourhood

"There is noise and air pollution emerging from surrounding industrial areas and dilapidated construction sites." (B.K., boy)

"I dislike visiting the park [because] I have to walk a long way." (Z.E.A., girl)

Urban Sprawl Neighbourhood

"I wish there was extensive tree cover within there empty lots." (D.M.Y., girl)

"There are no adequate sidewalks…" (E.M., boy)

Figure 3. Children's negative experiences of their everyday activity spaces as thematically coded across neighbourhoods along with selected quotes. The sizes of circles and squares represent the frequency (reported in numbers), with larger ones indicating a higher number of mentions.

and the urban core reported interactions with harmful individuals and other incivilities, such as "being bullied by peers," and "people drinking in vacant lands," as well as other nuisances such as "discomforting sounds of smashing glass." Unlike prior studies (van Vliet, 1981), our research found that boys, except in the general urban neighbourhood, perceived the presence of dangerous individuals as a greater barrier to using public spaces than girls. These gender disparities likely arise from different parental practices, such as girls spending more time with their parents (Wridt, 2004), and neighbourhood characteristics that uniquely affect each gender (Morrow, 2006). Consistent with findings from earlier research (van Vliet, 1981), this issue was reported more frequently in the urban core (25.3%) and general urban neighbourhoods (19.7%) compared to the suburban (14.2%) and sprawling areas (5.7%). In Ankara, fear of stray dogs significantly impacted children across all neighbourhoods, forcing both genders to alter their home–school routes to avoid them, a safety concern rarely noted in Western studies.

Within the theme of built environment quality, polluted and unmaintained environments and visually unpleasant places emerged as prominent sub-themes. They were particularly prevalent among children in the planned suburb, accounting for 38.8% of all negative experiences mentioned in this neighbourhood. These children often cited "traffic pollution at heavy junctions" as well as "noise and air pollution emerging from surrounding industrial areas and dilapidated construction sites," a lack of maintenance, and visually unappealing areas, such as "vacant, abandoned sites/plots," as part of their disliked experiences. Girls emphasised the quality of the built environment, particularly poorly maintained environments, more than boys across all neighbourhoods, which contrasts with Porter et al.'s (2021) findings. This concern was most pronounced in the urban sprawl.

While access and mobility emerged as a theme associated with positive experiences only among children in the urban core, it was represented in the negative experiences throughout the full sample. Children noted issues such as poor access/impermeability and heavy traffic as daily concerns, with no notable gender differences. Both boys and girls in the urban core and general urban neighbourhoods reported difficulty crossing roads due to "unsafe pedestrian crossings," "traffic congestions at the junctions," and "traffic accidents at the intersections." Nonpermeable/inaccessible spaces such as "alleys with no through-access," as well as a "lack of pedestrian crossings/overpass" and "narrow or non-existent sidewalks," were also other recurring sub-themes related to access and mobility, except for those living in urban sprawl. These issues related to street design caused children to "avoid visiting the park [because] [they] have to travel a long way" (Z.E.A., a girl from the planned suburb). Considering that our findings on gender-based differences in themes related to unsafe junctions and streets/roads contrast with previous research (Porter et al., 2021), we anticipate that the differences identified between boys and girls in Ankara may be attributed to contextual factors.

Although social ties were not a key theme, "being lonely" was mentioned exclusively by children in the urban sprawl (1.5%), where dispersed, less accessible spaces limit social interaction. These findings support earlier studies (Veitch et al., 2006) that highlight neighbourhood design's role in promoting or hindering children's social opportunities and physical activity.

4.3. Geovisualization of Children's Activity Spaces

The geovisualization (i.e., hot-spot mapping) of children's activity spaces linked with their positive and negative experiences across neighbourhood types is shown in Figure 4. These maps shed light on the spatiality of children's experiences of their local environment, highlighting distinct differences in the geo-spatiality of activity spaces across neighbourhood types.

Consistent with previous research in non-Western contexts (Mizrak et al., 2014), this study found no gender-based territorial differences in the everyday activity spaces of 9–12-year-olds in Ankara, challenging earlier studies (Tezel, 2011; Valentine, 1997) that suggest girls' outdoor activities are restricted by domestic responsibilities and perceived vulnerability. The findings indicate that the same urban locations were linked to children's both positive and negative experiences for the full sample. The coexistence of both positive and negative features in these locations may help explain this dichotomy, supporting earlier findings, such as Zhou et al. (2016), who found that children's play places and "bad" places overlapped in Yantai, China. Children in the suburban and sprawling neighbourhoods typically frequented gardens and playgrounds
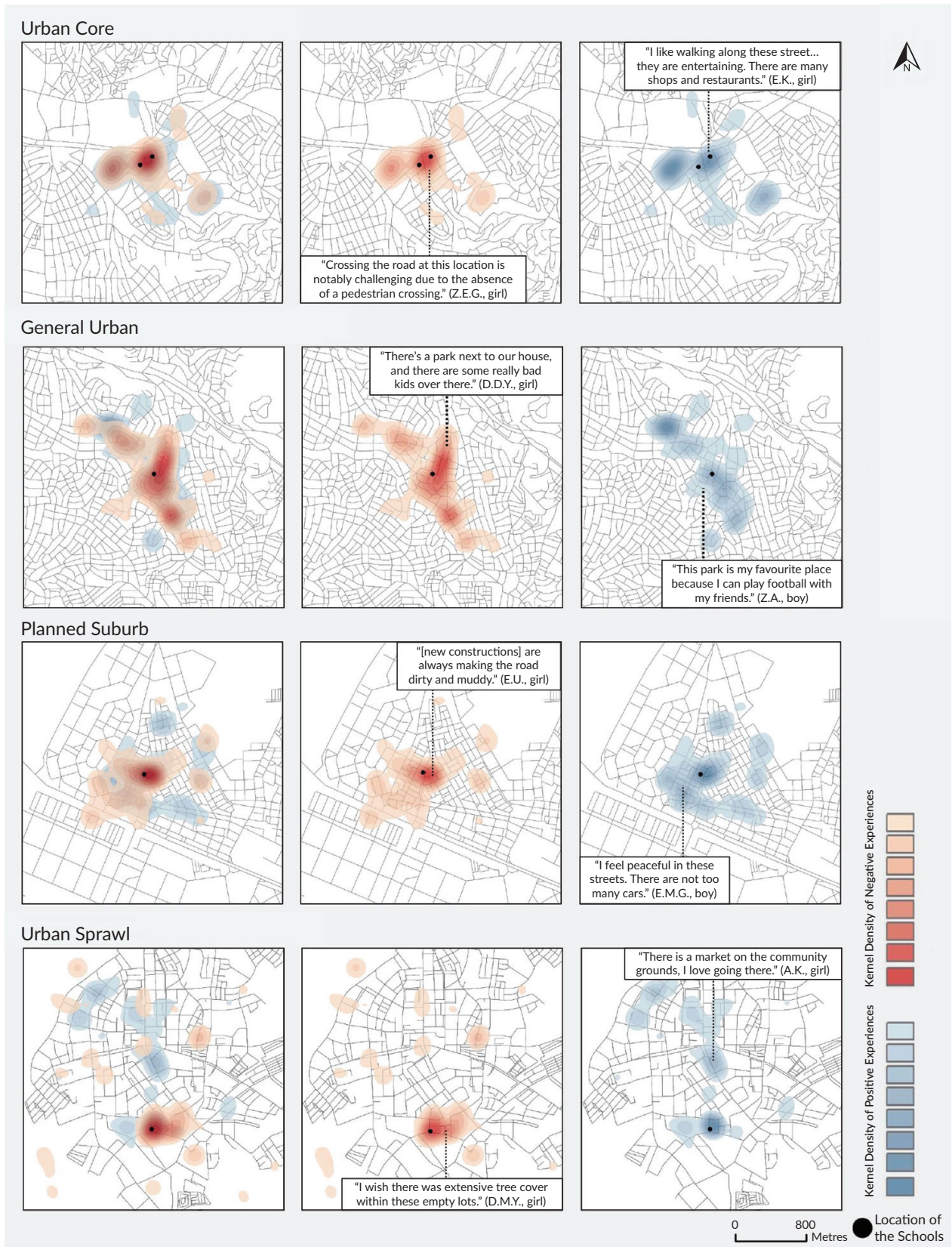
Figure 4. Focus group hot-spot maps based on the frequency of mention: places indicated as "liked" (blue) and "disliked" (red) by children.

within their gated communities and planned residential areas, primarily identifying a shortage of public green spaces, natural areas, or street trees as issues. In contrast, their counterparts in inner-city areas experienced issues with these spaces that were mainly related to personal safety (e.g., "There's a park next to our house, and there are some really bad kids over there. You can see people who look dodgy, and they're smoking at a young age" (D.D.Y., a girl from the general urban), and maintenance (e.g., "There is a big area in Kurtuluş Park with trash bins. It smells really bad there most of the time. It's a dirty place, like a total mess" (A.A., a boy from the urban core). On the other hand, the presence of physical features such as "slopes and hills" as well as "skate rinks" were also liked in these parks.

When these emerging geo-spatial locations were examined in greater detail, the variations in how children used and perceived activity spaces across the four types of neighbourhoods became more apparent, highlighting the role of specific neighbourhood design features in these variations (Figure 5). In the well-connected street network of the urban core neighbourhood, streets were viewed both negatively, due to traffic-related safety concerns, and positively, as vital spaces for children to socialise and be active (Figure 5a). Busy main streets and junctions were generally disliked (e.g., "There's a somewhat excessive flow of cars here, and I'm apprehensive about cycling in that area" (K.T., a boy from the urban core); "Crossing the road at this location is notably challenging due to the absence of a pedestrian crossing. There was even an instance when a car came close to colliding" (Z.E.G., a girl from the urban core). Conversely, the ease of access to destinations was appreciated (e.g., "easy to walk to the bus stop or public transport"). The streets identified by these children for playing/cycling/walking are easily accessible from their surroundings, with some being local high streets and/or pedestrianised green streets. Contrarily, children's physical activity spaces in the urban sprawl were primarily confined to the home context (e.g., gated communities), with schools and adjacent areas serving as the primary locations for playing/cycling/walking (Figure 5b). These children expressed a preference for walking only within their gated communities or neighbourhood parks, voicing concerns about street safety that suggest limited mobility due to the lack of an interconnected street network.
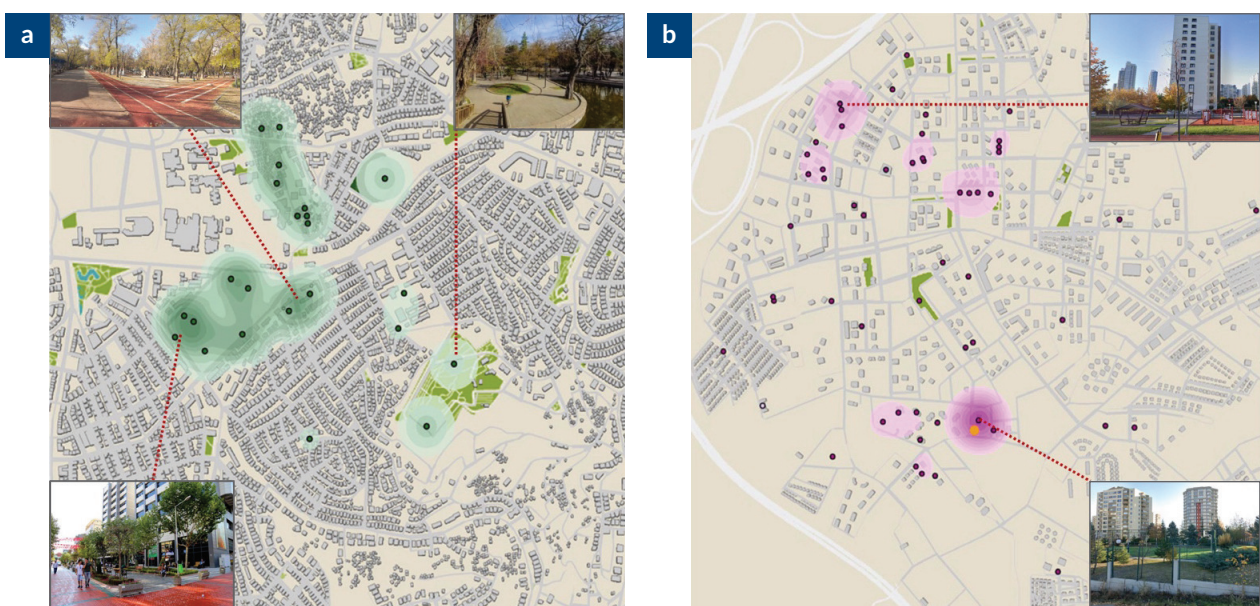
Figure 5. Geovisualization of children's everyday activity spaces related to playing/cycling/walking in the (a) urban core and (b) urban sprawl neighbourhoods.

Figure 6 visualises children's activity spaces across genders, showing no significant differences in the locations of liked places. However, aside from the urban core, disliked places varied by gender across neighbourhoods: Girls reported disliking more distant places in general urban and urban sprawl areas, while boys in the planned suburb noted more problematic places farther from their schools. In the planned suburb, boys reported both positive and negative experiences predominantly in the northeast, likely reflecting the influence of a local residential district.
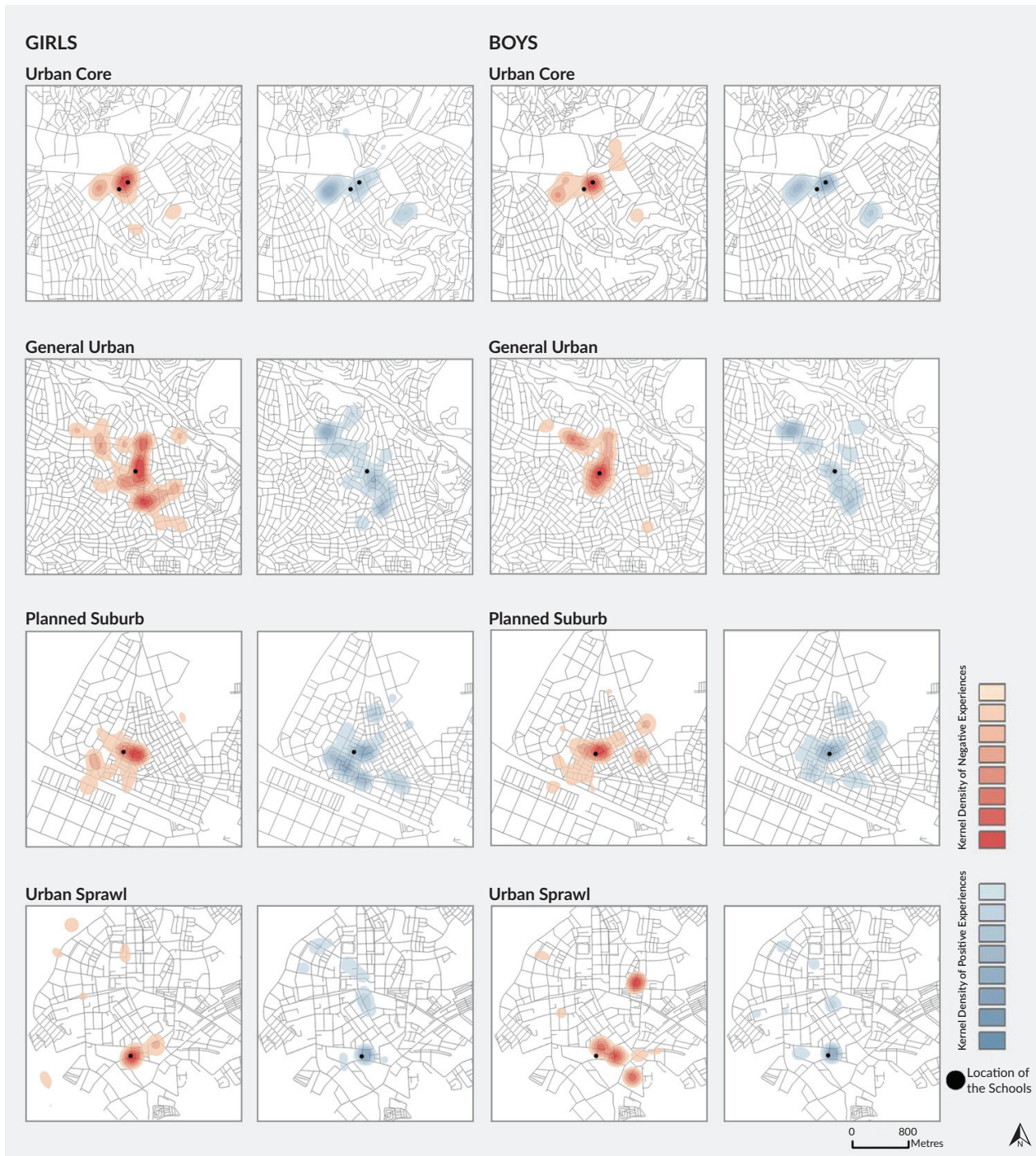
Figure 6. Focus group hot-spot maps based on the frequency of mention: places indicated as "liked" (blue) and "disliked" (red) by girls and boys.

5. Conclusion

This study's objectives were to determine children's activity space experiences across neighbourhood types and genders and to examine how these experiences relate to specific design features. Our analysis of mapping activities revealed that certain neighbourhood design characteristics are likely to influence children's experiences, both positively and negatively, regardless of the geographical setting. For example, while access to commercial amenities and the presence of safe and appealing spaces that provided children with opportunities to play surfaced as popular themes of positive neighbourhood experiences, safety concerns due to a lack of pedestrian-friendly infrastructure along with poor built environment quality (e.g., vacant lands) were barriers to children's engagement with outdoor places. While no significant gender-based differences in safety concerns were observed across contexts, our research found that, apart from the general urban neighbourhood, boys perceived the presence of dangerous individuals as a greater barrier to using public spaces than girls did. Children's positive comments about visiting or playing in parks highlighted their appreciation of green areas. Children across all neighbourhoods and genders enjoyed interacting with their peers in parks and playgrounds. While boys were more likely than girls to mention themes related to physical activities in open public spaces as part of their positive experiences, girls were more likely to cite the quality of the built environment as both positive and negative experiences. They consistently emphasised the need for accessible playgrounds and natural settings across all neighbourhoods. Hence, increasing neighbourhood greenness by developing diverse accessible local green spaces, such as sports fields, parks, and playgrounds, may foster increased opportunities for socialisation and physical activity among children. This is supported by previous studies that report positive associations between open green spaces and physical activity (Tewahade et al., 2019). Specifically, we found that street network design was notably linked to children's both positive and negative experiences. Children cited ease of access and a variety of routes as aspects of their positive daily experiences while impermeable spaces such as alleys without through-access were noted as safety threats.

More importantly, the geovisualization of children's physical activity locations revealed that, while no gender-based differences were observed, certain activities and sub-themes were associated with specific areas across different neighbourhoods. Children in the urban core and general urban neighbourhoods with well-connected street networks that provide multiple route choices and less complex navigation more frequently utilised local outdoor spaces like streets and neighbourhood parks and recognised local shops positively in their daily experiences. In contrast, their counterparts in the planned suburb and sprawling neighbourhood typically used and liked amenities located primarily within immediate home sites. This observation was supported by analysis of thematic data collected by focus groups, which showed that children in urban areas reported a wider range of activity spaces within their neighbourhoods, including those close to their homes, whereas children in peripheral areas reported fewer activity spaces, largely concentrated near their homes. Similar findings have reported limited mobility and a preference for outdoor spaces among children living in settings with low land-use diversity and accessibility (Moran et al., 2017), emphasising the significance of urban form in their daily activities and neighbourhood experiences.

5.1. Implications for Policy and Practice

Apart from its contributions to knowledge, this study also suggests insights for policy and practice as described below.

5.1.1. Urban Form as an Enabler and Barrier of Child-Friendly Neighbourhoods

The geovisualization of children's activity spaces revealed that the same urban locations were associated with both positive and negative experiences. Understanding this spatial overlap can help policymakers create environments where children thrive. Specifically, street connectivity and land-use appear to be essential components in developing child-friendly neighbourhoods. A street network that offers multiple routes and easier navigation would encourage outdoor use. From a design policy perspective, designing street networks that are integrated within their surroundings and require fewer direction changes between home and school can foster positive experiences among children and support their health. This study also highlights the importance of planning policies that prioritise local green spaces such as community gardens, parks, and sports fields to encourage children's outdoor activities. The notable link between neighbourhood greenness and children's daily experiences, especially among girls who often reported a lack of playgrounds and spending more time in green spaces than boys, emphasises the need to improve access to these areas to foster children's health and well-being.

5.1.2. Neighbourhood Design as a Provider of Social Opportunities

In addition to providing physical activity opportunities, child-friendly neighbourhoods are likely to foster social interactions. Our analysis showed that social ties positively influenced children's everyday experiences, especially in the urban core (e.g., "spending time with friends/family"). In contrast, children in urban sprawl reported a lack of social connections because "there is nothing around [my] gated community" (E.U., a girl from the urban sprawl). This difference suggests that more connected urban environments with greater outdoor access may facilitate stronger social interactions, providing children with more opportunities to engage with peers and family in shared spaces. Our findings reveal that, regardless of urban location, children's everyday place experiences are influenced by perceived traffic-related and personal safety risks, although this was more prominent in inner-city (urban core and general urban) neighbourhoods. Therefore, environmental modifications such as installing crosswalks and traffic lights, along with widening sidewalks, particularly on spatially prominent streets, could enhance safety perceptions, reduce negative experiences, and promote social interactions.

5.1.3. General Considerations for Policy and Practice

These implications for designing child-friendly neighbourhoods suggest that local governments should focus on developing context-specific policies sensitive to the specific needs and experiences of children. For instance, in more restrictive settings like suburbs with fewer green spaces and less connected street networks, policies should prioritise minimum zoning and land allocations for a larger proportion of green recreational spaces and accessible streets with diverse uses. Such measures would particularly benefit children who typically have limited access to outdoor spaces. Alternatively, in inner-city settings where safety is paramount, promoting the development of safer streets and alleys (e.g., traffic calming measures and green features) could provide children with increased opportunities to play and spend time outdoors, which in return would help foster strong community ties.

5.2. Limitations of the Study

The study has a number of limitations. First, the small sample size resulting from the in-depth mixed-methods approach adopted and the potential bias in respondent selection (due to the non-probability sampling method employed) limit the generalisation of the findings. For instance, the study excluded children below or above the 9–12 years of age range, as well as those schools whose participation was not approved by the school officials (e.g., due to availability, etc.). Consequently, the results may not be generalizable to all children living in the selected neighbourhoods. Despite this, we suggest that the systematic sampling from schools in different neighbourhoods, combined with the mixed-methods approach, provides a comprehensive method to explore how neighbourhood design may influence children's experiences within their everyday activity spaces. Additionally, the self-reported nature of children's activity spaces might not accurately reflect all of their actual behaviours in these spaces. More precise data collection methods, such as unobtrusive field observations and GPS tracking, may offer deeper insights into specific attributes and behaviours in these environments. Not using place/street audits to quantify the streetscape characteristics could be considered a limitation and future research could utilise environmental audit tools and quantitative methods to better understand the underlying mechanisms of how neighbourhood design impacts children's place experiences. Finally, while our case-study sites include a variety of urban areas, including suburban and urban core, these environments are arguably more walkable than their rural counterparts. Therefore, future research should include a wider geographical reach.

Despite these limitations, this study contributes to the developing field of child-centred urban design by exploring the spatial distribution of children's activity spaces and examining how specific neighbourhood design features influence children's experiences across different urban contexts and genders. Our study provides evidence that children's positive everyday neighbourhood experiences can be supported by modifying the neighbourhood design. Importantly, effective policy development for child-friendly neighbourhoods requires a multi-disciplinary approach that incorporates children's perspectives.

Conflict of Interests
The authors declare no conflict of interests.

Data Availability
The data that support the findings of this study are available from the corresponding author upon request. Due to confidentiality, the data are not publicly available.

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