

Co-Generating Urban Knowledge with Children in Istanbul

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Co-Generating Urban Knowledge with Children in Istanbul: Children as Urban Investigators and Problem Solvers

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Abstract

Children's participation has been recognized as essential in participatory urban planning towards creating child-focused urban environments. However, it remains a challenge for researchers to address children's role in urban planning, particularly in contexts where a culture of participation is missing from everyday practice. The COVID-19 pandemic posed additional challenges in executing participatory research. In this article, we applied a methodology of online artwork elicitations with ten children from Istanbul. From our co-generated research findings, we argue that children are valuable social agents not only in urban planning but also in the fight against urgent and dramatic challenges facing our planet. Children's participation better informs solutions when children guide knowledge generation.

Keywords: children's participation, urban planning, knowledge co-generation, participatory research, digital tools, artwork elicitation, Istanbul

Introduction

Research is increasingly recognizing that children's participation in urban planning is central to creating child-focused urban environments. Participatory urban planning with children has demonstrated that children are capable of analyzing the social and spatial aspects of their urban environments (Chawla & Driskell, 2012; Derr et al., 2013; Derr & Tarantini, 2016; Carroll et al., 2017).

Urban planning research and practice is an adult-centered discipline by its nature. Urban planning professionals desire to shape and understand space as a finite product (Soreanu & Hurducaş, 2016). That finite product is procured through a rational planning process that requires "technocratic language and application of pragmatic and hermeneutic knowledge" (Horelli, 1998, p. 228). This can alienate non-professional groups and citizens of all ages. Reframing urban planning research to adopt a more inclusive stance toward children requires a better understanding of how to approach children methodologically and attitudinally. Additionally, the COVID-19 pandemic has globally challenged participatory qualitative research, and it has become difficult for researchers to conduct fieldwork where a close face-to-face connection is needed. In the face of COVID-19, researchers acted promptly to continue participatory research, often transforming the methodology used to be more online-based (as in Nguyen et al., 2020 and Faircloth et al., 2021).

Including children in research as co-researchers/co-investigators is a way to achieve a high level of collaboration between children and adults (Alderson, 2001). Thus, in this study, we started from the position that creating child-centered participatory processes depends on the ability of adult researchers to stay open to conversations with children (Clark et al., 2003; Clark & Statham, 2005; McLeod, 2008). Due to circumstances introduced by the COVID-19 pandemic, we used an online communication tool (WhatsApp) to collaborate with school-aged children (6-12 years old) living in Istanbul.

Istanbul is a global city that is showing social and spatial deterioration in public spaces under the effect of neoliberal policies (Keyder & Öncü, 1994). Its urban structure under rapid urbanism today provides children with a challenging social and spatial context. In Istanbul, not only are participatory processes scarce, but with children, they are almost absent (Akıllı, 2019; Çakırer Özservet, 2014b). Urban legislation does not support children's participation, ignoring their individuality in society (Ataol et al., 2022). Simultaneously, national participatory urban planning research rarely focused on children's participation (for a limited national context overview, see Çakırer Özservet, 2014a; Arın & Özsoy, 2015; Müderrisoğlu & Gültekin, 2015; Severcan, 2015a, 2015c; Gökmen & Taşçı, 2016). In these studies, scholars reported that children living in Istanbul are impacted by a comprehensive list of urban problems caused by rapid urbanism, such as car and gray (buildings) domination. These urban problems emerge in children's narratives in other global cities worldwide as well, such as Mexico City in Gülgönen and Corona (2015) and Auckland in Egli et al. (2020). Thus, generating urban data with children living in Istanbul as co-investigators, this study both contributes to the local context by filling the research gap, and enriches the international debate on children's participation in decision-making on diverse topics.

In this study, we aim to better understand children's knowledge of urban environments and how they acknowledge and approach the urban challenges they experience in Istanbul. We also test the advantages and drawbacks of using online communication tools for participatory research with children. Drawing on a thematic analysis of children's artwork elicitations through individual online interviews, we address the following questions: (1) How do children understand the neighborhood? (2) What do children value about their urban environment? (3) How do children approach solving the urban challenges they experience?

Children in the City of Istanbul

Istanbul's physical and social appearance today is a product of global neo-liberal policies initially enabled in the 1980s under the theme called "the Turkish experiment with economic liberation" (Keyder & Öncü, 1994, p. 397). Even though it was called the Turkish experiment, these policies led to globalized culture (Çınar et al., 2006). For example, the Turkish housing market responded to the neoliberal transformation of the city with the creation of gated communities in and around the center, following the footsteps of the "fortressing process" of American cities (Blakely & Snyder, 1997). This spatial transformation interrupted daily life by producing patchwork-type urban public spaces between walls (Ataol, 2013). Thus, the "ongoing gating of the city" (Candan & Kolluoğlu, 2008, p. 6) has caused Istanbul to become socially fragmented. People within the gates define urban life outside the gated communities as chaotic and unpleasant due to its socio-cultural heterogeneity (Geniş, 2007). On the other hand, people who are outside the gates create homogenous localities, resulting in "ethno-cultural cleavages" (Keyder & Öncü, 1994, p. 411). Both sides' otherness induces fear and suspicion of each other (Geniş, 2007).

Within the given context of Istanbul, urban planning researchers working with children have explored the effects of the urban pattern of Istanbul today on children's lives. Children's narratives of Istanbul represent the low quality of public spaces, reflecting the domination of cars, construction, and dirt in urban environments where socializing and playing in nature are missing (Çakırer Özservet, 2014a; Severcan, 2015a). This feedback reflects children's exposure to the fact that "[there is] nowhere to play" (Çakırer Özservet, 2014a, p. 167). Simultaneously, playgrounds, as designated play spaces, often lack age-appropriate, safe, and sufficient playing environments (Tandoğan & Ergun, 2013; Çakırer Özservet, 2014a; 2014c; Severcan, 2015a).

On the other hand, children who are not provided with alternatives to playgrounds and must deal with adult-focused urban environments. Tandoğan (2015), for example, describes how the street serves as the alternative space for play in low-income neighborhoods: because car ownership is not high in those communities, cars do not cause a threat, and most children there are less likely to have access to home-based entertainment such as video games, they usually play outside in the street. Çakırer Özservet (2014a) also advocates for streets as they are the places where "[the] child can feel most liberated" (p. 163). Since children living in Istanbul are dependent on their overprotective parents in public spaces (Severcan, 2015b; Tandoğan, 2015), often by default, the street serves as the closest area to the

house where parents can quickly observe their children out the window. Yet, streets are typically not play spaces children would choose over any other (Krishnamurthy & Ataol, 2020). Additionally, children from middle-income households living in gated communities hold relatively more freedom from their parents but still play wherever is available within the borders of the gated community, most likely in spaces in and around streets such as sidewalks (Tandoğan & Ergun, 2013).

Moreover, Severcan (2015a; 2015c) presents a detailed picture of how creating and maintaining child-friendly communities in Istanbul requires children to form social bonds with people living in the same neighborhood. Çakırer Özservet (2014a; 2014c) relays the same through children's criticism of people in their community who are ignorant of childhood. Being in social environments with others appears to be the main reason to be happy and feel safe in a neighborhood, and public spaces are sought to support social activities with friends and family members (Severcan, 2015c). When social activities with other community members and participatory activities related to their neighborhood are facilitated, children feel more attached to their urban environments and their environmental awareness is enhanced (Severcan, 2015c; Çakırer Özservet, 2019).

Methodology

By utilizing Horelli's (1998) approach that encourages children as urban investigators to diagnose the situated context, express themselves, and suggest ideas, our research aimed to co-generate urban knowledge with children to inform urban planning research and practice. We also tested WhatsApp, an online communication tool, for participatory research with children in response to the challenges and opportunities introduced by the COVID-19 pandemic. To achieve co-researching with children and activating children as urban investigators, we started by paying attention to social researchers' (1) attitudinal and (2) methodological choices that play a critical role in creating child-centered participatory processes.

It is a fact that the social role of adult researchers tends to cause unequal power relations in interactions with children; therefore, adult researchers first need to suspend the nature of their social roles (Waksler, 2003). Adult researchers can achieve this by focusing on similarities and reducing dissimilarities with children (Mayall, 2001). Taking on the "least-adult role" provides adult researchers full participation in children's world by suspending "all adult-like characteristics except physical size"; this role advocates for interacting with children in their ways and within their perspectives by accepting children as they come (Mandell, 2003, p. 40).

Secondly, researchers applying the child-centered methodological approach within participatory urban planning research with children commonly collaborate with school-aged children (6-12 years old; Ataol et al., 2019). The methodology follows two common principles: First, participatory processes engage children in a familiar setting. This requires "go[ing] where they are," such as youth centers, instead of inviting them to adult-focused events such as city councils where children may feel uncomfortable (Derr et al., 2013, p. 500). Second, the participatory processes adopt methods that are relevant and exciting to the age group, and these are commonly expressive methods in the context of school-aged children (Ataol et al.,

2019), such as photography (as in Derr et al., 2013), drawing (as in Malone, 2013; Derr & Tarantini, 2016), and internet and mobile applications (as in Horelli & Kaaja, 2002 and Reiersølmoen et al., 2017).

To follow these participatory research principles with children while under the circumstances created by the COVID-19 pandemic, we designed online qualitative exploratory research that utilized artwork elicitation through individual online interviews, reaching school-aged children (6-12 years old) from where they were. After obtaining approval from the ethical board of our institution for conducting this research and for using WhatsApp to collect images, in online interviews, we asked children to investigate their urban environments by taking photos or drawing pictures of places they like and dislike in their neighborhoods and discuss those artworks with us. We offered flexibility to child participants to choose drawing or photo documentation since both are commonly used in participatory urban planning research with school-aged children (Ataol et al., 2019). Child participants actively led online sessions, discussing their artworks and presenting their solutions to urban challenges they experienced. We actively listened to children's narratives on their artworks, embarking on the "least-adult role" defined by Mandell (2003) to maintain equal power relations.

Participant Recruitment and Profiles

In Turkey, 90% of households have access to the internet from home (TUIK, 2020). This represents a high inclusiveness rate for both online recruitment and online application of a research process. Leveraging this, first, we approached parents via groups on Facebook and WhatsApp, in which members gathered around an interest in parks and playgrounds. Later, we had acquaintance meetings with parents who showed interest in our research. Finally, we scheduled another acquaintance meeting with child participants, whose parents agreed on and signed consent forms, to explain the research. In addition, we asked for children's verbal assent and their visual documentation preferences to document their urban environments for the following sessions. By doing so, we employed self-nominated child participants and ended up with a total of ten children forming our sample.

Child investigators who participated in our research were students of primary- and middle-school levels (between 6-12 years old, four male and six female) who were technically competent enough to use the internet and mobile devices for video conferencing and photography. All participants were from the middle-income group based on the mean real-estate values of districts reported by Erginli (2018). They represented two different residential backgrounds: half of the participants lived in a house or an apartment in a gated community, and the rest lived in an apartment in heterogeneous non-gated neighborhoods. All participants were not fully free explorers as they were dependent on their parents in urban environments. Participants presented a broad geographical distribution as they were from different neighborhoods and gated communities across the city. This helped us to capture Istanbul's social and spatial geography. These neighborhoods and gated communities are located in eight different districts of Istanbul: Başakşehir, Gaziosmanpaşa, Güngören, Küçükçekmece, Kadıköy, Kartal, Pendik, and Ümraniye (Figure 1).

Participant 1: female, 6, non-gated community

Participant 2: male, 6, gated community

Participant 3: male, 9, gated community

Participant 4: female, 6, gated community

Participant 5: male, 7, non-gated community

Participant 6: female, 12, non-gated community

Participant 7: female, 7, gated community

Participant 8: male, 10, non-gated community

Participant 9: female, 9, gated community

Participant 10: female, 6, non-gated community

Istanbul

Turkey

Beşiktaş

Kuzuköy

Ümraniye

Kadıköy

Kartal

Pendik

Due to the global pandemic, home-based education and working were the norms in Turkey and the countries where the authors' institutions are located. The home became our setting for the interviews as they provided the required setting of "a neutral and silent place to hold the interview" (Clark et al., 2003, p. 85). We communicated with parents and child participants via the video call feature of WhatsApp and document sharing via WhatsApp messaging. Since WhatsApp does not support screen sharing in video calls, we purposefully utilized the dual camera function of mobile devices: While the front camera was stationed for face-to-face virtual conversations, the display was transferred to the back camera (when it was needed) to address child participants' artworks, which were projected on the adult researcher's laptop screen during the photo-elicitation processes.

We took advantage of utilizing an application on a mobile device to tackle some issues, such as building rapport in a short time and easing the research process for participants. First, we benefited from processing online interviews and data sharing via parents' mobile devices. WhatsApp requires sharing phone numbers, yet we did not collect any contact information for the child participants. Parents controlled communication by being the "gatekeepers" (as defined by Water, 2018, p. 51). Second, data sharing via a mobile device enabled child participants to take photos (a total of 80 photographs) of their urban environments and instantly share them with the adult researcher by using their parents' mobile devices, or parents took photos of drawings (seven drawings in total) made by child participants to share with the adult researcher.

Data Co-Generation Procedure

First, we conducted two pilot studies (two introduction and two artwork-elicitation sessions) to test the research design, especially to “get a feel” for the process with two children, ages 6 and 9 years old (Flewitt, 2014, p. 147). The two pilot studies helped us in checking the eligibility of the research setting and preparing an “interview kit” (a term coined by Cappello (2005), based on suggestions in Ponizovsky-Bergelson et al. (2019; Table 1).

Table 1. Interview kit questions for interview sessions with child participants

		aim
STEP 1 Introduction Session	What is a neighborhood?	To answer RQ#1
	What do you do in your neighborhood?	
	Where do you go in your neighborhood?	
STEP 2 Artwork-Elicitation Session	Why did you take this photo/draw this picture?	To answer RQ#2 and RQ#3
	What would you like to do here?	
	What do you dislike here?	
	What problems do you experience here?	
	How can we solve this problem?	

Finally, the data generation proceeded in two successive steps, and each step consisted of at least one video call session (Table 2). Prior to the second step, we asked the child participants to send us their artworks of places they liked and disliked in their neighborhoods. We offered child participants a choice to join more than one session in the second step if they wanted to share and discuss more artwork, but only two participants chose to do this. Thus, we had 22 sessions with ten child participants. The data generation process took place between December 2020 to March 2021. While introduction sessions lasted between 18 and 25 minutes, artwork-elicitation sessions lasted between 25 and 55 minutes.

Table 2. Data generation overview

		aim	when
STEP 1 Introduction Session	NO PREPARATION TASK FOR PARTICIPANT		
	<ul style="list-style-type: none">• Reminding the timetable, aims, and procedure of the research• Chitchatting about daily life• Discussion about neighborhood	To answer RQ#1	One week after the acquaintance meeting
	STEP 2 Artwork-Elicitation	PREPARATION TASK FOR PARTICIPANT (asked in introduction meeting): sending artworks of the places they like and dislike in their neighborhoods	

Session	<ul style="list-style-type: none"> • Chitchatting about daily life • Going over the introduction session • Discussion about likes/dislikes • Discussion about urban challenges • Discussion about how to solve urban challenges 	To answer RQ#2 and RQ#3	After the participants delivered their artworks and on a preferred day and time
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Analysis

We analyzed the data generated with children through thematic analysis. Through the inductive analysis process at the latent level supported by ATLAS.ti, we followed Braun and Clarke's (2006) framework. We applied open coding to transcribed data; thus, behind the visible face of data, we discovered child participants' context-driven neighborhood portrayals and learned coping mechanisms. Following the emerging patterns, we grouped applied codes and created potential themes to address our research questions. Codes under potential themes were read through and reconsidered in terms of their "accurate representation" in the theme (Braun & Clarke, 2006, p. 91), and re-grouped as needed. Finally, we ended up with six themes, and collected them under three sections in a fashion that replied to our three research questions.

Children's Narratives of Urban Neighborhoods

Children's narratives of urban neighborhoods revealed two specific concepts: neighborhood as an uncertain place outside of the house, and neighborhood as a place outside of the house where negotiation happens. These concepts were shaped by participants' limited (visual and physical) exploratory circles around their homes, more than their residential backgrounds.

Neighborhood: An Uncertain Place Outside of the House

Participants living in an apartment in non-gated community were obligated to have their parents' company outside the house. Thus, they were not free explorers, or their explorations were limited to the closest area around their homes. Accordingly, they framed a neighborhood as the closest area around their apartment buildings. One participant defined a neighborhood as a place limited to the apartments, trees, and streets around her apartment building. Another participant showed her neighborhood with a photo and later elaborated that "[in my neighborhood], there are other buildings and trees" (Figure 2).

Even though participants living in gated communities were relatively free explorers within the gated community walls, their definition of a neighborhood was the unknown place outside the gated community. One participant living in a gated community asked, "Isn't the neighborhood a small, gated community like ours?" and framed her definition of a neighborhood as a place where other buildings were located outside of the walls of her gated community while showing those buildings to the researcher by the window with her mother's mobile phone. Another participant who lived in a gated community also elaborated on her definition of a

neighborhood by stating, "I do not like neighborhoods because it is dangerous out [outside of the gated community]; the garbage man can kidnap kids."

It is apparent in children's narratives that children living in gated communities placed their walled communities in the center of their neighborhoods, and children living in non-gated communities placed their apartment buildings in the center. Yet, regardless of residential background, individual exploration around the center was limited for all, and their knowledge of the neighborhood was built on what they could see from the window of their apartment or what they could not see because of the gated community walls. As a result, participant children defined their neighborhood as an enormous but simultaneously limited place full of "others," based on the eyesight radius from the center.

Figure 2. "This is my neighborhood" (Participant, 7 years old)



Neighborhood: A Place Outside of the House where Negotiation Happens

Even though the neighborhood was an uncertain place, participants drew a rich list of activities they did in their neighborhoods: Playing, biking, skating, walking for exercising, shopping, doing sports, going to school, having a picnic, playing snowball, and so on. The places they visited for those activities mostly went beyond their definition of a neighborhood and beyond their exploratory circles. The common

trend was that the daily activities, such as playing and skating, occurred in close proximity to their houses; yet, the places they were interested in or preferred were reached by public or private transportation and certainly in the company of their parents. For example, one participant interested in playing tennis used the playground in the gated community for daily playing time outside. Still, she needed to be driven to the tennis court. Another participant, who did not like walking, used the closest park for kick-scooter and reached this park by walking. Still, she asked her parents to drive her to another park where she liked socializing with peers. Likewise, another participant liked playing in the park, which was far away, because she could only go there with her mother and they played together. In the park located within her mother's eyesight from their apartment window, she had to play alone, which she did not like.

As seen from the examples, children's preferences and interests play a critical role in the choice of places to visit, regardless of the means of travel and what their neighborhoods provide or not in terms of activities. This trend reveals the negotiation of children with their parents to add places to their parents' repertoire. This negotiation enlarges children's exploration circles around their homes, and the presentations of their preferences formed a collage of separate places inside and outside of the neighborhoods. This patchwork-type place experience makes understanding the children's knowledge about in-between public places, such as streets and sidewalks, challenging. While their narratives (preferences and interests) of places for playing and socializing were certain, their narratives about in-between public places were hidden and uncertain. In other words, when we asked about their experiences of commuting to places by walking, by public transportation, or by car, at first, we did not receive any reply elaborating on this; yet, they were happy to elaborate on the public places as final destinations, such as a park, forest, and playground for play and socializing where the negotiation for access between children and parents is apparent.

What Children Value in Urban Environments

Children's narratives of their positive and negative experiences revealed their values when it comes to the use of public spaces: togetherness, safety, health, and having fun. There are certain elements of the built environments that support these values: green and spacious environments for being together, clean and well-maintained environments for safety and health, and challenging and active environments for having fun. To satisfy these needs, they negotiate use, which introduces another negotiation between children and the built environment to tackle daily urban problems—in addition to their negotiation with their parents to access specific places.

Togetherness = Green + Spacious Environments

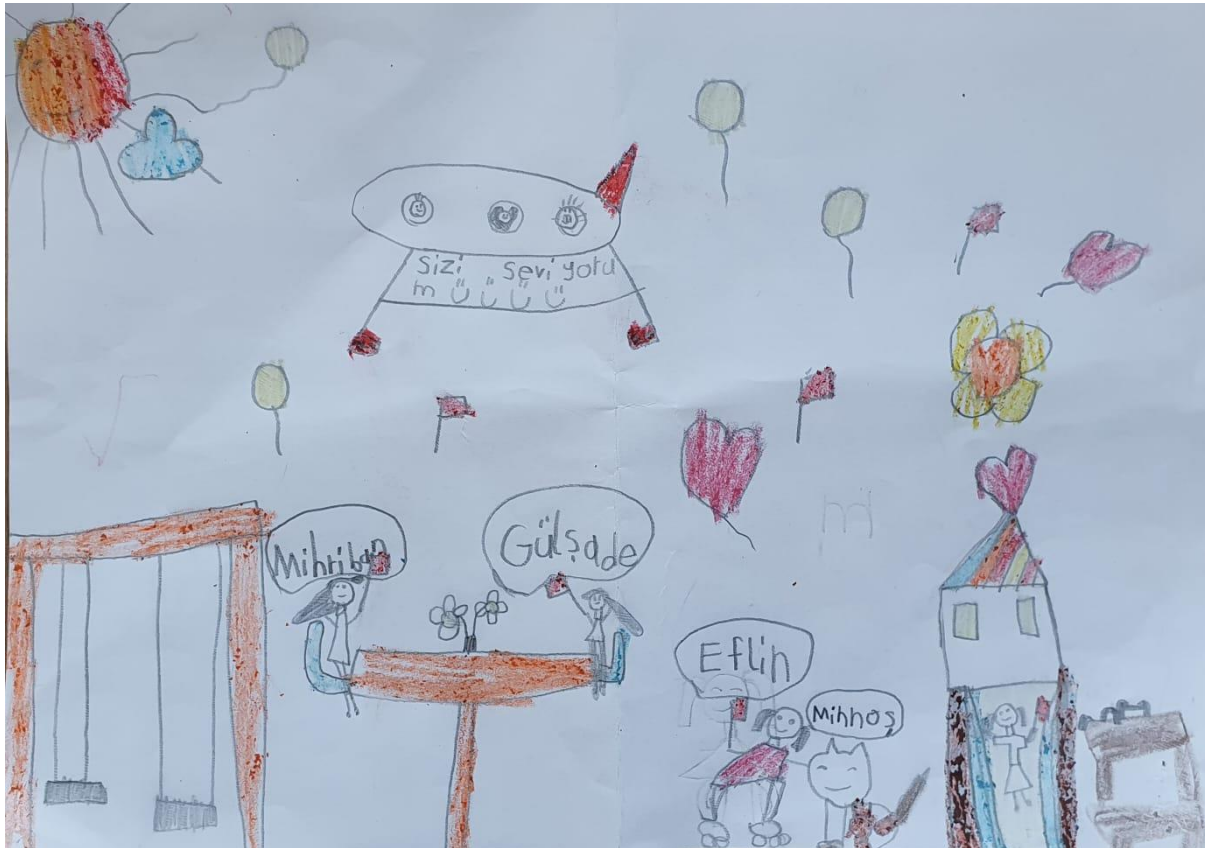
Playing or socializing with peers (friends, cousins, and siblings), parents, and animals (stray or adopted) were the most common activities in participants' daily lives. Togetherness was frequently highlighted and visible in their narratives, with "we" as the most used pronoun. Also, playing or socializing with others was a reason to be outdoors, as participants stated that being outdoors in a spacious and green environment provides activities beneficial for health and social life, such as

having fresh air and being with others in a social environment. For example, the oldest participant (12 years old) who had some exploratory freedom from her parents elaborated on her choice of not going to malls: "My friends and I do not like to go to malls. We are freer here than we are in malls. The park that I go to with my friends, as you can see [by addressing the photos she took], is greener" (Figure 3). Another participant shared her happiness and reason for being outside with her parents in a forest by stating, "We [she and her parents] like to go there because it is spacious. We can have fresh air, eat together, and also visit the open market by the locals there."

Figure 3. A photo of the park she prefers to go to socialize over going to the shopping mall and a photo of a stray animal there (Participant, 12 years old)



Togetherness in green and spacious environments was not limited to being together with their friends and families, but also included being with animals (Figures 3 and 4). When participants focused on the issues, they frequently mentioned the unpleasant living conditions of stray animals and their challenges in urban environments faced by their adopted animals. The challenges they identified focused around uninhabitable environments (e.g., limited nature and dangerous places) for animals, as well as adults' cruel attitude towards animals. One participant explained her challenges in her neighborhood with her adopted dog: "There is limited space for dogs to run and walk. The place for dogs is also dirty because people do not clean after their dogs."

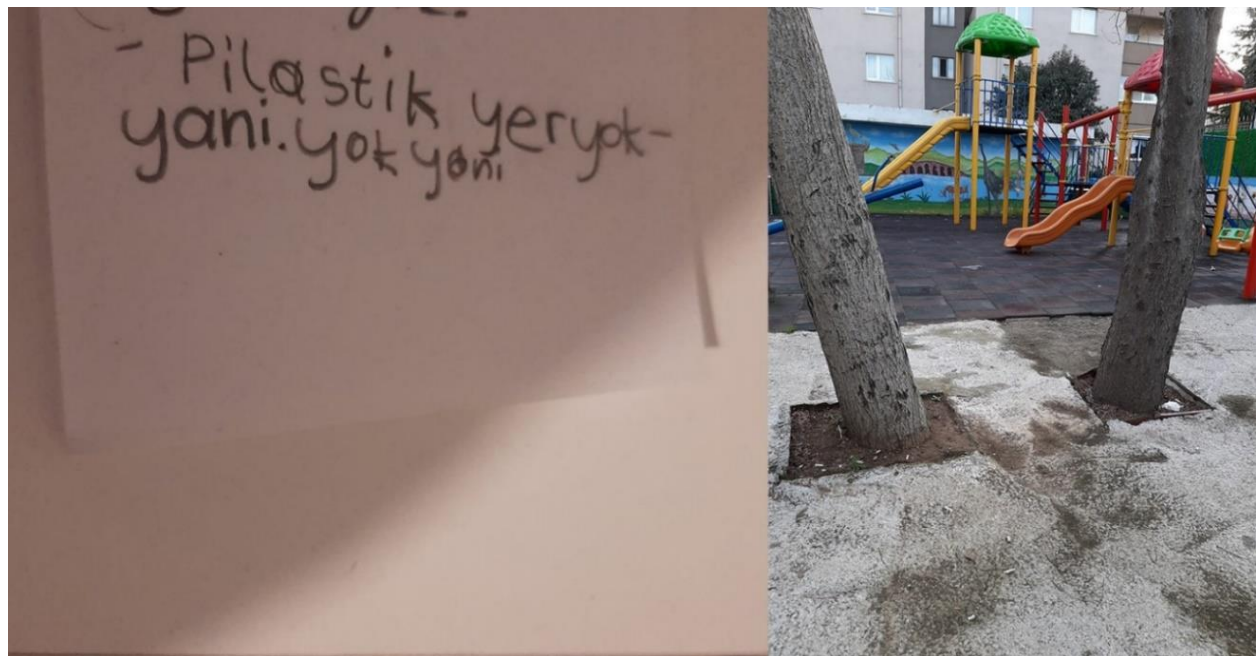
Figure 4. Togetherness with friends and animals (Participant, 6 years old)**Safety and Health = Clean + Well-Maintained Environments**

Participants defined dirty and poorly maintained public spaces and playgrounds as neglected urban environments. Neglected urban environments were considered unhealthy, unsafe, and a disincentive to enjoying time outside. One participant criticized people who throw their trash outside instead of in trash bins: "I am very sorry to see people throwing their trash, not in the bins. It makes a bad smell." Another participant elaborated on why she did not feel safe because of the trash in her neighborhood: "One time, I was kick-scootering, and I stumbled and fell because of trash on the sidewalk." Construction sites were regarded as another reason for the neglected urban environments. One participant stated that "I dislike walking there because of the construction. It is always dirty on the sidewalk and noisy there." Poorly maintained playgrounds also gathered negative comments of being unsafe and not enjoyable: "one-edge broken seesaw is boring because of not being functional," "partly broken soft floor cover in a playground is unsafe because of the concrete underneath," "broken benches are not functional for parents," and "broken plastic slide is unsafe because it is still in use."

Participants addressed car domination and lack of green in their neighborhoods as additional reasons for unsafe and unhealthy environments, making it difficult to bike because of insufficient bike lanes, the cars parking on the sidewalks, and the cars passing so fast; it was challenging to live healthily because of the lack of green,

natural materials in playgrounds and exercise spaces, such as biking and walking. One participant listed her negative experiences picturing her neighborhood: "Cars are everywhere—on the sidewalks and streets. There are no bike lanes. There is no space for fun. Everywhere is full of concrete: buildings and even the floor of the playground. There is no green: no trees and no grass. All toys in the playground are made of plastic. There is no space, so no" (Figure 5). The same participant was so frustrated with a frequent situation that adults told her not to bike next to parked cars just because they thought biking kids created scratches on their cars. However, most participants recognized a symbiosis of existence between people and cars: they showed an acknowledgment that cars are necessary for individuals' lives while listing unpleasant, unhealthy, and unsafe situations caused by motorized vehicles.

Figure 5. "All is plastic. See!" (Participant, 6 years old)



Having Fun = Challenging + Active Environments

In their daily lives, participants were least likely to choose a destination based on its location in terms of proximity to the house or walkability to the place. Rather, places that allowed them to be challenged and be active were determiners in choosing destinations. Biking, skating, and kick scootering were popular activities, and participants preferred parks and playgrounds where these activities were provided. They favored challenging environments, or they created challenges for themselves. One participant said that "[...] the slide on the left is very, very long. It has two stairs reaching the top. I and my cousin race to the top usually. Also, this triangle thing at the back with the webs on it... I cannot use it, but I wish. It is only advised for children older than 12." Another participant elaborated on how she altered a ropeway to make it more challenging and fun: "I tie my kick scooter at the end of the rope so that I can run fast before the jump."

Participants expressed boredom when they could not find a specific element/toy in a playground, when they could not do the activity that they intended to do, or when the playground was childish as a result of it being designed through adult perspective of childhood. For example, one participant criticized the paint and patterns on the walls around the playground she visits, and she stated that “[...] the walls are vibrant, and I would like them to be painted colorful, but there is no need for the paint of flowers and other stuff; maybe one or two colors is enough” (see Figure 5 above).

Problem Solvers for All with All: Creative, Practical, and Innovative

Participants had preferences and choices for destinations; at the same time, they outlined solid discussions on solving issues they experienced in urban environments, such as neglect in the built environment, car and “gray” domination, vulnerable (adopted and stray) animals, and boredom in the built environment. Participants evinced comprehensive problem-solving skills and showcased creative, practical, and innovative—but rarely adventurous—suggestions when asked about their approach to solving these issues. They required other people’s attention and collaboration to solve the urban challenges they experienced. Their suggested solutions for their issues were not limited to making the built environment better—fun, safe, healthy, and livable for themselves, but for everyone—their parents, friends, younger children, and street animals.

Participants approached fixing neglect in the built environment in ordinary and learned ways, yet utilization of technology and design thinking emerged in their solutions. For example, to solve the cleanliness problem in their urban environments, they suggested a cleaning operation with all neighborhood dwellers, having police or neighborhood patrol for cleanliness, and placing CCTV to prevent people from throwing trash around. Simultaneously, they creatively thought that if the elements of public spaces were designed appropriately, for example, fabricating a bench as a big bulky element, it would not be damaged by the people. One participant elaborated, “if the benches in my playground were designed as one long wooden piece on the concrete steps, kids could not have removed them that easily.” Likewise, two participants individually designed a robotic system that collects the trash and separates it for recycling purposes; simultaneously, it warns people who throw their trash outside the bins (Figure 6).

**Figure 6. "You threw the litter on the ground. Don't do it again!"
(Participant, 6 years old)**



As a solution to car and "gray" domination of urban environments, participants agreed on limiting but not removing the spaces for cars, but creating designated parking areas for cars, to leave more space for biking and skating. They suggested more nature—fruit trees, berry bushes, and grass for playing, rolling, and running over (Figure 7)—creatively through planting operations with other kids. Participants required more bumps, traffic lights, and pedestrian crossings on the streets for everyone's safety. One participant adventurously but creatively suggested a bridge over the streets on which kids and animals could safely walk. More green spaces were also imagined for animals as the improperness of urban environments and people's cruel attitudes towards animals were highlighted by participants. Participants approached these issues through the creation of sympathy for animals: warning people who are cruel to animals, creating food stations for stray animals, and keeping them safe in nature.

Image 7. “My imaginary neighborhood has more space for biking and playing, and it is a habitat for more trees” (Participant, 6 years old)



When they searched for solutions addressing the boredom of public spaces, they came up with creative ideas: combining all the fun elements/toys in one playground, and a street or island designed only for children. Even in the street or a playground, the most wanted elements were climbing and swinging parkours and trampolines that afford climbing and jumping. Most participants criticized their most visited playgrounds, which did not have any of those elements. One participant, who drew a picture of their most favored playground, suggested a special street for children:

There is a street close to our apartment. Kids play there. I imagined that that street could be converted into a special street only for children. It would be free from cars. It would have a sand and ball pit, maybe a climbing wall, and benches to sit together. There are already volleyball courts next to this street. My older sister plays volleyball with her friends.

Discussion

Our results show that in Istanbul, children's spatial knowledge of urban neighborhoods is fragmented, reflecting the city's spatial and social polarization (Keyder & Öncü, 1994; Geniş, 2007; Candan & Kolluoğlu, 2008). For children living in gated communities, the neighborhood is perceived to be the space outside of the

walls of the community, and they dissociate their community from the broader neighborhood, regarding them as others and sources of suspicion. It is apparent that this approach to defining neighborhoods inherits the results of social polarization defined by Geniş (2007). By comparison, children living in non-gated communities perceived the neighborhood to be outside of their apartment buildings, reflecting the otherness in their references of limited exploratory circles around the building, even though there is a continuity between the building and neighborhood. However, for all of the children, the neighborhood represented an uncertain place housing “others” even though children’s social attributions to public spaces break the fragmented pattern of their exploratory circles and extend their narrative on urban environments.

On the one hand, our findings concerning children’s creative, practical and innovative solutions to urban challenges, which are not different but more empathetic than solutions that adult stakeholders would suggest, highlight the criticality of equal inclusion of children in participatory urban planning. That they suggested highly competent solutions supports the fact that children are highly capable of analyzing the social and spatial aspects of their urban environment (Chawla & Driskell, 2012; Derr et al., 2013; Derr & Tarantini, 2016; Carroll et al., 2017).

On the other hand, our findings concerning children’s socio-spatial urban knowledge complement and extend the work of Tandoğan and Ergun (2013), Çakırer Özservet (2014a; 2014c), and Severcan (2015a; 2015c) in Istanbul. These scholars presented children’s need for specific social and spatial aspects of neighborhoods, especially the need for fun, spacious, and safe play spaces, and embracement by their communities. Similarly, we found that children in Istanbul see public spaces as a way to pursue togetherness, safety, health, and fun. However, given the decaying socio-spatial pattern of Istanbul, to pursue these values, children need to engage in negotiations with the built environment itself to enable its use, or with their parents who can enable access to other types of public spaces. That children negotiate use and access to urban environments shows that they master their way around the city and have learned ways to tackle daily urban problems; they created a coping mechanism. This represents their understanding of urban environments as a place of ongoing negotiations and alterations, not as a finite product, as acknowledged by urban planning and design professionals relayed by Soreanu and Hurducaş (2016). Further, children’s alterations do not touch streets as everyday places, unlike the claims of Çakırer Özservet (2014a) and Tandoğan (2015); streets between public places are invisible in children’s narratives because the spatial exploration of children does not involve streets as they were usually driven to everyday places like school, park, and playground.

Child participants were enthusiastic to talk to adult researchers and about their artworks for more extended periods or in more than one artwork elicitation session. They also showed leadership in interviews guided by their lists of urban challenges. Our experience of co-researching with children supports the fact that children, who become active in collaboration, gain environmental awareness when they are

involved in research as investigators of urban environments (Severcan, 2015c; Ford & Campell, 2018; Water, 2018).

During a time when in-person interaction was impossible due to the COVID-19 pandemic, utilizing digital tools to facilitate online interviews not only enabled collaborative research but also eased several procedures of participatory processes. Utilizing a mobile application to facilitate online meetings and data (photos and drawings) sharing through caregivers' mobile phones eased building rapport between adult researchers and parents, as we did not collect any contact information from the child participants. Additionally, data sharing via a mobile application eased the tasks of participants and parents during the process and encouraged child participants to take more photos, as evidenced in the total amount of artwork received.

Moreover, our experience with a digital communication tool in participatory research with children suggests a way of perfecting Mandell's (2003) "least-adult role" by suspending all adult-like characteristics, including our physical size. We confirm that the least-adult role, enhanced by utilizing a digital communication tool, minimizes unequal power relations and facilitates a high level of collaboration. This finding is critical as these are fundamental in research with children, as indicated by Alderson (2001), Mayall (2001), and Waksler (2003). Finally, we confirm the fact that the child-centered approach to researching with children enhances data generation if the methods of the child-centered approach are flexibility and relevant (as collectively represented by the methodological choices of Horelli and Kaaja, 2002; Derr et al., 2013; Reiersølmoen et al., 2017).

Conclusion

As urban planning practice and research globally move forward towards a collaborative model, there is a belated need to revisit and challenge conceptualizations in rational urban planning processes. This research used a child-centered approach to co-generate data with children in Istanbul, as urban investigators, through online interviews utilizing the artwork-elicitation method. By doing so, we sought to understand children's knowledge of urban environments and how they acknowledge and approach the urban challenges they experience in a global city that neoliberal policies have socially and spatially shaped.

We met children who are resilient in dealing with the decaying socio-spatial pattern of Istanbul, aware of the urban challenges they experience, and can generate feasible solutions when prompted. Their solutions, such as incorporating more nature and using existing technology in garbage management and recycling, highlight obvious approaches nations should adopt in the ongoing fight against climate change. This distinguishes not only children's role in planning the cities for better urban life but also their critical role in the fight against the urgent and dramatic challenges facing our planet. Besides, children's participation better informs, especially when they guide knowledge generation and a child-centered approach guides adult researchers. Therefore, this research supports policy change leading to mainstreaming children's participation in decision-making processes

regarding urban living environments and our planet through the use of child-centered approaches.

This research is limited in its small number of participants situated in a particular city, even though the narratives of the children reported here were sufficient to address research questions. Also, this research did not indicate differences in children's urban knowledge or approaches to urban challenges according to gender. Future research could benefit from a bigger participant population to better understand the lives of children living in Istanbul with different backgrounds. The urban problems that children face in Istanbul are not unique, as children's experience in Istanbul mirrors other global cities, such as Mexico City and Auckland. Yet, future studies could explore children's understanding of their urban environment through a child-centered approach in other global cities under similar spatial and social contexts of neo-liberal policies and compare them with the findings in Istanbul. This comparison would reveal not only the shared and urgent global issues but also accommodate enhancing methodology in participatory research with children. Through this, "How do future collaborations better support children's participation towards creating better futures?" can be better addressed.

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