Universitat Autònoma de Barcelona

CHILDREN'S SOCIO-NATURES:
The production of the Child Friendly City and its implications for health, wellbeing, and governance

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Ph.D. Dissertation

Supervisors: Dr. Isabelle Anguelovski and Dr. James J.T. Connolly

Academic tutor: Dr. Isabelle Anguelovski

Ph.D. Program in Environmental Science and Technology

Institut de Ciència i Tecnologia Ambientals (ICTA)

Universitat Autònoma de Barcelona (UAB)

Hospital del Mar-Medical Research Institute (IMIM)

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Universitat Autònoma de Barcelona

ICTA Institut de Ciència i Tecnologia Ambientals-UAB

BCNUEJ Barcelona Laboratory for Urban Environmental Justice and Sustainability

IMIM Parc de Salut MAR Institut Hospital del Mar

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Carmen Pérez del Pulgar Frowein [carmenppulgar@gmail.com], Universitat Autònoma de Barcelona, 2021

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Affiliations of Ph.D. supervisors and academic tutor:

Prof. Isabelle Anguelovski:

Institute of Environmental Science and Technology (ICTA), Univesitat Autònoma de Barcelona (UAB), Barcelona, Spain

IMIM (Hospital del Mar Medical Research Institute), Barcelona, Spain

ICREA (Institució Catalana de Recerca i Estudis Avançats), Barcelona, Spain

Prof. James J.T. Connolly:

School of Community and Regional Planning, University of British Columbia, Vancouver, Canada

Institute of Environmental Science and Technology (ICTA), Univesitat Autònoma de Barcelona (UAB), Barcelona, Spain

IMIM (Hospital del Mar Medical Research Institute), Barcelona, Spain

Note: U.S. spelling is used in this work

A mi padre, a mi madre, a mis hermanos y a Giacomo

CONTENTS

"It does not suffice to change the world. We do that anyway. And to a large extent that happens even without our involvement. In addition we have to interpret this change. Precisely in order to change it. So that the world does not change without us. And ultimately into a world without us."

Anders. G. 1956 The Outdatedness of Human Beings

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The years of development of the thesis have been years of profound transformation for me. I cannot unlink it from how my life, my way of thinking and seeing the world and my relationships have changed. I started feeling small and incapable and I finish this stage with firm feet more capable, slightly more mature, and thinking I am heading into a direction that makes sense to me and others. Also, with a strong addiction to coffee and chocolate.

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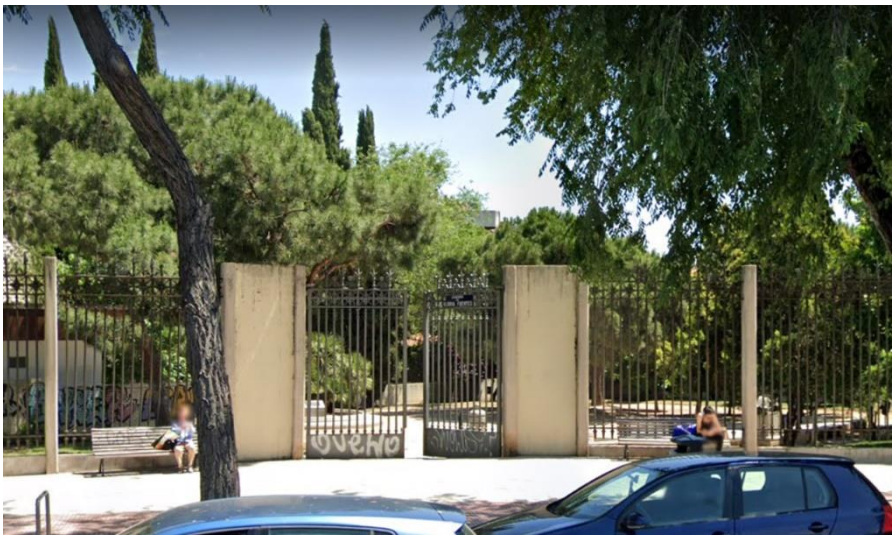
Preface

I was born in Madrid in 1988 in an upper-middle class neighborhood called Chamartín. I don't remember walking around the city alone before I was 11-12 years old, but I do remember doing so from then on. I remember the enthusiasm of taking the subway or walking through the city center. I remember being always struck by the number of vacant lots in the city center. During my adolescence they started to fill.



Picture of my childhood playground park

There were two playgrounds/parks near my house. One of them, at about 300 meters from my house, is where one of my brothers and I used to go to play every afternoon after having a snack. The most common users were the children who played there and a group of alcoholics and junkies who used it in the morning-it was the 90's in Madrid, that was normal-. I remember once arriving and seeing the group dancing naked and seemingly enjoying themselves, despite their gaunt faces. That afternoon we played in one part of the park and they stayed in another part. I didn't know how you got addicted but putting together the stories that surrounded me I knew that I had to say no to candy and cigarettes and navigated with this information an otherwise pleasant world. My playground-park was the best one and also the one I got. There was a swing, a slide, a seesaw, a fountain, and some trees. Mothers and caregivers sat eating sunflower seeds around a table. We children played alone until dinner time. As a teenager I kept going there. It was the place to hide and read books, smoke cigarettes, kiss, and do “botellón”.

The origin of this dissertation is not this memory, but probably it is one of the sources of my astonishment at the social alarmism around children's spaces and its essentialization within the framework of urban sustainability and Child Friendly Cities (CFC) agendas. Originally interested in the social space of the city, urban sustainability and environmental justice I never imagined ending up writing a thesis about child friendly cities. But a sense of discomfort with the

naiveness and plea to emotion of the framings of children in urban sustainability agendas sparked my interest. The framing seemed to disqualify the not-so-green and pristine childhood that I remembered and shared with many other once urban children. It also overestimated some childhoods that I had never encountered.

My very selective childhood memory does not aim at idealizing Madrid in the 1990s, a city crossed by inequality, abandonment, drug addiction and lack of investment which I experienced from a privileged position in a park in a high-income neighborhood. But it's a memory that kept coming back to me while writing the dissertation. From my point of view as a child there was no reason to be scandalized. A difference between "them" and "us" was transmitted to us children, but not presented as threatening. I like to believe that the park was a place of encounter where many of the dynamics and inequalities of the neighborhood collided either in shifts or at overlapping times. It was not a place designed to be cohesive, pristine, creative or child and/or community friendly. But it was.

I have ended up embracing what created discomfort. I've come to understand that there is no point in arguing against the advocacy to create urban sustainable shelters for children in the city. After all, it is the children who are going to inherit the consequences of a world that we adult humans have altered through our greed and exploitative anthropocentric desires. But it is urgent to more critically examine for which children these agendas are being implemented if an inequitable "sustainable child friendly city" only for privileged children is to be mitigated.

Abstract

Since the early 2000s, families with children are increasingly following broader trends toward "return" to the city together with investment capital and higher income residents. Almost half of the world's children now live in urban areas, yet research continues to identify cities as noxious environments for children in many aspects. Cities tend to lack access to beneficial socio-environmental conditions and present greater exposure to environmental harms, factors that have been shown to negatively affect human health, especially during the first years of human life during childhood.

In this context, cities in the Global North have increasingly embraced a set of urban policies and spatial interventions aimed at improving wellbeing and making child and family friendly urban cores under the loose umbrella of sustainable Child Friendly Cities (CFC). Nevertheless, these programs and urban interventions operate within a broader context of neoliberal urbanization that exacerbate processes of gentrification, commodification, displacement, environmental privilege, or inequitable exposure to environmental issues or amenities on the basis of social privilege.

This thesis attempts to explore these tensions – between unequal and neoliberalized urban environments as socio-environmental threats and beneficial spaces of wellbeing for children – by addressing two broad questions: To what extent and how are CFC initiatives reorganizing urban environments, and with which impacts on children's health and wellbeing? What are the potential inequities that have emerged or become consolidated in the distribution of these benefits/impacts in the context of neoliberal urbanization?

My results show that the implementation of new material child friendly, sustainable and play amenities is a necessary although not sufficient condition to address social, environmental and health inequities among urban children. Rather this dissertation points at the need to pay attention to a broader set of infrastructures that sustain children's wellbeing and care in cities, beyond -although also including - child friendly ad hoc spaces of play. I have put forward an understanding of the CFCs expressive of the formation of socio-natures in cities, where the parts that come together within the CFC agenda – the child, children's play structures, and natural spaces in the city – are not distinct, but rather comprised of a co-dependent set of meanings that can lead to health and wellbeing outcomes or not, for some groups. On the basis of these findings, several implications for urban/landscape planning, management and decision-making are drawn, including the prioritization for equity concerns of accounting for the justice of the social and political processes of production of child friendly socio natures and the prevention-through policy making - of unexpected outcomes that might limit the benefit of these agendas for some groups.

Resumen

Desde principios de la década de 2000, las familias con niñxs están volviendo a la ciudad junto con el capital de inversión y residentes de mayores ingresos. Casi la mitad de lx niñxs del mundo viven en áreas urbanas, sin embargo, la investigación continúa identificando las ciudades como entornos nocivos para lx niñxs en muchos aspectos. Las ciudades tienden a carecer de acceso a condiciones socioambientales beneficiosas y presentan una mayor exposición a daños ambientales, factores que se ha demostrado que afectan negativamente la salud humana, especialmente durante los primeros años de vida humana - durante la infancia.

En este contexto, las ciudades del Norte Global han adoptado cada vez más un conjunto de políticas urbanas e intervenciones espaciales destinadas a mejorar el bienestar y hacer núcleos urbanos favorables para lx niñxs y las familias bajo el lema de Ciudades Amigas de la Infancia (CAI) y sostenibles. Sin embargo, estos programas e intervenciones urbanas operan dentro de un contexto más amplio de urbanización neoliberal que exacerba los procesos de gentrificación, mercantilización, desplazamiento, privilegio ambiental o exposición inequitativa a problemas o comodidades ambientales sobre la base del privilegio social.

Esta tesis intenta explorar estas tensiones --entre entornos urbanos desiguales y neoliberalizados como amenazas socioambientales y espacios beneficiosos de bienestar para lx niñxs-- abordando dos preguntas amplias: ¿En qué medida y cómo las iniciativas de CAI están reorganizando los entornos urbanos y con qué impactos sobre salud y bienestar de lx niñxs? ¿Cuáles son las posibles inequidades que han surgido o se han consolidado en la distribución de estos beneficios / impactos en el contexto de la urbanización neoliberal?

Mis resultados muestran que la implementación de nuevos espacios de juego, sostenibles y amigables con la infancia son una condición necesaria, aunque no suficiente, para abordar las inequidades sociales, ambientales y de salud entre lxs niñxs urbanos. Más bien, esta disertación apunta a la necesidad de prestar atención a un conjunto más amplio de infraestructuras que sustentan el bienestar y el cuidado de lx niñxs en las ciudades, más allá, aunque también incluyen, espacios de juego ad hoc adaptados a lxs niñxs. He presentado una comprensión de los CAI que expresa la formación de socio-naturalalezas en las ciudades, donde las partes que se unen dentro de la agenda de CAI – el/la niñx, las estructuras de juego de lxs niñxs y los espacios naturales en la ciudad - no son distintas, sino más bien un conjunto co-dependiente de significados que pueden conducir o no a resultados de salud y bienestar, para algunos grupos. Sobre la base de estos hallazgos, se extraen varias implicaciones para la planificación, gestión y toma de decisiones urbanas / paisajísticas, incluida la priorización de las preocupaciones de equidad y de tener en cuenta la justicia de los procesos sociales y políticos de producción de socio-naturalezas favorables a la infancia y la prevención -a través de la formulación de políticas - de resultados inesperados que podrían limitar el beneficio de estas agendas para algunos grupos.

Chapter I- Introduction and research objectives

1.1. Background and motivation

Since the early 2000s, cities in the Global North have increasingly embraced a set of urban policies and spatial interventions aimed at improving wellbeing and making child and family friendly urban cores under the loose umbrella of sustainable Child Friendly Cities (CFC) (van Vliet & Karsten, 2015). Following broader trends toward "return" of investment capital and higher income residents to the city (Smith, 1979), families themselves are increasingly returning to or staying in the city after having children. Almost half of the world's children now live in urban areas and, although the situation of children differs across high and low income countries, the United Nations and other international organizations acknowledge the urgency to meet urban children's needs, alleviate the detrimental impacts of urbanization on children and their communities, and support an ecologically sustainable future (UNICEF, 2012) through initiatives such as UNICEF's active sustainable CFC program launched in 1997.

Although urban planners' commitment to children living in high income/Global North countries is not new (Burkhalter, 2016 argues that its predominantly an early 20th century phenomenon), attention to children in these cities had been largely neglected in the years between the 1950s suburbanization and the recent push for CFC initiatives (Lilius, 2019). Following WWII, suburbs became increasingly represented as the proper place for childhood and families for their quietness and nature-like environments (Fishman, 1987; Karsten, 2015; Lilius, 2019). In parallel, large disinvestments in inner cities' public spaces, the commercialization of children's (indoor) play spaces, and the widespread motorization of the city resulted in the deterioration of children's outdoor urban environments and limited the possibilities for children to engage with the city (Hart, 1979; Katz, 2001; Low & Smith, 2006; Lynch, 1977; Tonucci, 1997; Valentine, 1997; van Vliet & Karsten, 2015; Wridt, 2004).

Research on urban children continues to identify cities as noxious environments for children in many aspects. Cities tend to lack access to beneficial socio-environmental conditions (Cutter-Mackenzie et al., 2019; Formoso et al., 2010) and the exposure to environmental harms such as deteriorated urban environments, pollutants, or pathogens have been shown to negatively affect children's health, especially during the first years of human life (Gascon et al., 2016; N. Lee, 2013). Urban children are facing unprecedented high prevalence levels of childhood respiratory diseases (Tischer et al., 2017), overweight status and obesity (Di Cesare et al., 2019) and mental disorders (Amoly et al., 2014; Flies et al., 2019). Such impacts are particularly acute because of children's greater plasticity (Villanueva et al., 2016), and because of how detrimental

environmental conditions undermine children's development and later adult life (Hossin et al., 2020). Built environmental and socio-economic neighborhood characteristics related to the concentration of disadvantaged conditions (Kohen et al., 2008; Villanueva et al., 2016), such as poverty and unemployment rates (Lange et al., 2011), safety (Burdette & Whitaker, 2004; Lovasi et al., 2013) or living in poor housing conditions (Christian et al., 2015; Schüle et al., 2016), have significant impact on children's wellbeing and development.

These detrimental social and environmental conditions as well as their associated health harms or benefits are inequitably distributed in many cities, hitting lower income and racialized children the hardest and producing urban childhood environmental and health justice issues (Anguelovski, 2013; Kamel et al., 2014; McCarthy et al., 2017; Perez-del-Pulgar et al., 2020; Rigolon & Flohr, 2014; Strife & Downey, 2009; Vaughan et al., 2013). Research has found disparities in playground and park availability, features, characteristics and quality by income, ethnicity, and race. For instance, in Denver, Colorado, low income neighborhoods have lower access to parks with play amenities and with high levels of intimacy than high-income neighborhoods (Rigolon & Flohr, 2014). Some research found no significant disparities in playground or park availability in other cities, but in lower quality (Vaughan et al., 2013) and more safety and park incivilities (Hughey et al., 2016; Kamel et al., 2014; Vaughan et al., 2013) affecting disadvantaged neighborhoods disproportionately.

Yet, growing evidence reveals the health and wellbeing benefits of children's access to outdoor urban environments, such as green spaces (Aggio et al., 2015; Chawla, 2015; Cilluffo et al., 2018; Sanders et al., 2015; Tischer et al., 2017), playgrounds (Hughey et al., 2016; McCarthy et al., 2017) and sport fields (Lange et al., 2011). Engagement with green spaces is furthermore related with children's environmental competence, biophilia, sense of connectedness and empathy with the more-than-human world (Kellert, 2006; Mayer et al., 2009; Sobko et al., 2018). Early connections with natural spaces are also a predictor of a person's future degree of devotion to environmental stewardship (Broom, 2017; Chawla, 2007; Derr et al., 2017; Kals et al., 1999). In essence, the preponderance of evidence supporting a push toward the CFC sees investing in childhood as a means for positive transformation of society, with better overall health and environmental outcomes.

However, the means by which urban residents actually choose to invest in childhood is, in reality, affected by on-the-ground conditions in cities. Many urban families limit or control children's outdoor play, exploration of urban environments, and participation in the city (Malone, 2018). One consequence of this trend is that children are increasingly engaged in

formal or institutionalized school or in adult-organized activities (Holloway & Pimlott-Wilson, 2018) that constrain their ability to autonomously and more informally explore urban environments. Some research finds that in previous generations children in many high income cities were more likely than today to freely engage with their city, participate in neighborhood activities, use public parks and playgrounds or play in the streets, and build relations with places and people (Malone, 2007; C. Ward, 1978; Wridt, 2004). Such trends undermine children's engagement in so-called "free play" and what child psychologists and play workers value as a much more child-owned approach to growing up in urban environments (Holt et al., 2015; Malone, 2007; D. Wood, 1977). In sum, as it is actually rolled out, the child friendly city is heavily impacted by the extent to which children's everyday spaces and activities are subjected to the middle class discourse of upward mobility through investment in the child as a means of transformation of the self rather than society (Donner, 2017; Katz, 2008; Miggelbrink, 2020).

In the 1980s, the relation between societal change and investment in children's environments was at the center of a dialogue between sustainable development and children's rights[1] and wellbeing advocates. This dialogue permeated sustainability planning, on the one hand, and children rights' agendas on the other hand (Malone, 2006; Nations, 1989; United Nations, 1987). Since then, most of the CFC programs have identified children's wellbeing, healthy environments, good governance and sustainable development as interrelated priorities (UNICEF, 1997). In the most recent Sustainable Development Goals (SDG), especially the SDG 11 that aims to make cities more inclusive, safe, resilient and sustainable (the first SDG with an exclusively urban focus) and the New Urban Agenda (UN Habitat III), the attainment of sustainable urban spaces is framed as intertwined with equity, health and wellbeing goals for all, including children (Caprotti et al., 2017; United Nations, 2017).

The connection with sustainability that began in the 1980s has linked the understanding that children are those most likely to be impacted by the demise of the planet, climate change, and its related environmental extreme events (e.g., droughts, flooding, or heatwaves) with efforts to form present and future refuges from the Anthropocene (S. Bartlett, 2008). Today, these refuges support urban children by enhancing urban outdoor environments, improving recreational spaces and green spaces, controlling traffic, reducing the risks to climate change with the vulnerability of children in mind and tackling young people's alienation to their environments. In places such as Barcelona, initiatives include street pacification around schools, climate refuges in school environments (Baró et al., 2021), child-friendly green spaces, or urban

[1] UN Convention on the Rights of the Child 1989

renaturing programs (Ecologia Urbanisme i Mobilitat et al., 2019). In Amsterdam, initiatives include the temporary use of derelict sites for playgrounds, an ambitious schoolgrounds regeneration strategy, and plenty of new permanent playgrounds (Daan et al., 2019).

These interventions operate within a broader context of the transformation of urban space as a result of planetary urbanization, defined as the latest configuration of a series of market disciplined projects that have been reshaping the capitalist urban fabric since the global economic crisis of the 1970s and that affects both city spaces –concentrated urbanization-- and non-city spaces – extended urbanization (Brenner, 2019). Across the variegated terrain of city spaces (or, in planetary urbanization terms, concentrated urbanization) there is an increasing commitment to neoliberal, market- disciplined, growth-centric, aggressively financialized models of urban development and politically guided intensification of commodification, and (private) accumulation through (public) dispossession implemented through institutional transformation, realignment of hegemonic interests, and emergent forms of subjectivity (Brenner et al., 2010b). Combined with new rounds of austerity governance, urban neoliberalism has been fracturing the public infrastructures of social reproduction – including child centered spaces and infrastructures – for decades (Brenner, 2019). Given its fundamental presence in the process of shaping cities, CFC agendas cannot be understood outside of this broader context.

This thesis attempts to explore these tensions – between unequal and neoliberalized urban environments as socio-environmental threats and beneficial spaces of wellbeing for children – by addressing two broad questions: To what extent and how are CFC initiatives reorganizing urban environments, and with which impacts on children's health and wellbeing? What are the potential inequities that have emerged or become consolidated in the distribution of these benefits/impacts in the context of neoliberal urbanization?

I examine these questions from three different viewpoints. First, I explore the impact of child friendly urban spaces on children's health from a positivist, more quantitative, approach. In particular, I enquire about the associations between residential proximity to urban outdoor play spaces and the prevalence of diagnosed mental and behavioral disorders in children, using data from Barcelona. Second, I zoom in on two recent parks built in Barcelona to explore underlying wellbeing pathways in urban child friendly spaces, using the lens of what I call relational wellbeing. More specifically I analyze how the political and social production of urban green play spaces shape relational wellbeing in different contexts. Third, I open up the scale of analysis to an international comparison of different processes of CFC planning. In my last and third

empirical chapter, I explore the social reorganization of urban space and processes of political subjectivation brought up by these agendas and examine how different gradients of urban neoliberalization shape this process. Here, I draw on CFC agendas and interventions developed in Bristol, Amsterdam, and Vienna. Throughout, because of my transversal interest in equity issues, I keep an ongoing attention to potential class and race-based inequities in the distribution of the effects and processes of CFC agendas.

1.2. Conceptual framework

1.2.1. The essentialized relation between children and nature: From its reification to the recognition of socio-nature

Despite existing points of convergence, critical thinking, and praxis at the intersection of sustainable cities, environmental justice, and public health interventions still largely ignore questions of power and inequalities in relation to children. The processes by which green, sustainable and/or healthy city interventions shape urban (in)justices remain largely understudied in fields influencing CFC research and practice, such as environmental education, childhood sociology, urban planning, landscape architecture, and environmental psychology (Cutter-Mackenzie-Knowles et al., 2020). As a result, CFC initiatives are often framed in essentialized, deterministic, and apolitical terms.

The widespread acceptance that a deficit of nature is harmful to children's development, health, and wellbeing (Louv, 2005) is often used by public health experts and planners to justify the creation of more urban green areas for children as a leading CFC measure. Notwithstanding the multiple health, wellbeing, and ecological benefits of the creation of green spaces, these assumptions reproduce longstanding essentialized understandings of children and nature as pristine, innocent, and ethically good and in turn meant to be connected to each other (cf. Aitken, 2001; Chawla, 2015). These understandings often frame the past as better in terms of the relationship between children and nature and put the focus on returning children to this desired original state of nature (Dickinson, 2013; Malone, 2018).

These essentialized conceptions of children and nature polarize existing perceptions of the differences between childhood/nature versus adult/society, vacating one from the other (i.e., as if there is nothing adult, cultured, or social in children and nature) and assigning all bads to the category of adults and society. This placement of nature and childhood as outside of a society and culture defined by adults is not only about their essentialization as innocent and

pristine, but also about the reification of nature and childhood as unitary epistemological spaces that matter less for their meaning relative to individual experiences than for the universal laws of formation and development that they project, making childhood, in a way, more defined by non-human objectivity associated with natural and scientific laws (Fitzsimmons, 1989; Jameson, 1979). Moreover, the health and wellbeing benefits for children from increased contact/exposure to nature are framed as post-hoc rationalized benefits derived from the physical access/proximity to sustainable CFC amenities (Chawla, 2015) rather than understood as a result of the actual use or appropriation of the space.

In contrast to this society-nature divide and the reification of childhood as an inviolable state of nature, the general consensus within urban political ecology (UPE) is to understand urban space (and the sustainable CFC urban spaces embedded within) as "socio-natures." That is, spaces like those generated by CFCs are seen through this lens as the outcome of a dialectical relationship between nature and society whereby both nature and society are transformed as an outcome of "chemical, physical, social, economic, political and cultural processes in highly contradictory but inseparable manners" (Swyngedouw, 1996, p. 70). From this perspective, childhood's relation to nature is always mediated by society. There is no natural state to be preserved, but only and always a shifting terrain of socio-natural interchanges.

Similarly, political ecologists (PE) question the adulthood-childhood divide through analyses that uncover the changing understandings of childhood across space, time, and social position and its intersection with gender, race and class (Ariès, 1962; Mintz & Kellogg, 1988; Postman, 1982; Thompson, 1963). These approaches move away from understandings of childhood as a homogeneous, pre-existing and stable identity with a universal interest in the city. Rather, from this approach the focus is on the very constitution of childhood and the *natured* childhood as a world-building activity and thus as a space of and for politics (Dikeç, 2013; Kraftl, 2006).

From these critical perspectives nature, childhood, urban public spaces, society, subjectivity, daily practices and associated health and wellbeing outcomes are socially, culturally and politically co-produced and constantly questioned, renegotiated, and even resisted (Giddens, 1984; Lefebvre, 1974; Smith & Reid, 2017; Zukin, 1995). Thus, there isn't such a thing as a pristine and/or unitary nature and childhood (Kraftl, 2006), nor a sustainable and/or healthy CFC. Rather there is a series of political socio-ecological processes that produce certain socio-natures benefiting some groups, environments and bodies while harming others (Heynen, Kaika, et al., 2006).

The mainstream sustainable CFC city order -- which weaves together mythic representations of children and nature as "exceptional" and outside of society and assumes the return to a "more connected" relation between children and nature as the only way forwards to improve sustainability and children's overall condition in cities -- stands in contrast with a more fluid understanding of children as political actors within processes of socio-nature formation proposed by critical political ecology approaches. PE critiques "post-political" framings, that is how reconnecting children to nature is widely phrased by different stakeholders as necessary, positive and unquestionably good measures not subject to political contestation (Aitken, 2001; Swyngedouw, 2009). Furthermore, political ecologists argue that *politics* – seen from this perspective as disruption of three things (1) routinized sense-making practices, (2) the partitioning of what is classified as "sensible" (Dikeç, 2013,following Rancière), and/or (3) the symbolic order used to make decisions (Swyngedouw, 2009) – has been suppressed and replaced by what Rancière calls *the police.* Rancière's police depends on several components, including: (1) maintenance of an established order of governance, (2) the symbolic constitution of the social (Swyngedouw, 2009), and/or (3) the distribution and partitioning of established orders (Dikeç, 2013).

From this lens, CFC is, in part, a move to replace politics with police in the process of generating a child-centered urban space. One important mechanism for doing so is the upholding of the post-political notion of a sustainable CFC city based on the "reification of what are essentially social relationships" (Fitzsimmons, 1989, p. 108) (in reference to childhood and children). This process also relies on the empirical reductionism of breaking down complex phenomena (e.g., children's socio-natures) into "isolated" distinct constituent parts. For some, this trend has set humanity on its current path of ecological destruction (Malone, 2018) as it is precisely in the relation between different social, cultural, economic, political and environmental processes at different scales that we find the sources of environmental degradation, inequity, and illbeing (Brenner, 2019; von Benzon, 2018).

1.2.2. Environmental justice and health inequities in the green city. Children within a neoliberal and unequal urbanization

The post-political framing of sustainable CFC as the solution to children's wellbeing in cities obscures a long history of urban environmental inequities. The distribution of environmental hazards in urban and non-urban environments has historically fallen more on lower income, racialized residents (including children), and deprived neighborhoods than on those residents

and neighborhoods socially and racially positioned in more powerful positions, which have benefitted from greater access to environmental goods and privileges (Agyeman et al., 2002; Anguelovski, 2013; Comber et al., 2008; Detroit Geographical Expedition and Institute, 1971; Dickinson, 2013; Hughey et al., 2016; Kamel et al., 2014; Mohai et al., 2009; Pellow, 2000; Rigolon, 2017; Rigolon & Flohr, 2014; Vaughan et al., 2013; Wolch et al., 2005). These distributive inequities have resulted in deep-seated trends of urban environmental, social and health inequities that continue today. Moreover, the negative impacts of the demise of planetary ecosystem functions, and climate change related environmental extreme events are also disproportionately affecting the poor, dispossessed, and racialized residents (Anguelovski et al., 2016, 2020; Depietri et al., 2016). From an intergenerational point of view, children are going to be more affected than other populations by global environmental change, as they will be the ones inheriting and responding to the consequences of a "damaged" environment and world created by adult humans (Malone, 2018).

Zooming in on children's unequal urban environments, research has shown unequal access to playgrounds and nature-like spaces by race and deprivation levels (Grove et al., 2017; Strife & Downey, 2009). Poor and minority youth are less likely than their white and wealthier counterparts to spend time in green spaces (Strife & Downey, 2009). Moreover, racialized and deprived children are proportionally more exposed than other children to environmental hazards such as toxins like lead, polychlorinated phenols, and organophosphate pesticides, as well as elevated levels of nitrogen dioxide (NO2), urban heat islands, and flooding (Grove et al., 2017; Sheridan et al., 2019). This increased exposure occurs on top of exposure to already worse housing, schooling, and other societally-controlled conditions associated with poor indoor air quality (Gilliland et al., 2006). Legacies of social and environmental injustices can leave an imprint on the present distribution of amenities that impact child-centered environments, constraining transitions for more just and sustainable future CFC (Connolly & Anguelovski, 2021; Grove et al., 2017). Some studies reveal that minority children also face higher cancer and respiratory health risks from air toxics exposures (Strife & Downey, 2009).

What is more, the sustainable CFC framing can also present procedural and recognition justice concerns, regarding the lack of power of marginalized populations on the basis of class, race, ethnicity and/or age to propose a vision on space (Zukin, 1995) and the lack of attention to alternative spatial uses, practices, and perceptions. Research in the field of critical children's geographies challenges the assumed static and universal health and wellbeing assumptions derived from exposure to nature by children (Smith & Reid, 2017). As an alternative, it advocates for exploring children's "real" experiences of place, such as children's own

explanations of their life worlds (Valentine, 1997), children urban practices (C. Ward, 1978), games (Opie & Opie, 1969), conflicts (Wridt, 2004), and perceptions of their urban environments (Lehman-Frisch et al., 2012) amongst others. Contrary to what essentialized children-nature connections assume, children's encounters with the "environment" are not always as restorative, healthy, or spiritually uplifting as some nostalgic stories have seduced many to believe.

Recognizing the impact of cultural and ideological formations and the diversity of meanings, cultural norms, values, emotions, and experiences attached to parks is key to uncovering different forms and embodiments of urban environmental inequalities and injustices undermining children's enjoyment of public spaces, nature, and play. Research has examined how youths' experiences in and access to nature and green spaces is likely to vary according to race, ethnicity, and socioeconomic status (Hart, 1979; Kahn & Friedman, 1995; Russell & Tyler, 2002; Wolch et al., 2005). For example, in the US context, research has shown that Latinxs and African Americans are less likely than Anglo Americans to use outdoor recreation areas, local parks, and nature centers, with barriers to use such spaces, including unfamiliarity with natural areas, cultural preferences that affect youth participation in green space activities, lack of available transportation, racial discrimination, and the perception of these places as sites of exclusion, violence, drug-dealing, oppression, and trauma (Anguelovski et al., 2020; Brownlow, 2006; Dunton et al., 2014). In North American cities such as Philadelphia, Baltimore, or Washington, historical legacies of exclusion, unequal power relations, and patterns of racism and social control still permeate the design, distribution, and use of environmental amenities today (Brownlow, 2006; Connolly & Anguelovski, 2021; Wolch et al., 2014). Many African American residents have an uncomfortable relation with nature, a relation that is at times traumatic due to past experiences of lynching, discrimination, or violence against them. Recognizing these patterns is essential in order to unpack the differences in the distribution of the benefits of play space exposure for children's health and wellbeing by individual or area-level racial, ethnic, class and gender characteristics.

Sustainable CFC interventions are also immersed in neoliberal urbanization dynamics characteristic of current planetary urbanization processes, that are politically guiding the intensification of market rule, commodification, and (private) accumulation through (public) dispossession in cities (Brenner et al., 2010b) *via* neoliberal roll-back and roll-out policies (Tickell & Peck, 2002). Some neoliberal urbanization-related processes and consequences include gentrification, privatization of public space and residential segregation by class and race (Brenner, 2019; Maloutas, 2012; Swyngedouw et al., 2002). Its impact on children's access and

exposure to green/healthy child friendly spaces by race and class remains largely unstudied. But, previous research on green gentrification indicating how urban greening interventions can create elite enclaves of environmental privilege and exclude lower-income and minority residents, including children, from their benefits leads one to believe that sustainable CFC interventions also carry a risk of perverse effects given that their creation and distribution will also reflect capitalist and market-driven social relations of production and power (Aitken, 2001; Heynen, Perkins, et al., 2006). The sustainable CFC city has, in some of its forms, been related with (or even aimed at) a particular gentrification process called familificiation (Goodsell, 2013) or genderfication (Van den Berg, 2013), by which the current production of space for different gender and family relations is changing the cities' social composition by replacing existing families and households with more affluent families.

Moreover, the rise of the urban "power couple", typically composed by well-educated, highly educated and high-earning pairs with children is playing an important role in the back-to-the-city movement of capital and higher income residents to the city (Smith, 1979). These families increasingly value high density and mixed spatial functions as a means for reconciling the demands of work and family life (Lilius, 2019) and are more likely to live in large, highly educated cities than other types of couples (Simon, 2019). This new urban figure of young upwardly mobile professional parents is becoming an important market niche for the urban real estate and tourism industries and for rolling out more neoliberal urban redevelopment plans (van Vliet & Karsten, 2015).

As a result, many cities are allegedly becoming more child and family friendly but only for children whose families can afford it, which is preventing these policy and planning interventions from effectively promoting health and environmental equity (H. Cole et al., 2017) and sometimes bolstering rather than reducing environmental and health inequities (Anguelovski et al., 2019; Triguero-Mas et al., 2021). The risk of a sustainable CFC in the context of urban neoliberalism processes is that the provision of sustainable, healthful CFC amenities in cities expected to have positive effects on equitable children's health and wellbeing, might rather exacerbate gentrification, commodification, displacement, environmental privilege, or inequitable exposure to environmental issues or amenities on the basis of social privilege. Moreover, for those who can access the CFC, children's roles in it might be increasingly limited to the one of consumer (van Vliet & Karsten, 2015).

1.3. Research Gaps and Objectives

To date, scholarship on the design and development of sustainable CFC agendas has largely not engaged with non-essentialized ideas of children, nature, and health, nor with non-moralistic/reductionist constructions of inherent relationships between children and their environments. Largely, children are idealized as apolitical actors whose demands on urban space can be derived from abstract notions of childhood and not from the actual contextual movements and expressions of young people in cities. As a result, the sustainable and child friendly city is characterized by a contrived agenda for childhood that, because it is voiced through the beliefs of others ends up expressing the agendas of those others. Without research that begins from the assumption of children as a political category constituting independent political actors, such cooptation of childhood for other purposes easily continues.

Moreover, the question of whether children are disproportionately burdened by, or vulnerable to, environmental inequities (cf. Bullard, 1983; Detroit Geographical Expedition and Institute, 1971; Malone, 2018) has received scant attention in Environmental Justice research. Such research is needed to expand our understanding of children's environmental inequities and to increase the understanding of the urban barriers to healthy childhood development, especially in low-income and minority communities (Strife & Downey, 2009). While children are often an assumed element of distributional environmental justice studies, they rarely become the central focus.

Given the state of knowledge described above, I approach the production of sustainable CFCs and associated health and wellbeing benefits as a process of engaging socio-natures. With this approach, the goals of a CFC are not innate, but rather co-produced together with the individual, the environment, the surrounding social context (Quinn, 2013), and the uses of and activities taking place in these environments (von Benzon, 2018). Particularly, the approach of this thesis is designed to address three objectives: (1) the interrogation of the type of structures, power relations, materials, uses and relationships in CFC spaces that might benefit or harm urban children; (2) the disclosure of the potential of these agendas to equitably redistribute quality of life and healthier urban environments for children; and (3) the articulation of these CFC agendas with/against the broader context of neoliberal urbanization.

These overarching objectives are addressed across the three research chapters included in this dissertation (Chapters II-IV). However, each of the Chapters considers these objectives in the context of the following specific aims:

Chapter II: To assess the associations between residential proximity to outdoor play spaces and the prevalence of diagnosed mental and behavioral disorders in children 0-12 in Barcelona, and to explore whether play space-health associations differ by individual and area level socio demographic characteristics.

Chapter III: To unpack pathways towards the creation of relational wellbeing and enquire about the role of the political and social production of sustainable CFC amenities in shaping relational wellbeing.

Chapter IV: To explore and compare how different international contemporary CFC agendas are reorganizing urban social space across diverse urban neoliberalization contexts.

The different (yet complementary) theoretical frameworks, scales, variables, processes, methodologies and ontological perspectives in my three empirical chapters allow me to engage with contemporary urban children's socio-natures and examine the relation between different social, cultural, economic, political and environmental processes as sources of inequity. In all, the methodological and empirical diversity embraced by the three chapters is designed to offer different lenses on the central objectives. This diversity of approaches to the question allows for the understanding of effect and intent within CFCs to be triangulated across different data sources and means of measurement.

	RQ	Approach	Methods
Chapter II	What is the association between residential proximity to outdoor play spaces and the prevalence of diagnosed mental and behavioral disorders in children? How does this association differ by individual and area level socio demographic characteristics?	Quantitative and spatial analysis of the impact of some CFC spaces on children's health.	Cross sectional health outcome study
Chapter III	How does the political and social production of green-playful-child-friendly amenities shape relational wellbeing in different contexts? How do those processes of producing relational wellbeing help refine our understanding of environmental inequities?	Qualitative analysis of the pathways and processes shaping relational wellbeing.	Archival data, ethnographic observation
Chapter IV	How are CFC plans reorganizing children's urban social spaces?	Qualitative comparative analysis	Case study through document analysis

	How do these reorganizations differ across diverse neoliberalizing contexts?	of different versions of this present time activism	and semi-structured interviews

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Chapter II. The relationship between residential proximity to outdoor play spaces and children's mental and behavioral health: The importance of neighborhood socio-economic characteristics

Abstract

Urban outdoor play spaces are reported to improve children's health. However, there is little empirical evidence on the impact of outdoor play spaces on childhood mental and behavioral health. To fill this gap, we investigated the associations between residential proximity to outdoor play spaces and the prevalence of diagnosed mental and behavioral disorders. We explored whether these associations differ by individual and area-level socioeconomic status (SES). This cross-sectional study included 151 110 children who were 0–12 years old in 2014 and were visited in public primary health care centers in Barcelona (Spain). Each child's demographic and mental and behavioral disorders information was extracted for 2005–2014, including diagnoses on disorders of psychological development together with other four types of mental and behavioral disorders. The pediatrician diagnosed mental and behavioral disorders we explored in this study were: mood/affective; neurotic, stress related and somatoform; psychological development; behavioral and emotional; and overall mental and behavioral disorders. We assessed 300 m network buffer residential proximity to overall outdoor play spaces (i.e., the overall sum of play spaces of any type), outdoor green play spaces, and to a diversity of outdoor play spaces. We used robust Poisson regression models to investigate the association between proximity to outdoor play spaces indicators and each health outcome. We tested interaction terms for indicators of proximity to outdoor play spaces and individual and area SES. For measures with significant interaction terms, we conducted stratified models. We found residential proximity to outdoor play spaces to be protective of disorders of psychological development. Proximity to overall outdoor play spaces, proximity to outdoor green play spaces and proximity to a greater diversity of outdoor play spaces were associated with a 4% (95% CI: 1,7), 4% (95% CI: 1,7) and 5% (95% CI: 2,9) lower prevalence rates of disorders of psychological development respectively. Most of the associations were found to be in the same direction-although more pronounced-in low SES areas, but in the opposite direction for children living in high SES areas. No differences in these associations were found by individual SES.

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2.1. Introduction

Today, cities in the Global North face the challenge of having unprecedented high prevalence levels of childhood mental disorders (Amoly et al., 2014; Flies et al., 2019). A growing field of research at the intersection of public health and urban planning is enquiring the specific urban social and built-environment conditions that benefit or harm human development in the first years of life (Derr et al., 2017; Flouri et al., 2014; Malone, 2013). Increasing attention is also paid to environmental (health) justice questions enquiring inequities in the distribution of urban social and built-environment conditions and their associated health benefits or harms by neighborhood disadvantage, racial and ethnic characteristics (Anguelovski, 2013; Byrne & Wolch, 2009; Hughey et al., 2016; Kamel et al., 2014; Perez-del-Pulgar et al., 2020; Rigolon & Flohr, 2014; Strife & Downey, 2009; Vaughan et al., 2013).

Neighborhood social conditions related with the concentration of disadvantage, such as poverty, crime and unemployment rates have been associated with mental, behavioral, and cognitive problems (Christian et al., 2015). In terms of the relation of the available outdoor play spaces – which are a fundamental part of children's social life in dense cities (Busquets, 2006) - with children's mental and behavioral health, links have been found for different types of residential green space availability (Alderton et al., 2019; Bijnens et al., 2020; Christian et al., 2015; Engemann et al., 2019; Madzia et al., 2019; Markevych et al., 2018; McCormick, 2017; Mnich et al., 2019; Thygesen et al., 2020; Vanaken & Danckaerts, 2018). Specifically, green space availability has been associated with better emotional and behavioral outcomes (Amoly et al., 2014; Balseviciene et al., 2014; Flouri et al., 2014; Markevych et al., 2014; Sobko et al., 2018), better mood indicators for depression and anxiety (Maas et al., 2009), stress reduction and attention restoration (Huynh et al., 2013; A. F. Taylor & Kuo, 2011) and self-discipline (A. F. Taylor et al., 2002). The diversity of outdoor play spaces (i.e. diversity of types of outdoor play spaces such as green, sports-oriented, socially exposed, quiet, or with different sets of play equipment) to which a child is exposed to has been found to provide opportunities for different types of play experiences and meet a broader array of needs of children of different genders, physical abilities, ages and developmental stages (Dyment & O'Connell, 2013; Luken et al., 2011; Stanley, 2011) and potentially associated health benefits. The congestion of green spaces has been identified as an access barrier -as it may decrease the attractiveness of the space - (Biernacka & Kronenberg, 2018) which can reduce its use and the associated health benefits.

To our knowledge, no study has accounted for the differential associations between the residential proximity to green and non-green outdoor play spaces – such as parks, plazas, sport fields or playgrounds – as well as the proximity to a diversity of play opportunities and children's

mental and behavioral health. Furthermore, few studies have explored differences in the distribution of the benefits of outdoor play space proximity for children's mental health by individual or area-level sociodemographic characteristics (for exceptions see Flouri et al., 2014; Wells, 2000). In response to those research gaps, the aim of our study is to investigate the association between residential proximity to outdoor play spaces and the prevalence of diagnosed mental and behavioral disorders in children. We further incorporate some insights from environmental justice by exploring potential inequities in the distribution of the mental and behavioral health benefits of outdoor play space (Anguelovski et al., 2020), by examining whether play space-health associations differ by individual and area-level socio-demographic characteristics.

2.2. Materials and methods

2.2.1. Study design and population

We designed a semi-individual cross-sectional study in Barcelona (Spain) using individual health data from the Information System for Research in Primary Care (SIDIAP; www.sidiap.org) in Catalonia, Spain (Bolíbar et al., 2012). The Mediterranean coastal city of Barcelona had in 2014 a population of 1.6 million inhabitants, 200.890 of whom were children aged 0–12 (Barcelona City Council Statistical Yearbook, 2014). The city was divided in 1061 census tracts in 2014 with a median size of 3.6 ha and average population per tract of 1511 residents. Outdoor play spaces are fundamental for children's social life in a city with an urban form as dense and compact as Barcelona (Busquets, 2006). The SIDIAP database is a large pseudo-anonymized database of electronic health records for all visits in primary care centers managed by the Catalan Health Institute since 2005. It has a catchment of 5.5 M people, approximately 74% of the population living in Catalonia. SIDIAP includes demographic data, clinical variables, immunizations, specialists' referrals, prescriptions and dispensation of medications, history of sick leave and any acute and chronic health problems registered during a primary care visit.

The selection of children with ages from 0 to 12 registered in the SIDIAP database and living in the municipality of Barcelona in 2014 resulted in the extraction of data of 151 110 individuals corresponding to 75.22% of the age group in the city of Barcelona in 2014. We chose 12 years old as a cut-off age defining the end of childhood and the onset of adolescence (Britannica, 2020). For the selected individuals their complete data history on demographic data (date of birth, gender and nationality) and mental and behavioral health diagnoses from 2005 until 2014 was retrieved. This study was approved by the ethics committee of the Jordi Gol i Gurina Institute for Research in Primary Care (IDIAPJGol, 20/163).

2.2.2. Outdoor play space indicators

We collected comprehensive spatial data on public outdoor play spaces in the city of Barcelona either specifically planned for children or where children frequently play in the city (Lynch, 1977). Data was obtained from the Urban Ecology Department. We identified 1665 play spaces, including playgrounds, plazas, parks, gardens, urban forests and recreational sports fields for 2014.

We applied a geospatial analysis of residential proximity to these play spaces based on the intersection between 300 m-network buffers around play spaces and the census tracts (Graph 1). The 300 m threshold was chosen for being the average walking independent mobility standard for children defined by UNICEF (United Nations, 2018). Network buffers were calculated based on the centroid of the play spaces, except for fenced parks and urban forests, for which the main access point (i.e., main entrance) was used as the center of the network buffer. Based on this analysis, for each census tract we calculated the following indicators: 1) total number of 300 m network buffers around play spaces intersecting each Barcelona census tract; 2) number of 300 m network buffers around outdoor green play spaces intersecting each Barcelona census tract; 3) number of 300 m network buffers around outdoor playgrounds intersecting the census tract; 4) number of 300 m network buffers around sport-oriented outdoor play spaces intersecting the census tract; and 5) number of 300 m network buffers around community outdoor public play spaces intersecting the census tract.

Whereas indicator 1 counted each play space buffer once, indicators 2–5 were sometimes overlapping with one outdoor play space possibly falling into several categories. (e.g., a play space with play equipment located in a park was considered both a playground and a green play space). Indicators 2–5 were meant to capture the type of play opportunities and experiences offered by the outdoor play space (Frost, 1992; Gibson, 1979; Hart, 1979). Parks, gardens, urban forests and playgrounds and recreational sports fields located inside parks were counted as outdoor green play spaces (Indicator 2). Outdoor play spaces with traditional play equipment were counted as playgrounds (Indicator 3). Sports fields were counted as sport-oriented outdoor play spaces (Indicator 4) and plazas were considered as outdoor community play spaces (indicator 5) (Graph 1).

Based on these indicators, we computed our three main exposure variables: a) Residential proximity to overall play spaces, defined as the total number of outdoor play spaces whose 300 m network buffer intersects the census tract divided by the number of children living in the census tract; b) Residential proximity to green play spaces, defined as the total number of green outdoor play spaces whose 300 m network buffer intersects the census tract divided by the

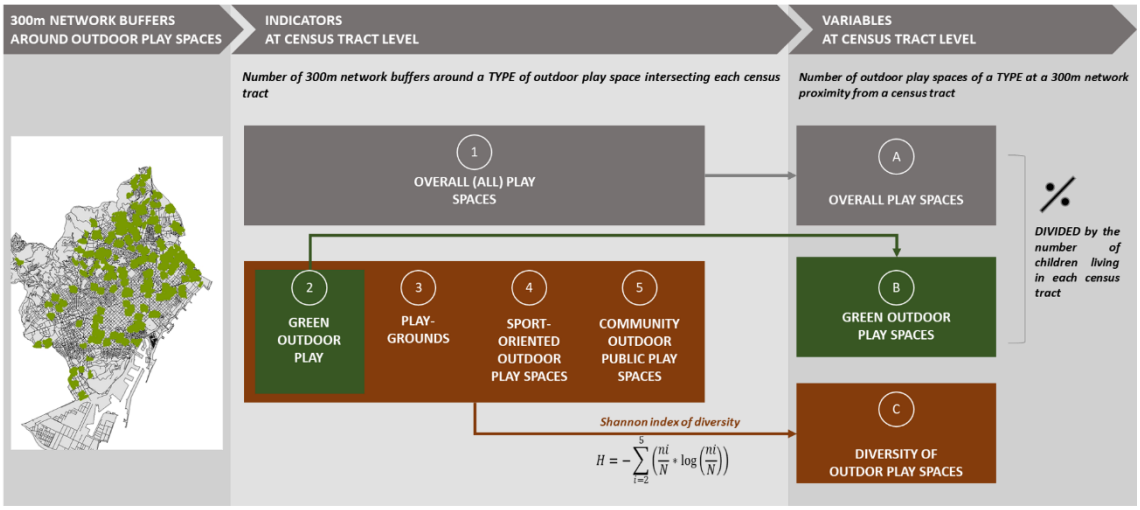
number of children living in the census tract and c) Residential proximity to a diversity of play spaces, calculated as an index of the diversity of play types offered by play spaces whose 300 m network buffer intersected the census tract (Graph 1).

For exposure variables a) proximity to overall outdoor play spaces and b) proximity to outdoor green spaces, we divided the number of outdoor play spaces by the number of children living in each census tract to account for the potential pressure of use of each outdoor play space. This is based on the assumption that a high competition for outdoor play space (i.e., low number of proximate outdoor play spaces per child) can be considered an entry barrier (Biernacka & Kronenberg, 2018) and be associated to lower mental health benefits.

The variable c) proximity to a diversity of play spaces index was calculated using the Shannon index of diversity (Spellerberg & Fedor, 2003) considering the types of outdoor play space defined in indicators 2–5: green play spaces; playgrounds; sport-oriented play spaces; and community play spaces, as follows:

$$H = -\sum_{i=2}^{5}\left(\frac{ni}{N} * \log\left(\frac{ni}{N}\right)\right)$$

where, n is the total amount of outdoor play spaces of each type, N the total amount of play spaces in the census tract and i the indicator.



Graph 1 Illustration of the process of composition of the exposure variables.

2.2.3. Mental and behavioral disorders

We extracted information on children's mental and behavioral health diagnoses that were not associated with physiological disturbances, physical factors, or psychoactive substance use. These health diagnoses are registered by pediatricians following the International Statistical Classification of Diseases and Related Health Problems-10 (ICD-10) clinical evaluation and coding criteria. Each child can have several entries for the same and/or different diagnoses over the years. Accordingly, the mental and behavioral health indicators we included in our study were:

-Mood/affective disorders: containing disorders in which the fundamental disturbance is a change in affect or mood to depression or to elation, ICD-10 codes: F30–F39.

-Neurotic, stress-related and somatoform disorders: including several phobias, anxiety and severe stress, ICD-10: F40–F48.

-Disorders of psychological development: which in most cases refer to disorders in language, visuo-spatial skills, and motor coordination, ICD- 10: F80–F89.

-Behavioral and emotional disorders: with onset usually occurring in childhood and adolescence and characterized by a lack of persistence in activities that require cognitive involvement, ICD-10: F90–F98.

-Overall mental and behavioral disorders: indicating the presence of any of the previously mentioned disorders (ICD-10: F30–F39, F40–48, F80–F89, F90–F98) and/or unspecified mental disorder (ICD-10: F99).

To assess prevalence for each mental and behavioral indicator, we created dichotomous variables for each of the previously cited mental and behavioral disorder groups where 1 indicated that the child had one or more diagnoses of the considered indicator in the period 2005–2014. For all health indicators, the date of the diagnosis was defined as the first recorded date at which the disorder appeared in their record.

2.2.4. Individual and area-level socio-economic status covariates

Individual variables on gender (dichotomous variable), age in 2014 (as a continuous variable), and nationality (dichotomous variable defined as either nationality from Global South – i.e., Latin-America and the Caribbean, Africa and Asia/Middle East- or Global North – i.e., Europe and Anglo-Saxon America-were retrieved from the SIDIAP database. Nationality was used as a proxy of racial and ethnic characteristics, as used in other recent studies in the context of Barcelona (Anguelovski, Connolly, Masip, et al., 2018).

To estimate area-level socio-economic status (SES), we developed a census tract SES index linked to the children's census tract of residence. To do so, first we selected relevant variables a priori using information from similar indicators developed in the Spanish context to theory-inform our selection (Anguelovski, Connolly, Masip, et al., 2018; Domínguez-Berjón et al., 2008). Accordingly, we used the following area-level data: index of family income (household disposable income); percentage of population (i) with university degree or higher, (ii) with non-western nationality (i.e. all African Countries, Philippines, Pakistan, Peru, Bolivia, Ecuador, Colombia, Dominican Republic, those being the most numerous and identifiable Global South nationalities in Barcelona's census tract available statistical data), (iii) aged 65 or more, (iv) unemployed; percentage of mono-parental households; percentage of housing stock (i) privately owned, (ii) occupied by the owner, (iii) in deficient condition; and average monthly rent (€/m2). All the variables used to develop the area level SES index were available at the Barcelona city Statistics Department, were at the census tract level (apart from family income which was at neighborhood level) and referred to year 2014 (apart from percentage of housing stock occupied by the owner or in deficient condition and percentage of population unemployed which was available from 2011). Second, following the same methodology as the one used to develop the previously-used MEDEA indicator (Domínguez-Berjón et al., 2008), we performed a principal component analysis (PCA) to identify clustered variables whose variation could be explained by one index. For that purpose, we used an orthogonally rotated principal component analysis (PCA) according to the Varimax method and selected the extraction of components with Eigenvalues greater than 1. The analysis indicated a first component that explained 25.94% of the total variance of the initial ten variables. We considered that indicators were highly correlated with the first component if their component loadings were greater or equal to 0.70 (Domínguez-Berjón et al., 2008), which resulted in the selection of three variables related to the economic and educational capital of the census tract (percentage of population with university degree or higher, family income and average monthly rent), ruling out the rest of variables. We then conducted a second orthogonally rotated PCA including only the three selected indicators and adopted the extraction of one component. We used the first (and only) component factor, which explained 84.05% of the total variance of the three indicators (percentage of population with university degree or higher component loading 0.93, family income component loading 0.93 and average monthly rent component loading 0.82), as our census tract SES index. Using this index, Barcelona census tracts were classified alongside four equal groups according to the distribution of de value of the index across the city's census tracts.

2.2.5. Statistical analysis

We conducted descriptive analyses of the prevalence of our mental and behavioral health indicators by gender, age, nationality and area level SES index. Then, we estimated the relationship between outdoor play space indicators and prevalence of mental and behavioral disorders outcomes. For each outcome/exposure combination, we developed robust Poisson regression models to estimate the change in the prevalence of each health outcome associated with an interquartile range (IQR) increase of each play space indicator. We used Poisson regression with robust variance for understanding that it provides correct estimates and is a better alternative for the analysis of cross-sectional studies with binary outcomes than a logistic regression, since the prevalence ratio (PR) is more interpretable and easier to communicate than the odds ratios (OR) (Barros & Hirakata, 2003). We adjusted for gender, age, nationality and area level SES index and calculated prevalence ratios and 95% Wald confidence intervals in all models. Then, to evaluate the effect modification of individual and area-level SES variables, we included interaction terms between IQR increases in outdoor play space indicators and SES variables in the robust Poisson regression models (one interaction by each SES variable in each outcome/exposure combination model). For measures with significant interaction terms, we then conducted stratified models. We used SPSS, version 26 and set statistical significance at p-value<0.05.

2.2.6. Sensitivity analyses

We conducted several sensitivity analyses to evaluate the robustness of our findings. First, to explore whether differences between the area level SES indicators influenced our findings we performed models substituting the adjustment of our area-level SES index by the disaggregated variables for area-level average monthly rent per census tract, income (household disposable income per neighborhood), education (percentage of population with university degree or higher per census tract) and nationality (percentage of population with non- Western nationality per census tract), which are the variables included in the area level SES index, plus, an indicator of the percentage of population with non-Western nationality per census tract which did not show to be correlated with other socio-economic variables in the PCA but is theoretically relevant according to the literature (Anguelovski, Connolly, Masip, et al., 2018; Domínguez-Berjón et al., 2008).

Second, to evaluate the robustness of our findings to variations in the individual nationality indicator we performed: 1) models categorizing individual nationality as Spanish and non-Spanish, given the high share of children with Spanish nationality (87.4%) and the potential confounding effect it can have on the Global South/Global North individual nationality

categorization and 2) models excluding children with Asian nationality and from Central and Eastern Europe from the analysis, considering that these nationalities included an especially heterogeneous mix of social, economic and ethnic statuses in the context of Barcelona. Models excluding children with Asian nationality from the Global South category and children with Central and Eastern European nationality from the Global North category reduced the sample to 145 026 children.

Third, since we use the outdoor play space proximity indicators associated to the children's census tract of residence in year 2014 but some children might have changed census tract of residence in the period 2005–2014, we performed models excluding children who changed census tract of residence in the period 2011–2014 (data on change of residency is not available prior to 2011). Models excluding children who moved in the studied period reduced the sample to 114 460 children.

Last, we conducted sensitivity analyses with the indicators of children's residential proximity to outdoor play spaces as a categorical versus continuous variable to assess the assumption of a linear relationship between proximity to outdoor play spaces and mental and behavioral disorder outcomes in the robust Poisson model.

2.3. Results

2.3.1. Descriptive statistics

Descriptive statistics for the characteristics of study participants, the prevalence of our investigated disorder outcomes and the play space indicators are presented in Table 1. Maps of our outdoor play space indicators, and area-level SES index are presented in Supplemental Material, Figures S1–S3.

Our sample had a balanced presence of both genders (51.43% of boys). Most children had a Global North nationality (91.2%), mainly Spanish (87.41%) but also South European (1.43%), Central and Eastern European (1.57%), Northern European (0.79%) and Anglo-Saxon American (0.15%) (data not shown). For the children that had a Global South nationality, most were from Latin-America and the Caribbean (4.35%), and the rest were: 2.45% Asia and Middle Eastern, 1.44% Northern African, and 0.39% Central and Southern African. The study population had an even distribution of children in different ages 0–12 (median 6 and IQR = 6).

In our study population, bit more than 10% of the children – more frequently boys (62.51%) than girls (data not shown) - were diagnosed in the period 2005–2014 with any mental and behavioral disorder, at a median age of 6 (IQR = 4). From these, the disorder outcome most diagnosed was behavioral and emotional disorders, again mostly boys (64.59%) and at the same median age

than for the overall diagnosed. Less than 5% of our study population were diagnosed from each of the remaining disorder outcomes. From these remaining disorders, children in our sample were diagnosed of disorders of psychological development at a median age of 5 (IQR = 4), with the prevalence being higher among boys (65.28%). Similarly, children (particularly boys, 54.09% of the diagnosed in our sample) were diagnosed of neurotic, stress-related and somatoform disorders at a median age of 7 (IQR = 4). Last, the average age of mood/affective disorders was slightly higher, 8 years old (IQR = 4), despite those more frequently diagnosed were also boys (51.16%).

The distribution of our study population across the four quartiles of area-level SES index followed a decreasing trend, with over 30%of the study population living in census tracts with the lowest area-level SES index and around 18% of the study population living in census tracts with the highest area-level SES index. The prevalence of all mental and behavioral disorder outcomes also followed a decreasing trend as the area-level SES index increased. Over 12% of the study population living in census tracts with the lowest area-level SES index were diagnosed with any mental and behavioral disorder, whereas the prevalence of any mental and behavioral disorder decreased to over 6% among the study population living in census tracts with the highest area-level SES index.

There was a big variability within all indicators of proximity to outdoor play spaces from the census tracts of residence. The minimum number of overall play spaces per 1000 children within 300 m from children's census tracts of residence was 0.37 and the maximum 77.53 (data not shown). Similarly, the minimum number of green play spaces per 1000 children within 300 m from children's census tracts of residence was 0 and the maximum 60.67. Children of our study were exposed to a diversity of outdoor play spaces between 0 and 1.28. The indicator of proximity to overall outdoor play spaces was strongly correlated with the indicator of proximity to green play spaces (Spearman's correlation coefficient r = 0.82). Contrary, the correlation between overall play spaces and diversity of play spaces and between green play spaces and diversity of play spaces was very weak (r = 0.05 and r = 0.16 respectively).

Table 1 – Descriptive statistics of sample sociodemographic characteristics, health outcomes and outdoor play space proximity variables (n=151,110)

Variable	**n(%)/ median(IQR)**
Sociodemographic characteristics	
Gender, *Girls* [n (%)]	73403 (48.57)
Nationality, *Global South* [n (%)]	13073 (8.65)
Age [years: median (IQR[2])]	6 (6)
Area-level SES index [index: median (IQR)]	-0.39 (1.34)
Area-level SES index 1st quartile, lowest SES [n (%)]	49650 (32.85)
Mood/affective disorders, *Diagnosed* [n (%)]	107 (0.22)
Neurotic, stress-related and somatoform disorders, *Diagnosed* [n (%)]	1027 (2.07)
Disorders of psychological development, *Diagnosed* [n (%)]	1998 (4.02)
Behavioral and emotional disorders *Diagnosed* [n (%)]	3747 (7.55)
Overall mental and behavioral disorders, *Diagnosed* [n (%)]	6101 (12.29)
Area-level SES index 2nd quartile [n (%)]	45089 (29.84)
Mood/affective disorders, *Diagnosed* [n (%)]	51 (0.11)
Neurotic, stress-related and somatoform disorders, *Diagnosed* [n (%)]	800 (1.77)
Disorders of psychological development, *Diagnosed* [n (%)]	1494 (3.31)
Behavioral and emotional disorders *Diagnosed* [n (%)]	2699 (5.99)
Overall mental and behavioral disorders, *Diagnosed* [n (%)]	4527 (10.04)
Area-level SES index 3rd quartile [n (%)]	29953 (19.82)
Mood/affective disorders, *Diagnosed* [n (%)]	52 (0.17)
Neurotic, stress-related and somatoform disorders, *Diagnosed* [n (%)]	593 (1.98)
Disorders of psychological development, *Diagnosed* [n (%)]	870 (2.90)
Behavioral and emotional disorders *Diagnosed* [n (%)]	1673 (5.59)
Overall mental and behavioral disorders, *Diagnosed* [n (%)]	2826 (9.43)
Area-level SES index 4th quartile, highest SES [n (%)]	26418 (17.48)
Mood/affective disorders, *Diagnosed* [n (%)]	48 (0.18)
Neurotic, stress-related and somatoform disorders, *Diagnosed* [n (%)]	333 (1.26)
Disorders of psychological development, *Diagnosed* [n (%)]	482 (1.82)
Behavioral and emotional disorders *Diagnosed* [n (%)]	1097 (4.15)
Overall mental and behavioral disorders, *Diagnosed* [n (%)]	1807 (6.84)
Mental and behavioral disorders	
Mood/affective disorders, *Diagnosed* [n (%)]	258 (0.17)
Neurotic, stress-related and somatoform disorders, *Diagnosed* [n (%)]	2753 (1.82)
Disorders of psychological development, *Diagnosed* [n (%)]	4844 (3.21)
Behavioral and emotional disorders *Diagnosed* [n (%)]	9216 (6.10)
Overall mental and behavioral disorders, *Diagnosed* [n (%)]	15261 (10.10)
Outdoor play space indicators	
Overall play spaces per 1000 children [number of play spaces: median (IQR)]	67 (64)
Green play spaces per 1000 children [number of play spaces: median (IQR)]	34 (36)
Diversity of play spaces [index: median (IQR)]	0.9 (0.29)

[2] Inter Quartile Range

2.3.2. Main results

Lower prevalences of disorders of psychological development were associated with higher values of the indicators of outdoor play space (Table 2). For all play space indicators, an IQR increase of the play space indicator was significantly associated with lower prevalence of disorders of psychological development. That is, an increase in 64 overall play spaces per 1000 children (i.e., an IQR increase in the overall play spaces indicator) within 300 m from children's census tracts of residence was associated with a 4% (95% CI: 1,7) decrease in the prevalence of disorders of psychological development. Each IQR (36) increase in the number of green play spaces per 1000 children within 300 m from the census tracts of residence was associated with a 4% (95% CI 1,7) lower prevalence of disorders of psychological development. And an increase in 0.29 units of the Shannon index within 300 m from children's census tracts of residence was associated with a 5% (95% CI 2,9) lower prevalence of disorders of psychological development.

An increase in 64 overall play spaces per 1000 children (i.e., an IQR increase) within 300 m from children's census tracts of residence was also associated with a 2% (95% CI: 1,3) decrease in the prevalence of overall mental and behavioral health disorders. The rest of mental and behavioral health outcomes were not statistically significantly associated with any of the play space indicators.

We did not find any suggestion of differences on the associations between outdoor play space indicators and individual nationality (p-value> 0.08 for the interaction terms). However, we found indications of differences by area-level SES index on the associations between prevalence of disorders of psychological development with overall play spaces and also with diversity of play spaces (p-value = 0.02 and p-value = 0.01 for the interaction terms, respectively). We also found some marginal indication of differences by area-level SES index on the associations between prevalence of disorders of psychological development with green play spaces (p-value = 0.07), which we considered worth exploring given the significance of the interaction terms of all other exposures with this outcome. Moreover, we found indications of differences by area-level SES index on the association of overall mental and behavioral disorders with overall play spaces (p-value<0.01 for the interaction term).

Stratified models by area-level SES index revealed a general trend of proximity to overall outdoor play spaces and diversity of play spaces being protective of disorders of psychological development for children living in low SES census tracts but a risk factor for children living in high SES census tracts (see Table 3). An IQR (64) increase in the number of overall proximate outdoor play spaces per 1000 children within 300 m from children's census tract of residence was associated with an 8% lower prevalence of disorders of psychological development for

children living in the first and second lowest area-level SES index census tracts (i.e. area-level index first quartile with 95% CI: 2,13 and area-level index second quartile with 95% CI: 2,14). Similarly, an IQR (0.29) increases in the diversity of proximate play spaces was associated with 8% (95% CI:3,14) lower prevalence of disorders of psychological development for children living in the lowest SES census tracts (i.e., area-level index first quartile). Also, an increase in 36 green play spaces per 1000 children within 300 m from children's census tracts of residence was associated with a 6% (95%CI: 1, 11) lower prevalence of disorders of psychological development for children living in the lowest area-level SES index census tracts, and with an 8% (95%CI: 3, 13) lower prevalence for those living in the second lowest area-level SES index census tracts. However, for children living in the highest SES census tracts these associations reversed their direction: Each IQR (64) increase in the proximate overall outdoor play spaces was associated with 9% (95%CI: 1,18) higher prevalence of disorders of psychological development for children living in the second highest area-level SES index census tracts (third quartile). IQR increases in the diversity of proximate outdoor play spaces were associated with a 16% (95% CI:3,32) higher prevalence of disorders of psychological development for children living in the highest area-level SES index census tracts (i.e., area-level index forth quartile) (see Table 3).

Table 2 – Adjusted associations between prevalence of mental and behavioral disorders and residential proximity to outdoor play space indicators derived from robust Poisson regression models. Associations reported for 1-IQR increase in outdoor play space indicators within 300m from children's census tracts of residence.

	Overall play spaces		Green play spaces		Diversity of play spaces	
	Prevalence Ratio (95% CI)	p-value	Prevalence Ratio (95% CI)	p-value	Prevalence Ratio (95% CI)	p-value
Mood/affective disorders	0.95 (0.83, 1.09)	0.48	0.96 (0.85, 1.08)	0.51	1.04 (0.88, 1.23)	0.68
Neurotic, stress-related and somatoform disorders	0.98 (0.94, 1.02)	0.37	0.99 (0.95, 1.02)	0.46	1.02 (0.97, 1.09)	0.41
Disorders of psychological development	0.96 (0.93, 0.99)	0.02	0.96 (0.93, 0.99)	<0.01	0.95 (0.91, 0.98)	<0.01
Behavioral and emotional disorders	0.98 (0.96, 1.01)	0.15	0.99 (0.97, 1.01)	0.31	0.99 (0.96, 1.01)	0.32
Overall mental and behavioral disorders	0.98 (0.97, 0.99)	0.05	0.99 (0.97, 1.00)	0.09	0.98 (0.96, 1.01)	0.14

Note: All models include individual gender, nationality, age and area-level SES index as covariates

Table 3 – Adjusted associations between prevalence of mental and behavioral disorders and residential proximity to outdoor play space indicators derived from robust Poisson regression models. Associations reported for 1-IQR increase in outdoor play space indicators within 300m from children's census tracts of residence. Models stratified by area-level SES index.

	Overall play spaces		Green play spaces		Diversity of play spaces	
	Prevalence Ratio (95% CI)	p-value	Prevalence Ratio (95% CI)	p-value	Prevalence Ratio (95% CI)	p-value
Disorders of psychological development						
Area-level SES index 1st quartile (lowest SES)	0.92 (0.87, 0.98)	<0.01	0.94 (0.89, 0.99)	0.02	0.92 (0.86, 0.97)	<0.01
Area-level SES index 2nd quartile	0.92 (0.86, 0.98)	<0.01	0.92 (0.87, 0.97)	<0.01	0.97 (0.90, 1.05)	0.44
Area-level SES index 3rd quartile	1.09 (1.01, 1.18)	0.04	1.04 (0.96, 1.13)	0.35	0.93 (0.85, 1.01)	0.06
Area-level SES index 4th quartile (highest SES)	1.02 (0.90, 1.16)	0.71	1.02 (0.90, 1.15)	0.80	1.16 (1.03, 1.32)	0.02
Overall mental and behavioral disorders						
Area-level SES index 1st quartile (lowest SES)	0.94 (0.92, 0.97)	<0.01	(not estimated)[3]		(not estimated)	
Area-level SES index 2nd quartile	0.98 (0.95, 1.01)	0.23	(not estimated)		(not estimated)	
Area-level SES index 3rd quartile	1.04 (0.99, 1.08)	0.10	(not estimated)		(not estimated)	
Area-level SES index 4th quartile (highest SES)	1.08 (1.02, 1.14)	0.01	(not estimated)		(not estimated)	

Note: All models include individual gender, nationality and age as covariates.

[3] Effect modification was not significant.

Similar results were found for proximity to overall outdoor play spaces in its associations with overall mental and behavioral disorders: An IQR (64) increase in the overall proximate outdoor play spaces was a protective factor for children living in low SES census tracts but a risk factor for children living in high SES census tracts (see Table 3). That is, each IQR (64) increase in the proximate overall outdoor play spaces was associated with 6% (95%CI: 3,8) lower prevalence of disorders of psychological development for children living in the lowest SES census tracts (i.e., area-level index first quartile) and an 8% (95%CI: 2,14) higher prevalence of disorders of psychological development for children living in the highest SES census tracts (i.e. area-level index forth quartile).

2.3.3. Sensitivity analyses

Our findings - when substituting the adjustment of our area-level socio economic indicator by the disaggregated variables; when categorizing nationality as Spanish and non-Spanish, when excluding children with Asian nationality and from Central and Eastern Europe, or when excluding children who changed census tract of residence from the analysis - were generally consistent with those of the main analyses in terms of direction and statistical significance (Supplemental material, Tables S1–S4). Only some minor differences were found when substituting the adjustment of our area-level socio economic indicator by the disaggregated variables of income, education, nationality, and monthly rent, were we found negative associations between proximity to overall outdoor play spaces and green outdoor play spaces and behavioral and emotional disorders, at the expense of the associations with disorders of psychological development (Supplemental Material Table S1).

2.4. Discussion

In this study including 151 110 children living in Barcelona, we found that lower prevalence of disorders of psychological development was consistently associated to increases in the residential proximity to overall and green outdoor play space as well as to a greater diversity of play opportunities. Meanwhile, lower prevalence of overall mental and behavioral disorders was also found to be associated with increases in the proximity to overall outdoor play spaces. Our findings also indicate that these associations are not equal across area-level SES characteristics. We found that, for those children living in the lowest SES census tracts, the indicators of residential proximity to different indictors of outdoor play space had a protective role for their mental and behavioral health. However, residential proximity to overall play spaces and to a diversity of proximate play spaces were risk factors for those children living in higher SES census tracts.

The association we found between proximity to overall outdoor play spaces with lower prevalence of disorders of psychological development is novel. We hypothesize that our findings could be explained by the activities that outdoor play spaces have been shown to offer. For example, previous research has indicated that a higher presence of outdoor play spaces is associated with greater overall physical activity (Dunton et al., 2014; Timperio et al., 2008). Outdoor play spaces have also been linked to other precursors of better mental health such as active participation and interaction (WHO, 2001), negotiation of one's identity and sense of purpose (Cederborg, 2020; Compton-Lilly et al., 2017), increased sense of community (Anguelovski, 2014; Perez-del-Pulgar et al., 2020), awareness of one's self and others (Mayer et al., 2009), experience of independent mobility (Schoeppe et al., 2016), free play and exploratory thinking (Holt et al., 2015), stress mitigation (Ulrich et al., 1991), and attention restoration (A. F. Taylor & Kuo, 2011).

Our findings with regards to the protective role of the proximity to outdoor green play spaces are in line with previous studies reporting better children's development (Alderton et al., 2019; Christian et al., 2015; Vaden-Kiernan et al., 2010; Wells, 2000; Wu et al., 2014) and general mental health outcomes (Sobko et al., 2018; Tillmann et al., 2018) associated with higher exposure to green spaces. However, our findings differ from previous studies with regards to the particular mental and behavioral health disorders significantly associated with exposure to green spaces. Whereas previous studies present exposure to green being protective of mood disorders (Maas et al., 2009), neurotic and stress related disorders (Huynh et al., 2013) or behavioral and emotional disorders (Amoly et al., 2014; Balseviciene et al., 2014; Flouri et al., 2014; Markevych et al., 2014; Mårtensson et al., 2009; A. F. Taylor et al., 2002; A. F. Taylor & Kuo, 2011), our results show mainly a protection to disorders of psychological development. We argue that these differences are secondary and could point to the difficulty to clearly distinguish and separate each category of mental disorders given the porosity between the different mental health disorders and the heterogeneity of their clinical presentations (American Psychiatric Association, 2013).

We are unaware of previous studies on the association of the proximity to a greater diversity of play spaces and the prevalence of children's mental and behavioral health outcomes overall or disorders of psychological development in particular. In this respect our results are novel. However, our results are coherent with previous research drawing attention to the importance of the built environment (Derr & Tarantini, 2016; Malone, 2013; Moore-Cherry, 2014; Perez-del-Pulgar et al., 2020; Woolcock et al., 2010), its richness, diversity of purposes and play

experiences (Dyment & O'Connell, 2013; Luken et al., 2011; Stanley, 2011) for children's wellbeing.

Our results point to a modification of the association between residential proximity to outdoor play space and mental and behavioral health by area-level socio-demographic characteristics in a manner consistent with previous literature, suggesting that outdoor play spaces may mitigate the negative influences of other aspects of the physical environment, such as poor housing, deteriorated neighborhoods, overcrowded schools, or the prevalence of crime and violence (Engemann et al., 2019). Thus, the role of residential proximity to overall outdoor play spaces, green outdoor play spaces as well as to a diversity of these could be especially important and protective for children's mental health in lower SES areas, indicating strong environmental justice and health equity benefits. Meanwhile, for children living in high SES areas, proximity to outdoor play spaces seems to be working as a socio-environmental risk factor vis a vis children's mental and behavioral health outcomes. This difference may reflect spatially bounded class-based differences in the use and meaning of children's play spaces (Perez-del-Pulgar et al., 2020) influenced by cultural, social and historical perspectives and ideologies of outdoor recreation as well as material socioeconomic factors (Byrne & Wolch, 2009; Floyd, 2001; Strife & Downey, 2009; Tierney et al., 2001).

In this line, previous research suggests that upper- and middle-class cultures of parenting (Villanueva et al., 2016), time management (Loukaitou-Sideris & Sideris, 2010) and perceptions of safety (Arroyo-Johnson et al., 2016; McCarthy et al., 2017; Perez-del-Pulgar et al., 2020; Tappe et al., 2013) have a strong impact on the actual use (and likely restorative effect) of these play spaces and could be influencing the negatively associated health benefits we observed for high SES areas. Higher-income families also have greater access to larger backyards and private gardens, second homes -which is especially prevalent in Spain (Módenes & López-Colás, 2007) - or are financially able to travel further distances and provide alternative access to outdoor play spaces, meaning that municipal outdoor play spaces might not be the primary outdoor play spaces and the determinants of high SES children's good mental health. In contrast, children from urban low SES areas are those for whom urban outdoor play and contact with nature tend to be mostly facilitated by formal municipal play spaces rather than private play spaces, to which they tend to have more limited access, hence the protecting effects our findings indicate. In addition, residents of Barcelona's working-class neighborhoods have long mobilized for public play spaces and value their construction, design, access, and use. Under these conditions outdoor play spaces tend to become a source of pride for the community (Perez-del-Pulgar et al., 2020) which potentially gets transmitted to children (Putra et al., 2021) having an impact on

how children use, experience and care for these spaces. More regular uses of these spaces and feelings of safety and attachment might explain some of the positive health outcomes. Last, we might hypothesize that the tendency of high SES families with children to move to areas with better children's facilities, including outdoor play spaces (Lilius, 2019) is enhanced amongst high SES families with children with mental health disorders. In any case, more research on the pathways through which proximity to outdoor play spaces is associated to higher risks of disorders of psychological development in children living in the higher SES areas.

Our study faced some limitations. First, our study considered the 300 m network distance from the outdoor play spaces to the census tract boundaries as a proxy for residential proximity to the play space because we did not have children's individual residential addresses. This exposure introduced an ecological bias and, in some cases the actual walking distance from the child's home to the outdoor play space might be higher than 300 m. Second, the study's cross-sectional design, limits its ability to determine causality. Third, mental and behavioral health is associated with a wide range of individual child and parental factors (e.g., physiological conditions of the child, family members with mental and behavioral health disorders or specific traumatic events in the child's life) that, for data limitations, cannot be included in the present study as confounder variables. Fourth, individual race and ethnicity have been suggested to influence the association between the exposure to outdoor play spaces and health outcomes, but that information was unavailable to us for this study. The most similar available data was on individual nationality, aggregated in mixed categories that included children with very different types of advantages and disadvantage, access to material and cultural resources, education, incomes, language etc. We ran a sensitivity analysis to test the effect of this factor, but we cannot rule out that other (not available) data may have been better estimates of ethnicity in our study. Fifth, our study considered the number of outdoor play spaces per 1000 children within 300 m or less from each census tract. Testing the impact of the available area of play or quality of the area was not possible due to data limitations. Sixth, there could be some measurement error due to the linkage of the cross-sectional play-space proximity for year 2014 with the census tract residential data of the period 2005–2014. However, due to the nature of Barcelona's little post 2005 urban transformation in terms of the outdoor play space amenities here analyzed we assume this measurement error to be potentially very minor. Seventh there might be an underreporting of health outcomes, since the used database does not capture diagnoses performed in private health centers. Despite Spain has a universal coverage of healthcare and that children visit their pediatricians even when they are healthy to follow vaccinations protocols – between others -, our number of diagnoses could be underestimated

given the double coverage of public and private healthcare. However, this measurement error would be underestimating the associations we observe in our study.

The study also has several strengths. First, to our knowledge, this is the first study to report the association between different types of residential outdoor play spaces and diagnosed mental and behavioral disorders in children. Second, this study has a large sample size that enables the exploration of associations and effect modifications without affecting statistical power. Third, we uniquely include several measures of outdoor play spaces. Fourth, we report objectively assessed health outcomes and outdoor play space proximity measures. Last, we conducted a range of sensitivity analyses of importance for assessing health equity, including testing the effect of the nationality and area SES index indicators, and our findings were robust across all the analyses.

2.5. Conclusions

Our findings are suggestive of a possible beneficial effect of overall outdoor play space proximity, and its greenness and diversity, on childhood mental and behavioral health disorders, especially for disorders of psychological development. These benefits, nevertheless, were only found for children living in low SES areas.

We recommend future studies to more closely investigate the importance of outdoor play space types and diversity for children's disorders of psychological development as well as the pathways through which proximity to outdoor play spaces is associated with higher prevalence of children's disorders of psychological development in high SES areas. Examining the qualities of the built environment as well as its actual uses a function of gender, physical ability, age or ethnicity and its impact on children's mental and behavioral health is a promising and compelling area of study that requires further research.

Our finding should be of interest for policy makers in planning for healthier cities for children through equitable place-based interventions that aim to remedy urban environments currently criticized for overlooking children's needs for participation and play (Derr & Tarantini, 2016; Malone, 2013; Moore-Cherry, 2014; Woolcock et al., 2010). Environmental planners should place particular attention to creating new play and green space opportunities for children of working-class neighborhoods, since those seem to both particularly benefit from such interventions while, traditionally, lacking equitable access to those, and this beyond the case of Barcelona. Placing children at the center of public space interventions (including play spaces such as parks or plazas) is essential for building accessible, green, and healthy cities for all.

2.6. References

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2.7. Supplementary data

Table S1 – Adjusted associations between prevalence of mental and behavioral disorders and residential proximity to outdoor play space indicators derived from robust Poisson regression models. Associations reported for 1-IQR increase in outdoor play space indicators within 300m from children's census tracts of residence. Sensitivity Analysis with alternative area SES indicators (income, education, nationality and monthly rent).

	Overall play spaces		Green play spaces		Diversity of play spaces	
	Prevalence Ratio (95% CI)	p-value	Prevalence Ratio (95% CI)	p-value	Prevalence Ratio (95% CI)	p-value
Mood/affective disorders	0.92 (0.80, 1.06)	0.28	0.94 (0.83, 1.06)	0.32	1.04 (0.88, 1.23)	0.66
Neurotic, stress-related and somatoform disorders	0.97 (0.93, 1.01)	0.18	0.98 (0.94, 1.02)	0.26	1.03 (0.98,1.08)	0.31
Disorders of psychological development	0.98 (0.95, 1.01)	0.21	0.97 (0.94, 1.00)	0.06	0.96 (0.92, 0.99)	0.02
Behavioral and emotional disorders	0.97 (0.95, 0.99)	<0.01	0.98 (0.96, 0.99)	0.03	0.99 (0.96, 1.02)	0.49
Overall mental and behavioral disorders	0.98 (0.96, 0.99)	0.01	0.98 (0.97, 0.99)	0.02	0.99 (0.97, 1.01)	0.34

Note: All models include individual gender, nationality, age and area-level income, education, nationality and monthly rent as covariates.

Table S2 - Adjusted associations between prevalence of mental and behavioral disorders and residential proximity to outdoor play space indicators derived from robust Poisson regression models. Associations reported for 1-IQR increase in outdoor play space indicators within 300m from children's census tracts of residence. Sensitivity Analysis with alternative individual nationality indicators (grouping Spanish vs. non-Spanish)

	Overall play spaces		Green play spaces		Diversity of play spaces	
	Prevalence Ratio (95% CI)	p-value	Prevalence Ratio (95% CI)	p-value	Prevalence Ratio (95% CI)	p-value
Mood/affective disorders	0.95 (0.83, 1.09)	0.47	0.96 (0.85, 1.08)	0.51	1.04 (0.88, 1.23)	0.68
Neurotic, stress-related and somatoform disorders	0.98 (0.94, 1.02)	0.34	0.99 (0.95, 1.02)	0.44	1.02 (0.97, 1.08)	0.41
Disorders of psychological development	0.96 (0.93, 0.99)	0.02	0.96 (0.93, 0.99)	<0.01	0.95 (0.91, 0.98)	<0.01
Behavioral and emotional disorders	0.98 (0.96, 1.01)	0.13	0.99 (0.97, 1.01)	0.29	0.99 (0.96, 1.01)	0.32
Overall mental and behavioral disorders	0.98 (0.97, 0.99)	0.04	0.99 (0.97, 1.00)	0.07	0.98 (0.96, 1.01)	0.14

Note: All models include individual gender, nationality, age and area-level SES index as covariates.

Table S3 - Adjusted associations between prevalence of mental and behavioral disorders and residential proximity to outdoor play space indicators derived from robust Poisson regression models. Associations reported for 1-IQR increase in outdoor play space indicators within 300m from children's census tracts of residence. Sensitivity Analysis with alternative individual nationality indicators (excluding Asian and Central and Eastern Europe nationality)

	Overall play spaces		Green play spaces		Diversity of play spaces	
	Prevalence Ratio (95% CI)	p-value	Prevalence Ratio (95% CI)	p-value	Prevalence Ratio (95% CI)	p-value
Mood/affective disorders	0.95 (0.83, 1.09)	0.48	0.96 (0.85, 1.08)	0.52	1.04 (0.88, 1.22)	0.69
Neurotic, stress-related and somatoform disorders	0.98 (0.94, 1.02)	0.38	0.99 (0.95, 1.02)	0.43	1.02 (0.96, 1.07)	0.59
Disorders of psychological development	0.96 (0.93, 0.99)	0.03	0.96 (0.93, 0.99)	0.01	0.95 (0.92, 0.99)	0.01
Behavioral and emotional disorders	0.99 (0.96, 1.01)	0.19	0.99 (0.97, 1.01)	0.33	0.99 (0.96, 1.02)	0.44
Overall mental and behavioral disorders	0.98 (0.97, 1.00)	0.07	0.99 (0.97, 1.00)	0.12	0.99 (0.97, 1.01)	0.19

Note: All models include individual gender, nationality, age and area-level SES index as covariates.

Table S4 - Adjusted associations between prevalence of mental and behavioral disorders and residential proximity to outdoor play space indicators derived from robust Poisson regression models. Associations reported for 1-IQR increase in outdoor play space indicators within 300m from children's census tracts of residence. Sensitivity analysis only including children that did not change their residence in the period 2005-2014.

	Overall play spaces		Green play spaces		Diversity of play spaces	
	Prevalence Ratio (95% CI)	p-value	Prevalence Ratio (95% CI)	p-value	Prevalence Ratio (95% CI)	p-value
Mood/affective disorders	0.95 (0.81, 1.11)	0.50	0.96 (0.84, 1.10)	0.52	1.09 (0.88, 1.34)	0.45
Neurotic, stress-related and somatoform disorders	0.95 (0.91, 1.00)	0.07	0.96 (0.92, 1.01)	0.09	1.02 (0.96, 1.08)	0.57
Disorders of psychological development	0.96 (0.92, 0.99)	0.03	0.96 (0.92, 0.99)	0.03	0.95 (0.91, 0.99)	0.02
Behavioral and emotional disorders	0.98 (0.95, 1.00)	0.08	0.99 (0.96, 1.01)	0.21	1.00 (0.97, 1.03)	0.99
Overall mental and behavioral disorders	0.97 (0.95, 0.99)	<0.01	0.98 (0.96, 0.99)	0.03	0.99 (0.97, 1.01)	0.35

Note: All models include individual gender, nationality, age and area-level SES index as covariates.

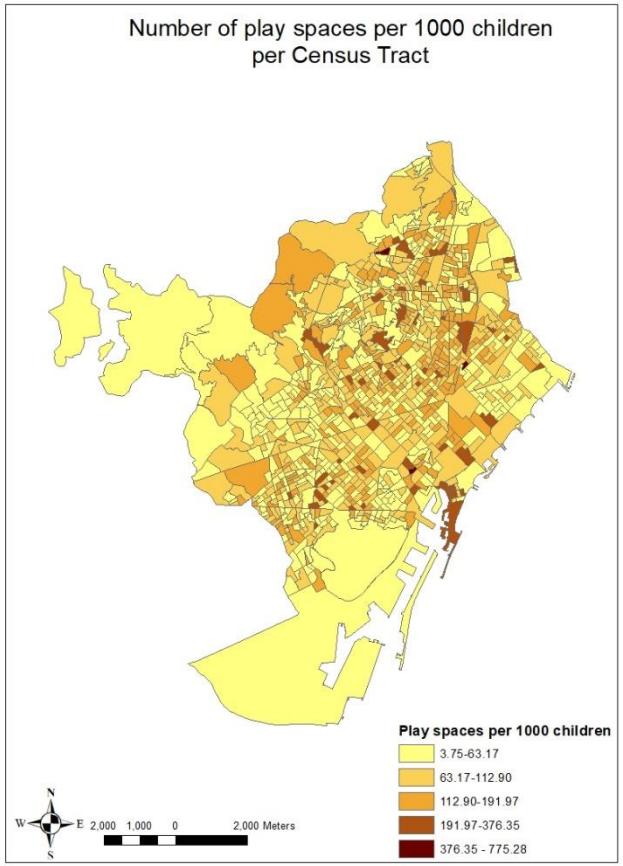

Figure S1 - Map of the total number of outdoor play space whose 300m network buffer intersects the census tract per 1000 children per Census Tract, Year 2014, Barcelona.

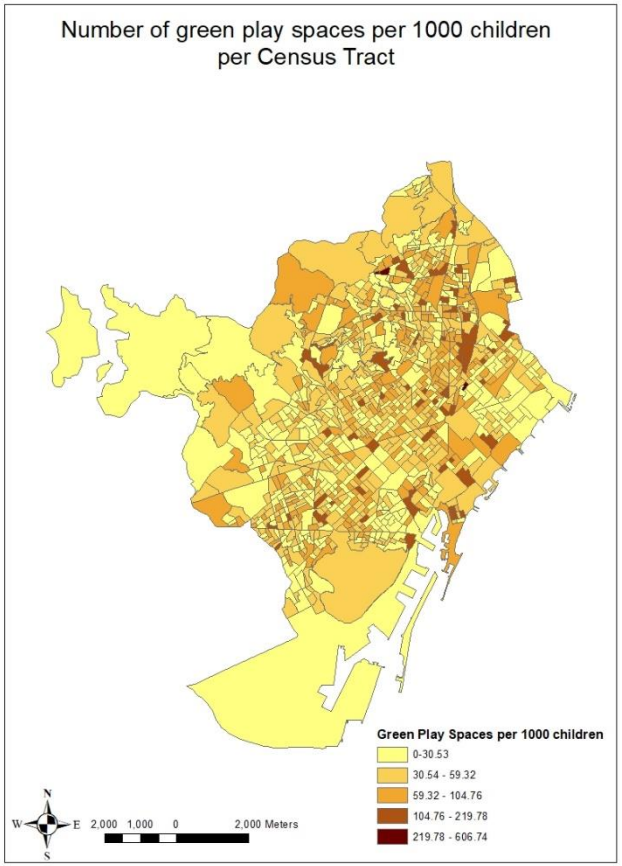

Figure S2 - Map of the total number of green outdoor play space whose 300m network buffer intersects the census tract per 1000 children per Census Tract, Year 2014, Barcelona

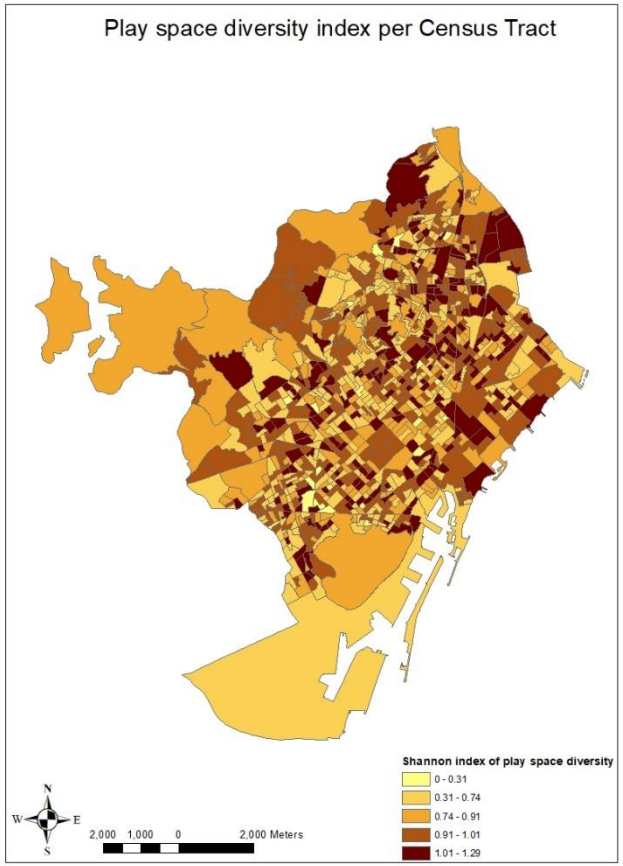

Figure S3 - Map of the Shannon index of the diversity of play types offered by play spaces whose 300m network buffer intersected the census tract, Year 2014, Barcelona

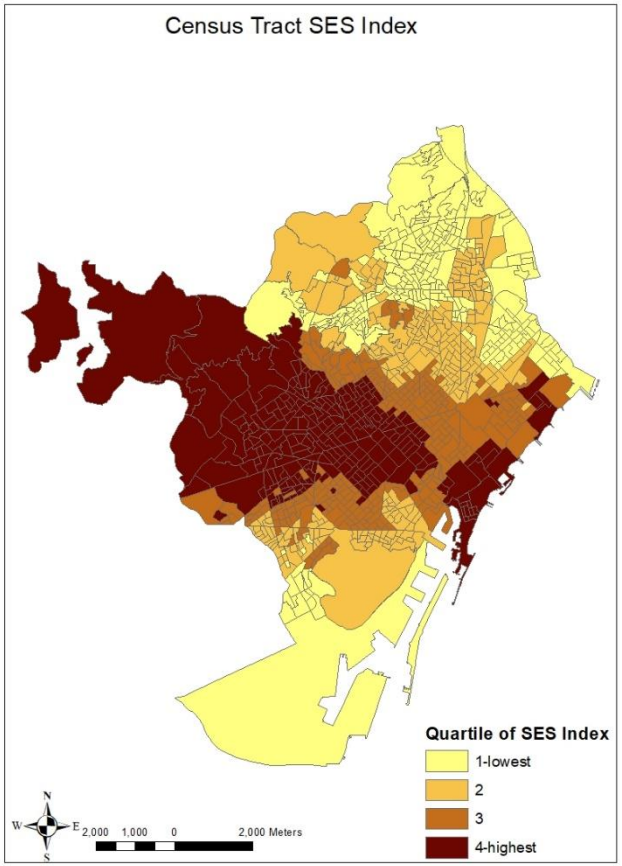

Figure S4 - Map of area-level Socio Economic Status -index divided in quartiles. Year 2014, Barcelona

Chapter III. Toward a green and playful city: Understanding the social and political production of children's relational wellbeing in Barcelona

A b s t r a c t

This paper examines recent urban green amenities directed toward children and families and develops a novel understanding of the ways in which children's socio-natures are made/unmade through such interventions. We employ ethnographic and archival analysis in two new parks – Poblenou and Nou Barris – in Barcelona to examine how a particular type of children's wellbeing, what we call "relational wellbeing" is shaped through the production of green-playful-child-friendly amenities. We find that planning processes and visions, urban development goals, and neighborhood socio-material structure moderate the effect of green-playful-child-friendly amenities on relational wellbeing by directing how these spaces are used. This finding points toward the importance – for equity concerns – of accounting for the social and political processes that generate relational wellbeing. These processes are often reflective of broader economic agendas of urban transformation designed to extract value, control space, and/or legitimize speculative urban development – while sometimes eroding local socio-material conditions – to the point of producing green spaces of privilege, exclusion and control. The connection between relational wellbeing and green-playful-child-friendly interventions highlights the importance, within the urban environmental equity literature, of reconceptualizing pathways of wellbeing and health beyond questions of spatial distribution of natural areas and offers a new perspective for the development of future guidelines on green-playful-child-friendly space policies.

This chapter corresponds to the article:

Pérez-del-Pulgar, C., Anguelovski, I. and Connolly, J., 2020. Toward a green and playful city: Understanding the social and political production of children's relational wellbeing in Barcelona. Cities, 96, p.102438.

3.1. Introduction

Municipalities are increasingly creating and restoring green amenities directed toward children and families as an important part of efforts to shift toward more sustainable and healthy cities for all (Anguelovski, Connolly, Masip, et al., 2018; Ekawati, 2015; Kondo et al., 2018; Lang & Rothenberg, 2017; Woolley, 2006). Yet, these amenities, which serve at once to promote greater contact with nature and 'free' or 'creative' play in cities, are increasingly reduced to universal prescriptions for achieving wellbeing within policy conversations guiding urban growth. However, there is a risk that such an approach reifies and commodifies problematically narrow concepts of the child, nature, and play (Kraftl, 2006; Morgan, 2017) – potentially (re)producing uneven territorialization at odds with equity and wellbeing goals (Rigolon & Flohr, 2014).

In this paper, we challenge widely held assumptions that child friendly green spaces of play produce universal benefits (Douglas et al., 2017; Flouri et al., 2014; Ward et al., 2016) by focusing on the particularly relational aspects of wellbeing. Our original contribution flows from this challenge; we parse out the socio-political mechanisms that produce differences in what we call 'relational wellbeing' – the portion of overall wellbeing derived from social relations, connections, and interactions. By focusing on how design, socio-spatial context, and planning and politics shape relations in particular children's spaces, we uncover an important part of the making/unmaking of children's urban socio-natures. Specifically, we highlight the impacts of power and capital (e.g. Morgan, 2017; Shillington & Murnaghan, 2016) on the wellbeing outcomes of new green play spaces. Studies in children's geography (Sheridan Bartlett et al., 2016; van Vliet & Karsten, 2015), urban environmental justice (Rigolon & Flohr, 2014), and social determinants of health (Dadvand et al., 2015; Ebbeling et al., 2002; Rydin et al., 2012; Ward et al., 2016) have indeed overlooked the ways in which such social and political processes shape children's wider socio-natures and in turn relational wellbeing.

Using Barcelona as a critical case study where the green and playful agenda has permeated recent urban development and municipal practice, we examine two new child-oriented park areas with contrasting political visions and processes of space production. These two parks also have different socio-economic characteristics: The Parc Central de Nou Barris is exemplary of a traditional working-class neighborhood while the Parc Central de Poblenou exemplifies a recently gentrifying neighborhood. Using archival data and ethnographic observation methods, we qualitatively analyze the ways in which socio-material and political foundations differentially co-produce relational wellbeing for children. This is a process that is not specific to Barcelona. Rather, the underlying dynamics we uncover apply across many cities turning toward the intersection of greening and child's play as a means of increasing livability.

Results show that neighborhood socio-material conditions and political processes of space production seem to undermine the relationship between green space and relational wellbeing in some cases, while, in other cases support greater relational wellbeing. Such findings highlight the importance, within the ample urban environmental health and environmental equity literature, of reconceptualizing drivers of and pathways for wellbeing and health benefits beyond questions of green space access and distribution throughout the city. They also call for the critical examination of internationally-praised urban planning practices that place social equity, wellbeing, and access to green space for all at the center of municipal action but, might, in some cases, undermine the creation of benefits for some social groups.

3.1.1. The production of (uneven) urban space in the green-playful-child friendly city

3.1.1.1. The changing status of children's urban socio-natures

Urban space is 'lived' space (Raffestin, 2012) composed of messy relations, ties, and representations that people build within their material and social environment. The full human and environmental composition of urban lived space has been described as "social space" (Lefebvre, 1974), "territory" (Raffestin, 2012) or "socio-nature" (Swyngedouw, 1996). These human-human and human-environment relations are the "hidden, dissimulated structure of the everyday" (Raffestin, 2012) that co-produce space, human experience, and wellbeing (Smith & Reid, 2017). Thus, urban socio-nature is built on a series of complex metabolic processes in which social and natural systems dialectically produce the city (Swyngedouw, 1996). Through socio-natures, people construct nature and themselves both discursively and materially as a human-nature outcome and relation (Heynen, Kaika, et al., 2006). And, in turn, these processes are deeply political in the sense that they are produced, circulated, and interpreted through (and for) power (Heynen, 2006).

Children's urban socio-natures are specifically those aspects of the metabolic processes producing cities that shape the urban life of those individuals understood in a given time and place to be a child – and shaping their construction of nature-human relations. The socio-natures of many Western cities are premised on an historical disregard for children in urban planning. Urban development trends in Europe and the US historically produced unsustainable, adult-centered environments that adversely affected children's healthy development and wellbeing (Hart, 1979; Karsten, 2002; Lynch, 1977; Tonucci, 1997; Valentine, 1997; Van den Berg, 2013; C. Ward, 1978). Such adverse environments occurred through children's institutionalization, enclosure and control (De Visscher & Bouverne-de Bie, 2008; Zeiher, 2001), and through poor free outdoor play and contact with nature (Louv, 2005).

Yet, today many city administrations are seeking to reverse these trends by investing ample resources in green space and infrastructure projects (Anguelovski, Connolly, Masip, et al., 2018; Ekawati, 2015; Kondo et al., 2018; Lang & Rothenberg, 2017; Woolley, 2006). These investments are a targeted effort to improve the social and environmental conditions that make up children's socio-natures. They respond to and further build on research highlighting the health and wellbeing benefits of quality urban outdoor environments. In all, this research shows that green outdoor amenities improve local environmental air and noise conditions and offer sites for restorative activities, with physical (Dadvand et al., 2015; Gascon et al., 2016) and mental health benefits (Triguero-Mas et al., 2017).

The emerging reformulation of children's socio-natures is premised on a universal notion of wellbeing developed from measures in public health research of specific health outcomes. A universal notion of wellbeing is defined here as the somatic and psychic state of a person that allows its proper functioning (Zaror et al., 2019). This understanding of wellbeing is usually assumed to be induced by the exposition to specific material conditions or necessary things to "live well". Environmental epidemiologists, for instance, argue that green areas can improve wellbeing outcomes by helping to address obesity (Ebbeling et al., 2002), attentional functioning needs (A. F. Taylor et al., 2001), risk of ocular vision impairment (Dadvand et al., 2017) and lower cognitive development (Dadvand et al., 2015; J. Ward et al., 2016). This evidence has been used to make an argument of the universal benefits for children's wellbeing of an exposure to green socio-natures.

Consequently, this common narrative of universal wellbeing benefits reduces understanding of children's socio-natures to simple types of play equipment or physical access to amenities – an approach that recent public health scholarship has started to question (Anguelovski et al., 2019; Anguelovski, Cole, et al., 2018). In that approach, children are assumed to be homogeneous, pre-existing, innocent, and pure subjects with inherent, direct, and universal connections to nature (Taylor, 2011). However, this understanding ignores other social categories, such as gender, race, ethnicity, class, and physical and mental abilities (Kraftl, 2006). It also abstracts away the differences in understanding childhood across space, time, and social position (Ariès, 1962; Mintz & Kellogg, 1988; Thompson, 1963). As such, common narratives around greening, play, and health impacts obscure the ways in which the everyday urbanism of children's green spaces actually enables or prevents construction of play and access to play.

3.1.1.2. Toward a focus on relational wellbeing in children's urban socio-natures

The generalized approach to wellbeing does not often account for the specifically relational aspects that structure a great deal of children's experiences in cities. Green amenities are not just places to receive environmental inputs; they are also places of interaction. They are sites of peer and intergenerational exchange where children can explore both themselves and the material and social surroundings (Stevens, 2007), acquire a social network, and negotiate their cultural and social identities (Formoso et al., 2010). Green spaces are especially important as centers of 'free' or 'creative' play (Douglas et al., 2017; Flouri et al., 2014; Taylor et al., 1998; Ward et al., 2016). Moreover, children's greater access to green spaces tends to foster environmental stewardship by increasing their knowledge of and attachment to the natural environment (Broom, 2017; Chawla, 2007, 2015; Derr et al., 2017; Fisher et al., 2015; Kals et al., 1999) which also plays a role in wellbeing through regular social and environmental contacts.

In response, in this paper we aim to contribute to a research agenda that addresses an under-theorization of the underlying ontologies and pathways for wellbeing (e.g. Smith & Reid, 2017). Specifically, we look at how relational wellbeing is differentially produced in two urban green play spaces. We examine some of the complexities and nuances embedded in the production of children's urban socio-natures and develop an understanding of a particularized notion of wellbeing – relational wellbeing, which is strongly mediated by political and socio-material relations. In all, we aim at refining the ways we view equity and wellbeing within green-playful-child-friendly spaces beyond a traditionally decontextualized analysis of access and distribution of amenities.

Furthermore, we employ relational wellbeing as a conceptual tool for understanding better how children's wellbeing in large cities embedded in global economic and financial flows (Moreno, 2014) can be subsumed into market logics of demand and supply, favoring the creation of spaces as commodities designed primarily to increase real estate profits (van Vliet & Karsten, 2015). The travel, tourism, hospitality, and real estate industries are now selling green-playful-child friendly-ness as a consumable product to middle-class residents who have the capacity to move according to residential preferences (Boterman & Bridge, 2015; Van den Berg, 2013; van Vliet & Karsten, 2015). Some families link access to these spaces with the ability to remain in the city after having children (Karsten, 2002; Lilius, 2019), and elevate them to essential aspects of a new urban middle class identity (Boterman & Bridge, 2015; Donner, 2017; Rutz & Balkan, 2009; Van den Berg, 2013).

This entrepreneurial (Harvey, 2006) market and neoliberal (Horton, 2016; Rossi, 2017) logic in the process of green-playful-child-friendly space production also shapes questions of distribution and inclusion (Goodling et al., 2016). As the ample urban environmental justice and equity literature has demonstrated, children's leisure spaces and playgrounds tend to be unevenly distributed, being spatially concentrated in wealthier neighborhoods or in the outskirts of the city, and in turn do not offer equal access to marginalized or discriminated groups, including children within those groups (Karsten, 2002; Rigolon, 2017; Rigolon & Flohr, 2014). Child-friendly (Van den Berg, 2013) and green (Anguelovski, Connolly, Masip, et al., 2018; Hamilton & Curran, 2013; Heynen, Perkins, et al., 2006; Pearsall, 2010; Quastel, 2009; Quastel et al., 2012; J. R. Wolch et al., 2014) amenities can even contribute – sometimes in combination with other revitalization strategies – to increased rent and property value, leading to (green) gentrification trends (Checker, 2011; Dooling, 2009; Gould & Lewis, 2017; Van den Berg, 2013) and to other socio-cultural exclusionary trends (Anguelovski et al., 2020). Similar trends of gentrification have been established in relation to park-based playful urbanism and the "disneyfication" of cities (Bryman, 2004; Zukin, 1995).

3.1.2. Bringing back alternative voices in front of a historical disregard and a universal model

The universalized notion of children's wellbeing that lies behind many green-playful-child-friendly spaces turns the historical disregard for children in urban planning on its head, but also dismisses alternative visions for what is desirable (De Visscher & Bouverne-de Bie, 2008; Van den Berg, 2013; Zukin, 1995). Shaping the notion of wellbeing that drives the creation of such spaces around market demand prevents historically disempowered groups (at the intersection of class, racial, ethnic, gender, and sexual status) from transforming their needs into claims for urban territory because those needs are often not compatible with the private accumulation of capital (Donner, 2017). In addition, green-playful-child-friendly amenities may be perceived as fundamentally problematic sites of power, conflict, violence, oppression, racism and/or as devices of social control for minorities, immigrants and/or working-class residents (Brownlow, 2006; Byrne & Wolch, 2009; Hamilton & Curran, 2013; Wolch et al., 2014). Finally – and importantly for our findings here – the universalizing narrative around such spaces overlooks different class-based norms for free unstructured play (De Visscher & Bouverne-de Bie, 2008; Holloway & Pimlott-Wilson, 2018; Van den Berg, 2013). Any view apart from a playful, pristine childhood becomes associated with an abject un-child-like other (Aitken, 2001; De Visscher & Bouverne-de Bie, 2008; Van den Berg, 2013) or "waste" (Katz, 2008) – the alternative experience is equated with a degraded urban environment and dismissed within the green-playful-child-friendly urbanism narrative.

Despite – at least discursively – downplaying the poor wellbeing outcomes that may result for some groups from existing profit-oriented urban interventions, removing alternative voices serves to mobilize a consensus around urban policy goals that avoid challenging the socioecological contradictions of unsustainable, unjust, and androcentric growth. By obscuring the political construction of spaces and the contestation they might trigger, narratives around children's access to green space and wellbeing could paradoxically eventually aggravate urban socio-environmental inequalities by generating green-playful child-friendly cities with narrow wellbeing benefits for an exclusive number and type of residents. In response, our paper also examines the set of environmental inequities produced by dominant representations and idealizations of nature and children (Shillington & Murnaghan, 2016) and by the implementation processes of specific interventions. Our central questions are thus: How does the political and social production of green-playful-child-friendly amenities shape relational wellbeing in different contexts? And how do those processes of producing relational wellbeing help refine our understanding of environmental inequities?

3.1.3. Transformation of urban socio-natures in Barcelona 1975–2016

We selected Barcelona as a site to examine the recent transformation of children's urban socio-natures because the city has been extensively engaged in the creation of new public and green spaces since Spain's transition to democracy in 1979, with a strong emphasis on improving neighborhood quality of life and children's wellbeing. Since that time, the city has created roughly 300 new public green spaces, many with children's play areas as central aspects. Furthermore, Barcelona's recent urban transformation is characterized by different phases, with clear shifts in the role of economic, social, and political interests; as well as scales of interventions and involved stakeholders across time and space. Its practice of urban planning has received much international attention, with many praising its emphasis on neighborhood urbanism and access to new physical infrastructure and calling for it to be used in broader international applications (Borja et al., 2004; Monclús, 2003), although others have raised criticisms (Anguelovski, 2014; Arbaci & Tapada-Berteli, 2012; Borja et al., 2004). This recent history makes Barcelona a critical case to examine the complex and uneven effects of the production of green-playful-child-friendly socio-natures.

Early 1980s livability interventions in Barcelona were mostly led by the municipal government in conjunction with social movements and neighborhood associations. They were geared toward localized and small-scale interventions creating quality open and green spaces with children's play spaces often built in. This early approach especially targeted neighborhoods with a historical deficit of public space, such as degraded areas of the historic center (e.g., Jardín Emili

Vendrell, 1984), working class neighborhoods (e.g., Parc de la Espanya Industrial, 1985), and more peripheral neighborhoods (e.g., Parc del Clot, 1986).

The preparations for the 1992 Olympic Games inaugurated a new period characterized by the presence of large operators – mostly public private partnerships and mixed capital companies – executing extensive urban transformations (Montaner et al., 2011) without negotiating with small associations. Most public spaces and parks built during that period covered a much greater scale of action and featured public art installations authored by internationally acclaimed artists and architects (e.g., Joan Miró, Fernando Botero, Santiago Calatrava, Norman Foster). Many of those new parks raised eyebrows among some local planners and resident groups for being considered as tourist- oriented spaces of consumption and design rather than spaces responding to the needs of neighborhood residents (Anguelovski, Cole, et al., 2018).

The post-1992 Olympic games consolidated the leading role of private operators – mostly real estate companies (Montaner et al., 2011) in a context of economic crisis for public administrations and increase of real estate values and tourism. Representative of this time (1997–2004) the district of Sant Martí located just up the coast from the historic city center was radically transformed through new public space and greening interventions anchored by the "Diagonal Mar" luxury development and park; the establishment of the "22@ district" as a hub for tech and creative firms with a new Central Park (Parc Central de Poblenou); and the construction of the Parc del Forum for the 2004 Forum of Cultures international fair along the last undeveloped sections of the Barcelona waterfront. Green space production was embedded in a competitive urbanism logic to attract new investors and visitors, with decision-making influenced by developers and real estate speculation (Montaner et al., 2011). Several observers lament the resulting direct social costs, such as displacement, loss of industrial working-class cultural heritage (Borja et al., 2004) and streets with scant urban life (Montaner et al., 2011). Since 2004, the municipality has linked open space policy with global sustainability agendas to emphasize green infrastructure, biodiversity, and re-naturing projects through new green amenities including parks, forests, ecological corridors, streams, community gardens, and urban farms (Anguelovski, Cole, et al., 2018; Depietri et al., 2016).

Meanwhile, children's wellbeing and access to green space has played a strong role in the Barcelona green agenda in recent decades. Since 1990, the municipality has produced regulatory frameworks (e.g., periodic Children and Adolescence Plans, Charter for Educating Cities) that direct public action. The main objectives of children-focused interventions in Barcelona have generally been to guarantee children's universal access to urban resources and services and

promote more and better facilities and services for education, leisure, and health. Most recently, several plans and objectives[4] highlight the importance of children's right to free play and access to nature and two main strategies aim to stimulate free outdoor play: the 2018 governmental measure "Barcelona dona Molt de Joc" (Barcelona gives a lot of play)[5] and the 2016 (and beyond) creation of pacified "superblocks"[6].

3.2. Materials and methods

In this study, we compare the creation and use of green play spaces in two neighborhoods – Poblenou and Nou Barris. We describe their characteristics in Table 1 below.

[4] Plan Municipal De Infancia y Adolescencia 2005–2010; Plan Municipal De Infancia y Adolescencia 2013–2016, Foco Infancia y Ciudadanía 2017–2020.

[5] https://ajuntament.barcelona.cat/ecologiaurbana/ca/que-fem-i-per-que/espai-public-de-qualitat/barcelona-dona-molt-de-joc establishes the goal of creating a playful Barcelona by 2030.

[6] http://ajuntament.barcelona.cat/ecologiaurbana/ca/que-fem-i-per-que/espai-public-de-qualitat/superilles.

Table 1. Case study comparison model.

	PARC CENTRAL DE POBLENOU-St. Martí district	**PARC CENTRAL DE NOU BARRIS-Nou Barris district**
SIMILAR	**TIME**: same period (end of 90s).	
starting points in 1990	Construction started in 1999 and park opened in 2008	Construction started in 1992 and park opened in stages between 1999 and 2003
	LOCATION: First periphery of Barcelona	
	DIMENSION: Large non-urbanized urban spaces with a high proportion of public land	
	AGE COMPOSITION: above Barcelona-average percentage of children (14.10% for Nou Barris district and 14.08% for St. Martí district)	
	SOCIAL COMPOSITION:	
	High income gentrifying neighborhood	Low-income working-class neighborhood
	Rapidly growing percentage of college educated	Low percentage of college educated
	Low presence of Global South residents	High presence Global South residents
DIFFERENT	**URBAN TRANSFORMATION:**	
Political Processes of transformation & Social composition (1990-2018)	Scale	
	Immersed in large city- scale strategic transformation	District-neighborhood scale transformation
	Benefits	Community: Compensation of developmentalist Franco's phase and provision with equipment
	Part of Barcelona's attempt to gain competitive advantage in the ICT sector/world economy	Public space for the neighbors.
	Promotion and construction of housing for ICT and/or international expatriate workers	Creation of social housing
	Framing/Vision	
	Radical transformation of the neighborhood	Continuity
	Imposition of "new" spectacular, isolated, sustainable district and park	Response to neighborhood demands and remediation of historical lack of quality public spaces,
	Erosion of industrial heritage, historical layout of the area	community equipment and affordable housing
	Privatization of infrastructure works	Gain of public space overall through expropriation
	Redevelopment and urbanization of more than 35 km of streets and public spaces	
	Balance of Power	
	Leading role of private sector	Leading role of public sector
	Privatization of the public land	Expropriation of private land for the creation of public space
	DESIGN OF THE PARK:	
	Role of Park:	
	Playful and festive	Socio-cultural
	Isolated park	Connecting park
	Wild-alike aesthetic	Urban aesthetic
	Unstructured play equipment	Structured play equipment

To conduct our study, we used both archival and ethnographic observation methods. On the one hand, we carried out 30 h of observation in each park in May 2018, over two afternoons (from 17:00 until 21:00) between Monday and Thursday, one Friday afternoon (from 17:00 to 21:00), one day-long observation on a Saturday and one day-long observation on a Sunday (in both cases from 11:00 until 20:00) for each park in order to get an in-depth sense of each park's uses, users, and relationships between them. The chosen time slots covered midweek after school play, Friday afternoon play and weekend leisure times, in order to discriminate the effect of these different types of time and days on the uses, relations and duration of activities. This selection also helped us observe a variety of users and interactions between them.

We systematized our observations in three ways in order to combine a structured observation of play and recreation in the park (McKenzie et al., 2000, 2006) with an ethnographic non-structured approach to observation (DeWalt & DeWalt, 1989; C. Marshall & Rossman, 1995). First, through a checklist which included questions about physical access to the park, safety, urban density characteristics, types, quality, usability, organization, and distribution of equipment (including those for children), green space and natural element characteristics and composition and maintenance concerns. Second, we designed a diagramming tool (see Fig. 1) to keep systematic track of the parks user's physical activity levels, activity modes/types, estimated age, gender, and ethnic groupings, which we classified alongside the intensity of the physical activity and the interacting elements/agents –these were our proxy for type of play and socio-material interaction. Furthermore, we employed a field notebook with detailed descriptions of the type, location and duration of activities,[7] informal conversations, observable aspects of participants' ethnic and socio demographic characteristics, and the relations and interactions developed in the space. We built, adjusted, and completed our diagram and detailed descriptions continuously throughout field work, while moving around the park and stopping for especially long intervals of observation in each park's most crowded areas.

Field data was analyzed using grounded theory techniques, (Strauss & Corbin, 1990) following an iterative process of data collection and analysis[8] and using the insights of the analysis carried out after each session of observation to inform the following iteration of data collection. The final most relevant codes related to relational wellbeing from the analysis are: “self-management of risk”, “exploration of oneself”, “bodily and communicative control over rules

[7] e.g. informal/unplanned vs. formal/planned; verbal vs. non-verbal, joyful vs. conflictive, inclusive vs. exclusive, intragenerational vs. intergenerational, monitored/surveyed vs. non-monitored, etc.
[8] Each phase of analysis involved line-by-line thematic note coding; thick descriptions of interactions; and elaboration of hypotheses about the relation between the most salient and repeated codes.

and codes of conduct", "shared meanings and affordances", "management of material and social boundaries", "negotiation of social identity", "social network", "exploration of social and material environment", "attachment to environment and sense of place", "routines", "regimes of care" "regimes of space", "regimes of time".

In addition, we supplemented field observations with archival analysis of roughly 150 pages of documents related to the process of planning/transformation that generated these parks and the design attributes of each park, including the modifications of the General Municipal Plan of 1976 for the creation of the Central Park of Poblenou,[9] the modification for the Central Park of Nou Barris[10] and the different proposals that competed for the design of each park. The archival data contextualized the political processes of production of these socio-natures and situated the observed socio-material relations in the neighborhood's historical social and political context. These archival data were thematically coded according to the discourses, normative visions (e.g., of the "good" city or neighborhood), identified social concerns or problems, definition of beneficiaries, coalitions of power, material design of the built environment and role of "nature" suggested in the analyzed processes of urban transformations.

Our approach does not assume that green amenities have a specific, deterministic effect on children's relational wellbeing per se. Rather, we understand green-playful-child-friendly socio-natures as produced by a set of political and social processes that generate a medium in which relations of wellbeing arise or not (Smith & Reid, 2017). Thus, we are looking for evidence of processes at work below the surface-level and traditional target indicators of wellbeing that may shape the effects on relational wellbeing. We specifically focus on the following socio-material relations as indicators of relational wellbeing within the context of children's play activities: personal (exploration of oneself, self-management of risk); social (negotiation of social identity); and socioenvironmental (exploration of material environment, environmental knowledge, attachment to nature). We also hypothesize that the social composition of the neighborhood will shape the creation of socio-material relations. A visualization of the conceptual framework for data collection and analysis is presented in Fig. 2.

[9] Proyecto de Ordenación del Parque de Pueblo Nuevo, 2000. Municipal archive of Sant Martí.
[10] Plan Especial de Ordenación del ámbito del antiguo Instituto Mental, Fórum Nord de la Tecnología, 1992. Municipal archive of Poble Nou.

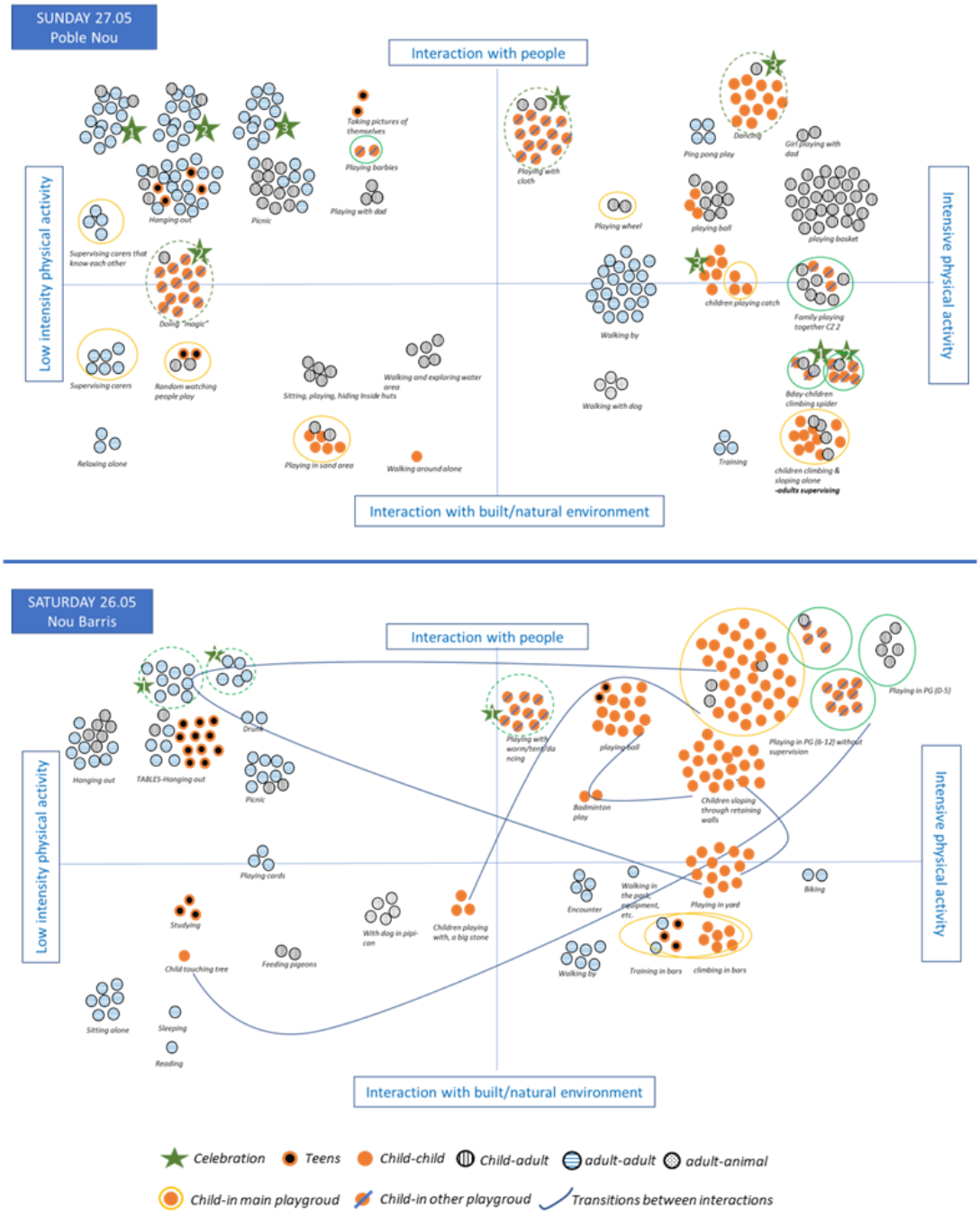

Fig. 1. Diagram of activities based on the intensity of the physical activity, of the interactions, and the interacting elements/agents. Two examples of a weekend day in May in Parc Central de Poblenou and Parc Central de Nou Barris.

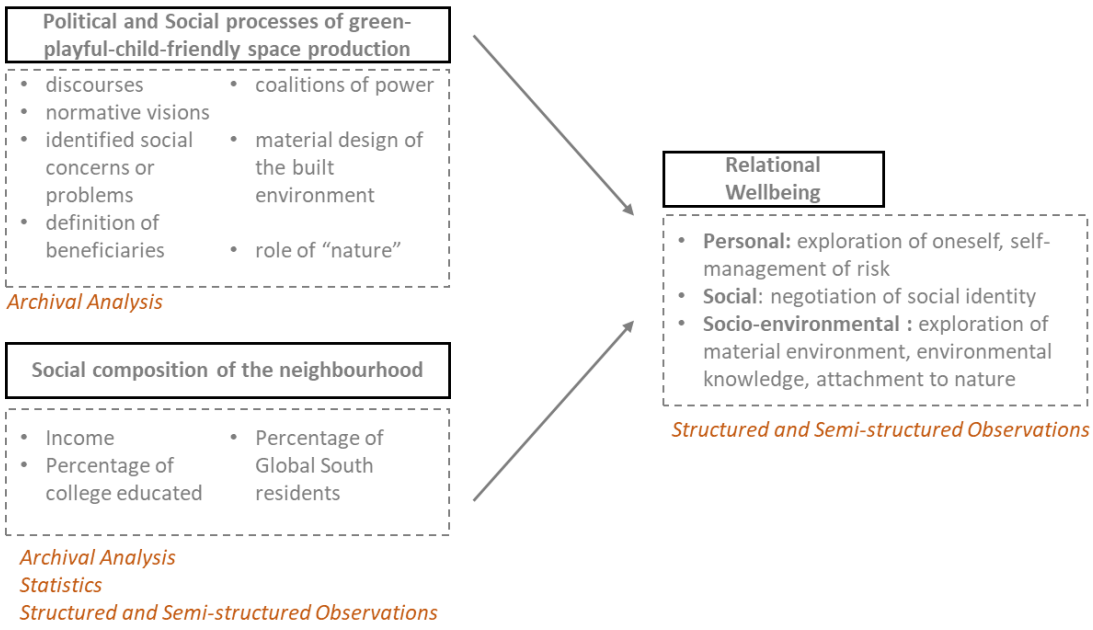

Fig. 2. Conceptual framework for data collection and analysis.

3.3. Results: a ground-level view of children's socio-natures in Barcelona

In this section we analyze the production of children's socio-natures and how those shape relational wellbeing based on our different data sources.

3.3.1. Assemblage of wellbeing in a structured urban socio-nature: the Parc Central de Nou Barris

3.3.1.1. Green space remediation for a historically underserved community

Nou Barris is the district in Barcelona with the lowest index of family economic capacity, a low proportion of college-educated residents in 2016 (11.11% vs. 29.14% city wide average; Barcelona Statistics Department), the second highest proportion of residents from the Global South in Barcelona (7.31% in 2016), and above average percentage of children aged 0–14 (14.11% vs 12.99% city wide average in 2016).

According to archival documents, the creation of the Parc Central de Nou Barris in 1992 was underpinned by a municipal commitment to remediate environmental inequities indicated by a historical lack of quality public spaces, community facilities, and affordable housing in this traditionally working-class district. It responded to longstanding resident demands articulated through a historically active network of neighborhood associations, which still persists today[11]. The Park is located on the site of an old Psychiatric Hospital that the 1976 General Metropolitan

[11] Nou Barris, Centre de Estudis I Documentació de Nou Barris, Municipal Archive Nou Barris.

Plan (PGM) and a 1992 Special Plan[12] decided to dedicate to a large green space, to community facilities (e.g., the Nou Barris district headquarter, local police offices, student housing, and a library) and to social housing. The planning of the park represented an important milestone in the interruption of the speculative and developmental urbanization of the area of the previous decade and its substitution for a period of suture urbanism, "reliving what had been separated, of intervening in the regeneration and dignifying of spaces marginalized by Francoist speculation"[13].

According to the 1992 Special Plan9, the amount of land for housing was reduced to a strip located along the Park, but with a strong ambition to devote these to quality public housing. The land reserved for community facilities largely re-used the remaining structure of the old Psychiatric hospital and its environs. Finally, the ground where the park was planned – that was previously privately owned and ready to be developed – was obtained by expropriation legitimated by the 1992 Plan[14]. As a result, public space was regained, community facilities were built, and more social housing was provided for vis a vis the previous state of the metropolitan plan. The Parc Central de Nou Barris and its surrounding transformations had a strong impact on discourse about the local community, as revealed by the narrative used to explain the origin of and visions behind the park in official documents8 and informative signs throughout the community amenity areas. (See Fig. 3.)

Fig. 3. Parc Central de Nou Barris. The design reflects the integration of different paces and diversity of uses Source: Pla Especial d'ordenació de l'ambit de l'antic institut mental-Forum Nord de la Tecnologia-1992, Municipal Archive of Poblenou. Scale 1:5.000 m.

[12] Plan Especial d'Ordenació de l'ambit de l'Antic Instituto Mental of 1992, Municipal Archive Nou Barris.
[13] Nou Barris, Centre de Estudis I Documentació de Nou Barris
[14] "Plan Especial d'Ordenació de l'ambit de l'Antic Instituto Mental" of 1992, Municipal Archive Nou Barris.

3.3.1.2. Material coherence and continuity of the park-design

The park has a rather urban aesthetic, reflected in the predominance of paved triangular terraces connected by brick-ramps used as contention slopes (see Fig. 4b, c) and the same vertical wooden structures providing daytime shade and night lights that are present across the neighborhood (see Fig. 4a). This design, together with the absence of a clear perimeter, contributes to a sense of continuity and visual coherence, integration, and flow between the neighborhood physical elements – houses, streets, equipment – and its natural features. Children's play equipment is mostly composed of fenced playgrounds – three out of four playgrounds are fenced (see Fig. 4d, e, f) – and contain objects that seem likely to shape and even dictate children's play. Benches are spread throughout the park, many of them around the fenced playgrounds, supporting children's supervision, and the abundant communal areas and picnic tables.

3.3.1.3. Socio-material relations in the Parc de Nou Barris

At first sight, abundant socio-environmental interactions take place in the park among people of a diversity of ages and spoken languages (Catalan, Spanish-Castellano, Spanish-Argentinian; Spanish-Dominican; Portuguese/Brasilian, Russian, Slavic languages or Moroccan) who seem to be involved in regular daily routine activities in and around the park throughout most of the time of observation. During working weekdays, teenagers carrying their backpacks enter the library or sit in the lawn to do homework and chat. Elderly – mostly white and Spanish residents – take walks in the park or sit in groups and engage in informal talk about their upcoming summer holidays or some health issues. Middle-age adults walk by and casually meet acquaintances and chat. Homeless people (many of them black) gather around the "Centre de Atención Integral,"[15] complaining about the difficulty of getting accepted in a music audition if you're not "Spanish-Spanish" or the discriminations faced when begging on the streets. Parents from diverse backgrounds (in general, either Spanish or from the Global South) wait at a school entrance in front of the park, either gathering for a while chatting over their latest tax declaration, scheduling appointments for dinner, breastfeeding, asking for someone to take care of the kids for a night, or using that time to quickly enter the local market and buy some groceries. During weekends, the park is an active and dynamic meeting point with a myriad of children playing, families and groups of friends – with and without children – organizing picnics or birthday

[15] Municipal center that offers night-time accommodation, hygiene, dinner, breakfast, rest and social-health care.

celebrations, elderly people taking a walk and sunbathing on the benches, and teenagers gathering to sing rap, skate, smoke and/or play cards.

a. Vertical iconic structures

d. Fenced playground. Castle and slide

b. Brick slopes

e. Fenced playground-Individual rocking horses

c. Brick slopes

f. Fenced playground with hanging bars

Fig. 4. Parc Central de Nou Barris. Material design of built environment. Design and elements allow for integration of diverse infrastructure, natural and non-natural elements, users, and uses.

There are abundant instances of children's free play and exploration of the environment. Children frequently decide the type, location, and rules of their play – either individually or in peer-groups, but without the guidance of an adult, which is also illustrated in the frequent

instances of child-child interactions in our diagram (see example of one observation session in Fig. 1 where child-child interactions are represented in orange). Children also exhibit a considerable degree of exploration and shared knowledge of their surrounding social and material environment. Free play is apparent in the seemingly improvised art of children's activities. Children's use of the equipment often challenges the standard usage of the equipment. There were regular observations such as, “children slide down the contention slopes as if they were slides”, “children hang themselves from bike racks as if these were monkey bars” (Fieldwork Notes, several days). Also, children play throughout the entire park and their range of movement seems to be only limited by the adjacent traffic streets and not by the fenced playgrounds. Children enter and exit fenced playgrounds whenever they want, flowing from one to another as if moving between rooms in a house, in a safe, familiar, and comfortable manner. Fenced playgrounds also seem to support toddlers' independent exploration of themselves and the environment given that some parents/caregivers seem to take advantage of the safety and visibility of the fenced playgrounds to leave toddlers alone for a while inside while playing with older children or chatting with other adults.

There are also numerous unexpected transitions in the type of play (e.g., from quiet to active play), the composition of the group playing – including interactions with strangers – (e.g., from individual to group play), and the objects of interaction (e.g., from interacting with a ball to interacting with a wooden stick to interacting with an ant). The high degree of fluctuation between spaces and types of activities was also observable through the very frequent lines representing transitions between activities and places in our diagrams (See example of one observation session in Fig. 1).

This relates to one of the main patterns observed in Parc de Nou Barris. Although the interactions with the surrounding environment mostly start out involving non-green/non-natural elements such as the playing equipment, the contention walls, the light and shade structures or objects brought from home (e.g., a ball), these interactions frequently stimulate and evolve into interactions with the natural environment, such as water, wooden sticks, trees, and animals.

Furthermore, another main pattern in Nou Barris was that children's socio-material relations were characterized by a high degree of control over their surrounding material environment, which allowed for an individual or peer-based management of risk, rules, and resources. We recorded recurrent instances of children's awareness of their own aptitudes and limits (e.g. “I can't do this”, says a girl to her dad; Fieldwork Notes Tuesday 8.05, 18:00) or warnings to other

kids about the risks involved in certain activities (e.g. “take care when sliding, in this way you will fall on your head”; “if you go into the water and get wet your mum will be very angry with you”, “if you get on this (big wheel) you will feel very dizzy”; Fieldwork Notes, several days). There were also hints of understanding of rules (e.g. “I like the water area, but bathing is not permitted, and anyway, I would not like it because the water is very dirty”; Fieldwork notes, Wednesday 16.05, 19:00) and peer-organization of norms (e.g. we observed that children tend to queue for using the Tyrolean, except when it's their first time of the day, when it seems to be accepted to skip the queue). Additionally, the children had a good geographic orientation vis-à-vis the surrounding environment (e.g., “let's go to the water area”; “I live there”; Fieldwork notes, Wednesday 16.05, 18:00), showing attachment to the space (e.g., “I like the spider/climbing areas. There is one here and one over there”; Fieldwork notes, Tuesday 8.05, 18:00), and held considerable knowledge of the available resources (e.g., we repeatedly observed carton boxes being collected from nearby stores to be shared and used to better slip down the contention walls).

The set of socio-material relations at work and the high degree of communicative and bodily exploration, knowledge, control, attachment and familiarity that children seemed to have with the social and material environment was at odds with the expected affordances and opportunities offered by a non- “natural”, structured and fenced socio-nature. Nevertheless, unstructured, and spontaneous relations among kids and their environment seem to emerge because of the way this socio-nature was inhabited and owned by the apparently working-class and/or minority residents in the park. The frequency with which mostly children but also teenagers, adults and elderly went to the park and the long time they spent in the park revealed a socio-nature comprised of proximate, ordinary, and comfortable public space for residents' fulfilment of their social and material needs, inhabited and cared for as an extension of the domestic sphere.

A shared regime of care toward children, the integration of adults in the space, and a sense of community precipitate the production of these spaces of play as a familiar, supportive, and nurturing arena characterized by safety and informal care that facilitates the creation of relational wellbeing for children and adults. Childcare activities were often shared among adult acquaintances who gathered together (e.g., “one or two adult members of the group at a time seem to care for children, bringing them a snack, playing with them or keeping an eye”: Fieldwork Saturday 26.05, 15:00). During weekends, as large group picnics allowed children to play with one another and/or with adults, adult participants did not seem to be in the park only in a supervisory/ childcare mode but also in order to socialize with peers and enjoy their free

time. This was also perceptible through the diagram, in which we recorded consistently frequent adult-adult interactions (See example of one observation session in Fig. 1 where adult-adult interactions are represented in striped, blue). Their presence reinforced a social network for them and for the children.

Last, a sense of community was perceptible, especially when new children and adults joined the park and upon arrival greeted each other - sometimes with an energetic "hola familia"/ "hi, family." During working days, we also encountered a general sense of co-responsibility – also stemming from strangers – toward children's safety (e.g. "a young man training in the bars calls the attention of a girl who is climbing too high and keeps an eye on the girl until she finishes climbing" Fieldwork Notes Tuesday 8.05, 18:00) and amusement (e.g. parents play and interact with their offspring, but also with other children in the playground; and the observation of "teenagers training in bars and listening to music (trap) briefly interacting with two nearby girls"; Fieldwork notes Wednesday 16.05, 19:00).

3.3.2. Scheduled structured play in a spectacular and "wild" socio-nature: the Parc Central de Poblenou

3.3.2.1. Radical transformation of a neighborhood for a city-wide redevelopment strategy

According to archival documents, in the late 1990s, Poblenou was a low-income, working-class post-industrial neighborhood that "had not participated in the dynamic of urban improvement of the surrounding renewed areas"[16]. During the early 2000s, the regeneration of Poblenou and the creation of the Parc Central del Poblenou were tightly linked with a large-scale city-wide redevelopment strategy. In Poblenou, this strategy called for a new creative, technology-centered, and sustainable hub known as the "22@ district" that would "boost Barcelona's competitive advantage"[13] and bring the city into line with the global transition from a "capitalist industrial society into a digital and knowledge driven society" of the 21st century[13]. This general strategy holds up to today.

This strong entrepreneurial framework used by the city Administration at the time was explicit that "the increase of the housing stock should be minimal, and … dedicated to the residence of the workers of the companies"[13], and not the existing majority of low-educated residents that lived in Poblenou at the end of the 1990s[13]. Furthermore, as stated in the archival documents, there was an initial capital prerequisite required for a developer to benefit from 22@ support (the minimum intervention unit was the block and main actors/partners had to "own 60% of the land"[13]), which resulted in high private investment and in the creation of a new public-private

[16] Proyecto de Ordenación del Parque de Pueblo Nuevo 2000, Municipal Archive of Sant Martí.

capital company – 22@bcn S.A. – to facilitate the transformation. The radical top-down intervention in Poblenou socially, physically, productively, and functionally transformed the neighborhood and swept away a large percentage of residents through concomitant gentrification and displacement dynamics, transformation of the material environment that had been associated with an industrial heritage, and alteration of the existing sense of community (Anguelovski, Connolly, Masip, et al., 2018; Montaner et al., 2011). Today this heavily gentrifying neighborhood has an index of economic capacity similar to Barcelona's average (92.63 in 2016[17]), a below-average percentage of residents from the Global South (4.67% in 2016), increasing presence of college educated residents (23.21% vs. 29.14% city wide average[18]), above average percentage of children aged 0–14 (14.08% vs 12.99% city wide average in 2016), loss of public space and a growing building stock of high-end housing and contemporary unique-architecture. Its current demographic and social composition thus vary quite dramatically from that of Nou Barris.

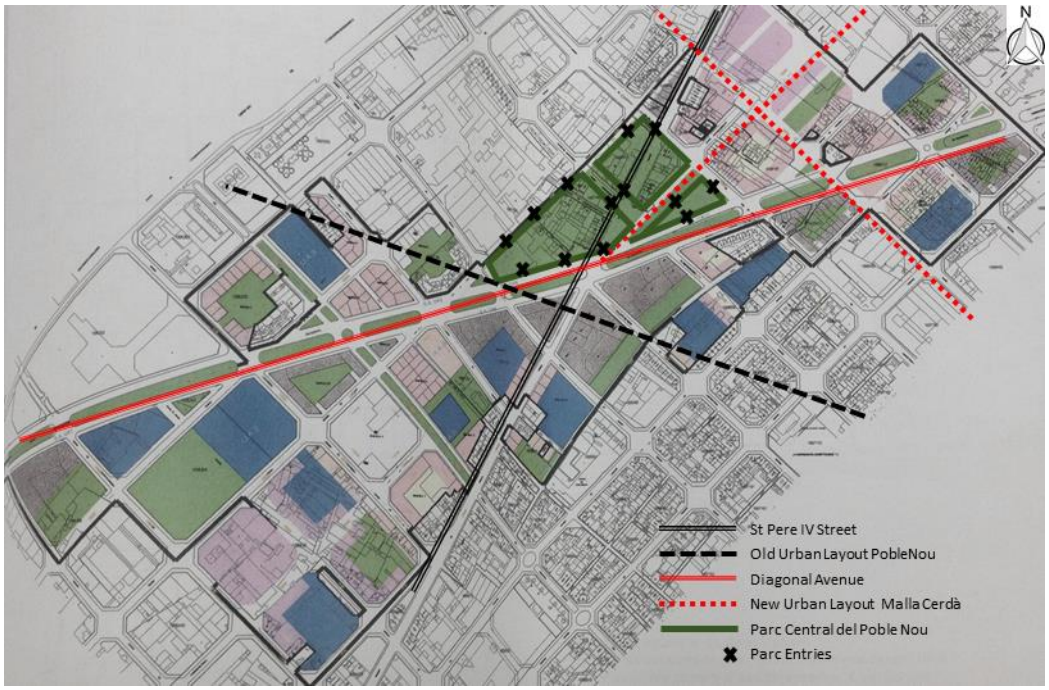

Fig. 5. Parc Central del Poblenou. Design reflects segregation of infrastructure and users and lack of continuity between different park spaces. Source: Proyecto de Ordenación del Parque de Pueblo Nuevo 2000, Municipal Archive of Sant Martí. Scale 1:5.000m

[17] City of Barcelona Statistics Department.
[18] City of Barcelona Statistics Department.

3.3.2.2. Spectacular and isolated design

In the late 1990s, the construction of the Parc Central del Poblenou was contemplated as part of this broader economic development agenda and as a central element of the area's "playful and festive offer of activities."[19] A review of historical documents reveals the extent to which the final selected project, led by French architect Jean Nouvel, reflected the same lack of consideration for Poblenou's material and social heritage as other 22@ projects. The park design aligns with the layout of the more modern portion of the central city (Avenida Diagonal and Eixample neighbourhood). It is structured around the historically central highway to France called Pere IV Street which erodes the older urban layout of Poblenou (see Fig. 5). Poblenou's material and social heritage was further transformed by the choice of an isolated park design – the space is concealed by bougainvillea ivy vegetated walls and only has a few entrances – that closes the new public space off from its surroundings.

On the interior, the park is silent, and the noise and urban form of the exterior are almost not perceptible (e.g., Fig. 6). With much of the park mimicking wild nature, in sharp contrast with Nou Barris, the Parc Central is divided into three main areas separated by city streets. Each of these areas presents a "natural" aesthetic, mainly achieved through the presence of abundant willow-trees. None of the children's equipment is fenced and many of the amenities are built out of biomass, such as wooden huts (Fig. 6a), a water area, one sand area, and a spiral shaped area full of bushes forming a labyrinth. There are also monkey bars, climbing spider nets (Fig. 6c), ping pong tables, basketball courts, and a large open playground surrounded by individual chairs and willows (Fig. 6d, e). The playground integrates many possible play options and presents a diverse orography, with ramps, ropes, slides, a wheel, hanging bars, a sand zone, and a rubber-surface area painted different colors and shapes (e.g., lines and circles).

[19] Proyecto de Ordenación del Parque de Pueblo Nuevo 2000, Municipal Archive of Sant Martí.

a. Wooden huts

d. Playground in vegetated area

b. Dense Vegetation and artistic sculptures

e. Playground in vegetated area

c. Spider-net. Supervised play

f. Birthday Celebration

Fig. 6. Parc Central de Poblenou. Material design of built environment. Design reflects segregation of infrastructure and users and lack of continuity between different park spaces.

3.3.2.3. Socio-material relations in the Parc Central de Poblenou

During weekdays, the park is usually very quiet in the early afternoon, one can hear birds and bikes passing through the bike lane on the old Pere IV street. Some of the few adult visitors lie on the grass while others walk their dogs. Teenagers seem to rarely use the park, and when they do, they practice dance moves, play basketball, or take pictures of themselves with their smartphones. Elderly visitors are also almost absent. In general, children and their

parents/caregivers tend to gather around the main rubber playground (Fig. 6d, e) and at intervals in the central plaza or around some of the hanging bars. They are mostly white and Spanish or from the Global North, as can be inferred from the main spoken languages – Catalan, Spanish, French, Italian, American- English and Greek. For the few instances of ethnic diversity we observed, visitors seemed to be divided along class lines around the playground, which we could infer by observing/identifying the dress style and relation with children of the visitors (e.g., parent or professional caregiver). In field notes (Monday 7.05), we recorded, "the 3 ethnically diverse persons in the park – one Asian and two Andean women – sit in the benches that are further away from the central playground, whereas Spanish-Global North white parents are sitting in the first line of the playground. The Asian woman is in the playground accompanying her child, whereas the Andean-South American women are professional caregivers." This hierarchical spatial disposition did not apply to middle-class nonwhite parents – only observed in seldom birthday celebrations – who were mostly spatially integrated.

Children were almost constantly accompanied by an adult and, as a result, play areas had comparable numbers of parents and children mixed together. This observation is perceptible in our diagrams by the high presence of adult-child interactions (see example of one observation session in Fig. 1, with adult-child interactions represented in black stripes). Children's interactions with the play equipment were mainly guided and stimulated by parents (e.g., parents saying, "look at that rope!", "do you want to go to the slide?" Fieldwork Notes, various days). When not guided by parents, interactions with the environment followed a strict obedience to the existing physical cues (e.g., the spider and monkey bars were exclusively used to climb, the sand area to play with sand, the basketball courts to play basketball). Furthermore, children's activities seemed to be guided by the uses demarcated by the colors and shapes painted on the rubber soil (i.e., circles to walk in circles or jump, straight lines to walk or run, etc.). Parents contributed to the reproduction of these norms by explaining to children how to navigate the playground. In Poblenou, in contrast with Nou Barris, none of the diagrams of the observation sessions contained fluid transitions across space or between activities (see example in Fig. 1).

Despite the numerous opportunities to have contact with nature (the park was designed to mimic natural landscapes), none of the children exited the playground area delimited by the rubber soil and children did not interact with the material environment other than the play equipment or games brought from home (e.g., balls, buckets, etc.). Consequently, the contrast between the neighborhood and playground physical elements, on the one hand, and the "wild-resembling" aesthetic of some of the natural elements, on the other, reinforced a socio-natural

dichotomy, leaving “natural” elements as an untouched aesthetic background landscape. The size and shape of the trees (Fig. 6) and their more manicured look might furthermore lead parents and children to perceive that those trees are not meant for play but have been placed there for aesthetic reasons.

Interactions with the social environment at all times were also scarce in comparison with Nou Barris. Children did not seem to interact much with other unknown children or adults. When interactions with strangers took place, these were mostly reduced to polite and kind gestures mediated by adults (e.g., “a dad explains to his daughter that if she wants to play with a ball, she needs to ask the owner for permission and thank her”; Fieldwork Notes, Friday 11.05; 19:00). The management of risk was also mostly taken over by adults (e.g., parents/caregivers commanding “do not jump here”, “watch out when climbing the ramp”; “don't run so fast or you might bump into other children”; Fieldwork Notes, various days).

The set of socio-material relations at work, especially the reduced exploration and management of oneself and the material and social environment was at odds with the expected opportunities offered by a “nature-like” play space with unstructured and creative play amenities designed into it. Nevertheless, these socio-material relations seemed to, partly, be shaped by parents shadowing children and by a lack of independent child integration into the park. The adults' main reason to be in the park was to accompany their children, play with children or supervise them. This was also perceptible through the diagram, in which we found few adult-adult interactions (See example of one observation session in Fig. 1 where adult-adult interactions are represented in a blue stripe).

Park occupation and activity increased after 5 pm during school days. However, in contrast with Nou Barris, the short-time and the little regularity of children's and parents'/caregivers' visits to the park during these working evenings (i.e., there were few identified recurrent users and children usually stayed maximum 40–50 min in the park) also seemed to hinder children's development of a sense of control over the processes that shape their socio-nature and ability to contribute to the scant social network children and parents seemed to have within the park.

Furthermore, the park only seemed to serve as a brief and exceptional stop in children's and parents' life rather than a long daily routine (e.g., a dad says to a little girl: “let's make a stop here and continue”; Fieldwork Notes, Thursday 17.05, 18:00), unlike what we observed in Nou Barris. The individual/family-based management of care we observed (e.g., parents only interacted with their offspring, not with the other children) with independent nuclear family units sharing a material space might reflect a desire of parents and/or children to spend some

quality minutes together in an exceptional moment within a broader, perhaps overscheduled, middle-class life (De Visscher & Bouverne-de Bie, 2008; Donner, 2017; Katz, 2008). This schedule is illustrated by parents' frequent conversations about their own and children's time management (e.g. “can we go on Saturday?… No, I have an appointment to do my nails”; Fieldwork Notes, Friday 11.05, 17:00). In turn, the lack of a routine and social network in the park tend to create a barrier against a greater sense of familiarity, safety, and informal environmental control that could prompt children to wander around comfortably and parents to feel more carefree.

During weekends, the time spent in the park and the sense of familiarity and safety seemed to increase, especially in the late mornings and late afternoons, when the space was usually more crowded, mostly owing to children's birthday celebrations (Fig. 5f). These celebrations were organized by residents who did not seem to use the park every day (e.g., organizing or participating parents acknowledged how this park is “actually a nice place to do this kind of celebration”; Fieldwork Notes, Sunday 27.05). During those events, parents socialized with other parents, talked about school options for children, language management (in the cases of multilingual families), work, etc. Although gathering for children's celebrations, adults seemed to be fulfilling independent socialization activities while children engaged in more exploratory play (e.g., running in-between trees), appropriated the material environment, and challenged the designed use of the equipment (e.g., “some girls are using the monkey bars as a puppet house”; Fieldwork Notes, Sunday 27.05, 13:00). Free play attempts were, however, on several occasions interrupted by the arrival of a hired professional entertainer who, even if encouraging children's interaction with the environment, mostly directed children's play, mediated children's care, and contributed to a shared – although commodified – regime of care while adults kept socializing. We rarely observed such directed play in Nou Barris.

In Poblenou, the lack of a routine, a sense of community or social network and the disaffection of adults in the socio-nature precipitate an individual/family-based management of care and the co-production of these spaces of play as a foreign, exceptional space, “used” as a material amenity in certain occasions but not “lived” as a community space in a way that enables practices associated with personal, social and environmental benefits to arise.

3.4. Interpretation and discussion

Our research in Barcelona reveals that different conditions of access, utilization, and material design of the two parks in terms of green biomass and unstructured play equipment proved not to be a sufficient condition for explaining the production of children's relational wellbeing, free play and observed contact with nature. In the seemingly more un-natural and structured socio-

nature of the working-class Nou Barris park, we observed a greater relational wellbeing. This was reflected through an assemblage of designs and interactions promoting children's free play, self-exploration, self-management of risks, diverse social interactions, freedom of movement and environmental exploration, knowledge, and control, thus creating a positive green-playful child-friendly park/amenity toward relational wellbeing. In contrast, in the creative, unstructured, and greener socio-nature of the gentrifying Poblenou park, we found high rates of supervised play, few movements across space, a strict arrangement of the types of play, and scarce interactions with the social and material environment at most times of the day and week – conditions that point toward a lower level of relational wellbeing built over time. Thus, we argue that the most important aspect in determining the production of relational wellbeing is the inseparably intersected socio-material structure of the neighborhood and residents' uses of the socio-nature (i.e., local socio-material conditions, Fig. 7). In turn, the differentiated planning processes, visions and urban development goals for each park determine how and for what these green-playful-child-friendly places are being produced and affect the socio-material conditions of the neighborhood – and eventually use of space and relational wellbeing (Fig. 7). While we have developed such findings for Barcelona, our analysis of the relation between urban greening, implementation of play and child-friendly agendas could readily be applied to analogous contexts in other cities such as Vienna, Amsterdam, Portland, or Austin, which have ostensibly exhibited similar agendas and neighborhood greening.

In Nou Barris, our archival analysis shows that urban transformations entailed a municipal effort to support the existing social and material capital while improving the community's access to equipment, social housing, and public spaces. The production of a green-playful-child-friendly space was the catalyst for a holistic, resident-centered, and co-driven process of regeneration that was able to address long standing demands stemming from existing neighborhood associations and diverse social groups. Up to today, the socio-material conditions of Nou Barris' residents (e.g., small apartments and no second residences; migrants with no direct family in the city; absence of professional domestic help) do influence residents' management of time (e.g., full time working parents and few children's extra-curricular activities) and aspirations. Here, the long-standing social capital of Nou Barris, which hasn't been eroded by radical neighborhood socio-material changes, is connected to what we observed in terms of risk perception, sense of community, and shared responsibility toward children. These conditions in turn co-produce the Parc Central de Nou Barris as a daily community park that resonates with the community's pride, identity and life that permeated the original planning process. While the intensive use of the park allows for residents' social reproduction, it simultaneously promotes

children's sense of safety, control, familiarity, knowledge, and attachment to the material environment and, in turn, their contact with "nature", freedom of movement, improvisation, fluidity of interactions, and a supportive surrounding social network – all reflecting strong relational wellbeing. This history has deep ramifications for how other cities engaging in similar agendas should include neighborhood history and actors into a co-design process.

In contrast, in Poblenou, our archival analysis shows an urban transformation aimed at attracting private investment through public spending in fixed capital and infrastructure in the area and securing private capital accumulation and growth through the destruction of old economic, material, and social structures (Harvey, 1978). In turn, this process opened up a growing role for private capital in the design of public spaces and eroded the original social and material structure of the neighborhood. In many aspects, unlike in Nou Barris, the Parc Central de Poblenou was produced as a commodity for the reproduction of power and capital in the restoration and new value creation of the geography of Poblenou and the 22@ district. A spectacular object image – where capital itself becomes image (Katz, 2008) – that relies on commodified experiences and representations of the "desired" child and nature- was imposed on the space designed by Jean Nouvel producing a commodified space that reifies the formalization of the relational categories of children, nature, and play – one at odds with the claimed universal benefits of a green, playful and child-friendly city.

In the Parc Central de Poblenou an eroded social and material capital strongly imprints socio-material relations in the socio-nature. Children's use of space is ordered and structured, while free interactions with the "natural" environment are scarce. Structures of shared care and a sense of familiarity and safety are absent. A rather individual or family-based organization of care and play prevails, further confining the park to an exception in children's routines. This sense of shared individuality and lack of socio-material relations outside the designed play amenities and/or the family unit are in line, although at a different scale, with the 22@ insular urban design of high-end constructions with little connectivity between them. The elimination of Poblenou's urban layout and industrial building stock together with the role of the park as an exception in children's routines seems to further obstruct the creation of social networks and prevent the attainment of the necessary attachment and knowledge of the socio-nature to provide a sense of community and control over the environment – and thus relational wellbeing. The hectic and interrupted use of Poblenou's socio-nature is in turn linked to these new middle-class families' socio-material structural circumstances (e.g. perhaps a second residence where children can interact with nature; domestic-help at home and more time to spend with their offspring in the park), routines, structures, times, habits (e.g. plenty of other activities are

scheduled in their day, in addition to occasionally playing in the park), aspirations (e.g. desire to excel) and perceptions of high, external risks.

More specifically, in terms of relational wellbeing, our analysis reveals that planning processes, visions and urban neighborhood development goals also moderate the effect of green-playful-child-friendly amenities by (re)-directing the socio-material structure of the neighborhood in a way that either promotes or undermines socio-natures – that is how these spaces are used and perceived – and, eventually, relational wellbeing (Fig. 7). These findings thus ask us to rethink how we interpret and analyze children's relational wellbeing and urban environmental equity, with a much greater emphasis on procedural and cultural processes that lie below the surface of the built and natural environment and what nature/natural spaces are created and available there.

Fig. 7 provides a model for understanding why the widespread construction of green and playful spaces in cities (and the density of “green” or “nature” features in particular) is not as important for children's wellbeing as neighborhoods’ socio-material structures and residents' social construction of the space. In turn, both are inextricability linked to the political and planning processes driving green and playful urban agendas. Relational wellbeing is co-produced by specific interactions between humans and the material environment at place in these socio-natures that are themselves embedded within socio-material structures as both a product and an enabler/constraint of specific actions, routines and uses constitutive of relational wellbeing. The political planning processes driving green and playful urban agendas and especially the balance of power between equity and growth interests, the definition of the beneficiaries, and the recognition of (or lack of) the social and material heritage of the neighborhood also all have a strong impact on the neighborhood local conditions, and eventually relational wellbeing.

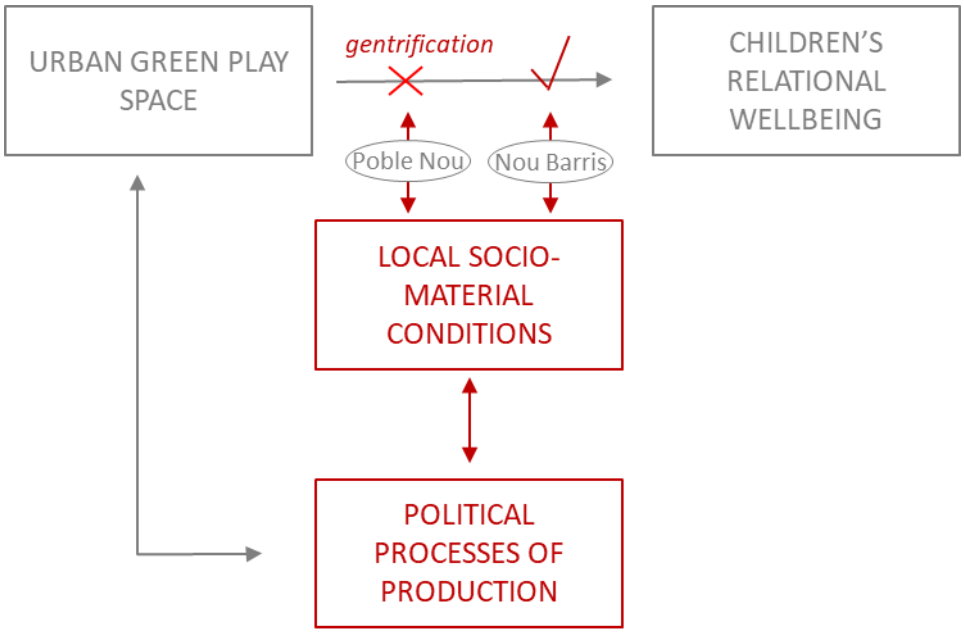

Fig. 7. Children's urban socio natures and the pathways for relational wellbeing.

3.5. Concluding remarks

Our study asked how the political and social production of green playful- child-friendly amenities shapes relational wellbeing. This paper contributes to the vast urban environmental equity and urban political ecology literatures (Agyeman et al., 2002; Agyeman & Evans, 2004; Campbell, 1996; Gould & Lewis, 2017; Heynen, 2006; Mohai et al., 2009; Pellow, 2000; Wolch et al., 2014) as well as wellbeing research (Smith & Reid, 2017) through a novel examination of the differential relationship between the creation of new green-playful-child-friendly socio-natures and the types of relational activities that result in two contrasting spaces.

It directs our focus toward the ways in which social hierarchies are differentially reproduced through the socio-material interactions generated in these spaces and how those, in turn, produce what we call 'relational wellbeing' for children. It specifically contributes new theory on the role of politics, power, and capital in shaping how urban socio-natures promote or constrain relations of wellbeing. In other words, this study moves us beyond traditional analysis of green or/and play space "access" and its impacts on health/wellbeing outcomes. It also reveals how historic environmental inequities might be remediated through green spaces that produce socio-natures and relational wellbeing in ways that address broader neighborhood needs and characteristics as well as traditional local social relations and ties.

From a methodological standpoint, this paper also offers a novel methodology to analyze relational wellbeing. Our developed methodology allows researchers to systematically observe relations in space in such a way that they can be related to the underlying socio-material context

and connected with overall wellbeing. While we have specifically focused on indicators of relational wellbeing within the context of children's play activities, this methodology can be applied to broader socio-natures and to other international cases of neighborhood redevelopment and implementation of child-friendly green space and play agendas.

In sum, we call here for researchers to examine the underlying processes that shape children's socio-natures in order to understand relational wellbeing, as part of overall wellbeing. In Nou Barris, the park was planned to integrate with the existing urban fabric with few designed elements for children to interact with nature. Yet, such interactions were common because of existing social and material contexts apart from the planned and designed elements that made them possible. In Poblenou, where interaction with a "purer" vision of nature was planned and designed with little integration to the existing surrounding urbanism, such interactions were rare. Rather, the social and material context militated a confined and rule-bound playscape. Even when access to nature was, in theory, greater and environmental inequities "better" addressed on paper, the differentiated benefits of greenness were determined almost entirely by the processes that shaped children's socio-natures.

3.6. References

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Chapter IV. Child Friendly City Agendas as emergent neoliberal place-based subjectivation?

Abstract

A set of urban policies and spatial interventions aimed at enhancing children's urban environments and increasing their health, wellbeing, and participation in urban life has been widely embraced and adapted to different contexts under the loose umbrella of Child Friendly Cities (CFC). These actions directly reshape the spatial infrastructure of children's social lives and, thus, have implications for the type of citizens cities produce. Yet, despite the increasing ubiquity of CFC plans, children-centered transformations have not been a major analytic theme compared to other economic, spatial, and welfare aspects of the restructuration of cities in the context of neoliberal urbanization. In light of this sparse examination of the topic, we explore how CFC plans reorganize children's urban social space across different neoliberalizing contexts. Drawing on empirical research conducted in Amsterdam, Vienna, and Bristol in 2019, including 46 semi-structured interviews with key actors involved in child friendly urban planning, we contribute to the understanding of how place-based subjectivation processes operate within CFC plans. We argue that in cities undergoing strong neoliberal reorganizations of space, CFC agendas are instrumental for neoliberal urbanization processes in terms of subjectivation and governmentality.

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4.1. From the promise of childhood in urban societies to child-friendly urbanism

There is a growing attention given to children in urban transformation agendas, which is often embedded within broader sustainability rationalities. Cities are embracing and adopting a set of urban policies and spatial interventions aimed at enhancing children's urban environments and improving their health, wellbeing, and participation in urban life under the loose umbrella of Child Friendly Cities (CFC). Initiatives include street pacification around schools, climate refuges in school environments, new children-friendly green spaces and urban renaturing programs, among others. Since the 1990s, international governance organizations have contributed to and supported the CFC Agenda. Examples include the United Nations General Assembly adoption of the Convention on the Rights of the Child in 1989 and UNICEF's CFC initiative launched in 1997. Beginning in the 2000s, this international attention prompted many local governments to renew their interest in parks and playground regeneration as part of a commitment to enhance children's wellbeing and address the unprecedentedly high prevalence of childhood respiratory diseases (Tischer et al., 2017), obesity (Di Cesare et al., 2019) and mental disorders (Amoly et al., 2014; Flies et al., 2019).

By and large, CFC initiatives are seen as a positive outcome in the overall push among cities to improve quality of life for residents, and it is unusual to find arguments against the implementation of CFC programs. Though, they have received some criticism. One line of critical thinking in this area sees CFCs as caught up in simplistic understandings of what urban children need, resulting in enclosed and monotonous or standardized play spaces unable to solve children's need for autonomy in the city (Hart, 1992) or to connect with the underlying dynamics that generate wellbeing for children (Perez-del-Pulgar et al., 2020). Meanwhile, another main strand of criticism in this areas sees CFC transformations as part of gentrification processes identified as "familification" (Goodsell, 2013) or "genderification" (van den Berg, 2018).

Notwithstanding these lines of critical thinking and the increasing ubiquity of CFC plans, children-centered transformations have not been a major analytic theme in the urban planning literature compared to other economic, spatial and welfare aspects of urban restructuration in the context of neoliberal urbanization (Brenner, 2019; Brenner et al., 2010b). Through the analysis of CFC practices in Amsterdam, Bristol, and Vienna, this article attempts to help redress this gap by exploring the extent to which and how CFC plans are reorganizing urban social space across different neoliberalizing contexts. Our analysis suggests that CFC agendas are instrumental for neoliberal urbanization processes in terms of subjectivation and governmentality.

4.1.1. The promise of childhood: Creating public and play spaces for children

Urban public spaces designed especially for children predominantly arose in the 20th century in Global North Metropolises[20] (Aitken, 2001; Burkhalter, 2016; Karsten, 2002; Light, 2020; Lilius, 2019; Ward, 1978). Scientific advancements in various fields during the 19th and early 20th centuries (e.g. psychoanalysis, developmental psychology, educational philosophy, cognitive development, pediatrics, and biomedicine) created a distinct perspective on childhood as an age category with its own characteristics (e.g. more plasticity and malleability (N. Lee, 2013)) and necessities (e.g. play). As a result, childhood became a policy challenge wherein interventions were needed to positively direct this crucial period of life for human development and formation of the self [21](Aitken, 2001; Harter, 2006).

In the early 1900s, the convergence of these ideas on childhood with modernist utopian social thinking and planning – characterized by a strong belief in social transformation and progress – produced organized efforts to standardize the material conditions of childhood as a means of larger social transformation (Burkhalter, 2016; N. Lee, 2013). Reflecting these efforts, during the 20th century, children were increasingly described as too important to be the responsibility of parents and families alone, so state agencies started to regulate personal, domestic and public aspects of children's everyday lives (Aitken, 2001; Lilius, 2019). Education, health, and the emerging science of play were regarded as pivotal fields for enhancing children's acquisition of social and cultural competencies appropriate to the urban society being designed at the time (Aitken, 2001; Hirschfeld, 2002).

4.1.2. Childhood public spaces and social utopia

There were notable paradigm shifts in children's public spaces throughout the 20th century. When early playgrounds were built in the late 19th and early 20th centuries, their construction was underpinned by moral and hygienic demands that challenged the living conditions of urban working classes and proposed to take children off the streets (Laurian, 2006; Lilius, 2019). In the 1930s, new playground concepts encouraging children's creativity and contact with natural materials (e.g., air, water, sand, and fire) emerged, challenging the standardized steel structures of early official playgrounds. Two decades later, the suburban ideal came to represent the

[20] Some playgrounds existed already in the end of the 19th century, but it wasn't a widespread phenomenon.

[21] 'Self' is used to refer to one's intimate sense of 'who I am and what I am', unlike 'identity' which refers to one's social 'face', that is how one perceives how one is perceived by others.(Harter, 2006)

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proper place for childhood. By the 1950s, families with children started to disappear from cities, first in the United States and then in some parts of Europe by the 1960s (Fishman, 1987; Karsten, 2015; Lilius, 2019).

The anti-establishment counterculture of the late 1960s brought about the next revolution in ideas about childhood and children's environments. Influenced by ideals about autonomy, self-determination, and advocacy planning encouraging do-it-yourself (DIY) practices, many urban communities started to take charge of the construction of playgrounds themselves, especially so in the US (Burkhalter, 2016). In Europe, state agencies maintained an important role in providing public space, mostly through adventure playgrounds, non-hierarchical structures of self-administration, and the stimulation of children's autonomous learning about their everyday environment in order to be able to navigate, but also "sabotage" (i.e. transform) it (Goodman, 2012; Ward, 1978).

The push toward children's autonomy within formal play spaces took a step backward in the late 1980s. The end of social utopias -- after an apparent triumph of liberalism in the Western world (Fukuyama, 1992) -- radically altered the general belief in social transformation and presumably also the importance of childhood as a means for such transformation. Some social critics argue that, starting in the 1980s, the boundary between adulthood and childhood became less and less defined, leading to the disappearance of childhood (Postman, 1982). The blurring of these categories did not translate into the fusion of formerly separated adult and children's urban spaces, but rather into the neglect of child-centered urban spaces altogether. A neoliberal urban turn (Brenner, 2019) prompted both large public disinvestments in parks and playgrounds together and paradoxically stricter playground safety regulations (e.g., DIN Norm 18034 in Europe on *Playground and Outdoor play areas* approved in 1988 and the US Consumer Product Safety Commission's Guidelines on *Playground Safety* in US first approved in 1981).

As a result, cities, and especially larger cities, became increasingly motorized and hostile with the few places reserved for children (e.g., playgrounds) often rendered unattractive due to strict safety standards and/or commercialization. Playgrounds became increasingly perceived as dangerous and unsafe due to a lack of investment and a generalized aversion to risk, nurtured by popular accounts of urban terror and the reconceptualization of security in terms of people instead of states (Hart, 1979; Katz, 2001; Low & Smith, 2006; Lynch, 1977; Tochterman, 2017; Tonucci, 1997; Valentine, 1997; van Vliet & Karsten, 2015; Wridt, 2004). New spaces and activities thus emerged for children, including commercial (indoor) playtime activities and organized after school activities (Karsten, 2005; Zeiher, 2001). The version of childhood being

shaped by policy morphed at this time from being a means of social transformation into a means for the transformation of the self. The idea of childhood was mobilized to further a strong expression of individual responsibility rather than a societally-supported endeavor, as reflected in the middle class discourse of the individual pursuit of excellence and upward mobility (Donner, 2017; Katz, 2008; Miggelbrink, 2020).

4.1.3. Rediscovering urban childhood

During the first decades of the 21st century, the return of capital and higher income residents to the city (Smith, 1979) also had an influence on families who started to increasingly value high density and mixed spatial functions as a means for reconciling the demands of work and family life. This was especially the case for women, who effectively saw this as a means for replacing the confinement of suburban life with a more dynamic inner city lifestyle (Lilius, 2019). With families now increasingly staying in the city after having children, the attention to children in cities has revived and, with it, an underlying attention to what role public policy should play in shaping childhood. New childhood paradigms are reappearing under the umbrella concept of the Child Friendly City (CFC) (van Vliet & Karsten, 2015), sometimes in strong synergy with urban sustainability rationalities. Most CFC programs reinterpret past ideals about suburban/rural environments for children (e.g., their need for contact with natural elements and the inappropriateness of some aspects of the city for children). In contrast, this new child-friendly urbanism overlooks previous ideals, such as the stimulation of children's creativity or their autonomy and inherent right to the beneficial aspects of the city. This selective retrieval of childhood notions is also reflected in current research. Whereas a new corpus of scientific production – especially in the field of environmental epidemiology and urban planning – is corroborating the health and wellbeing benefits of parks and green areas for children (Chawla, 2015; Dadvand et al., 2015; Perez-del-Pulgar et al., 2021), there is actually very little research on the benefits of other city characteristics such as connectivity, independent walking, or exposure to social difference for children (cf. Formoso et al., 2010; Perez-del-Pulgar et al., 2020).

4.1.4 A child-friendly turn in the context of neoliberal urbanization?

The renaissance of childhood's significance in urban planning in the form of CFC agendas is commonly understood as reflecting municipal or bottom-up ambitions to counterbalance the negative impacts of (concentrated) neoliberal urbanization on children's access to and participation in non-commodified urban spaces and their associated health equity and wellbeing concerns (Karsten, 2003; Lilius, 2019). We understand neoliberalization as a variegated but

patterned and politically guided intensification of market rule, commodification, and (private) accumulation through (public) dispossession implemented through institutional transformation, realignment of hegemonic interests, and emergent forms of subjectivity (Brenner et al., 2010b). One mechanism for forwarding neoliberalization is a shift from a traditional role for government toward "governmentality", wherein the State exercise power by promoting self-governing individuals who police themselves in relation with others (Brand, 2007; Foucault, 1980). In this mode, place-based subjectivation is an essential part of the shift toward governmentality and is achieved through explicit efforts to promote the constitution of a desired type of subject by modifying the built environment of individuals (Foucault, 1980).

To date, CFC agendas have largely not been viewed as projects integrated within – rather than working against – (concentrated) neoliberal urbanization processes (Brenner, 2019). Though, exceptions include an analyses relating CFC with processes of capital attraction and urban gentrification (Goodsell, 2013; Van den Berg, 2013). This lack of studies examining CFC agendas as an articulation of social, political, and spatial restructuration that accompanies neoliberal urbanization obscures our understanding of the processes that currently shape children's spaces. We hypothesize that CFC might be playing a crucial role in terms of subjectivation, that is the processes and practices that shape human subjectivity defined as a person's sense of identity, morals and worldviews (Brand, 2007), and, consequently, neoliberal governmentality. In response, this article explores the extent to which and how CFC plans are reorganizing children's urban social space. We operationalize the concept of children's space following Lefebvre's (Lefebvre, 1974) understanding of space as a triad of physical space, spatial practices and representations within space. Moreover, we explore how these spatial reorganizations differ across a variety of neoliberalization contexts in order to understand how gradients of neoliberal urbanization differently shape the reorganization of (children's) urban social spaces introduced by CFC agendas.

4.2. Methods

4.2.1. Research design

We designed a most similar comparative multiple case study (Yin, Ribert, 2002) by selecting three case cities that share a historic commitment to child-centered urban planning and a recent emphasis on CFC planning, but differ in the modality and regulatory structures of neoliberalization. These cities include Amsterdam (Netherlands), Vienna (Austria), and Bristol (United Kingdom). The primary dimension of Amsterdam's neoliberal transformation is roughly characterized by state-led gentrification through housing policy and public space interventions; for Vienna, it is broadly shaped by overlapping antagonistic policy layers juggling between

resisting and fostering neoliberalization; and in Bristol's process, it is markedly characterized by a singular focus on longstanding austerity politics (Table 1) (Matheney et al., 2022; Perez-del-Pulgar, 2022b, 2022a). This case selection allowed us to examine the extent to which and how CFC agendas are reorganizing (children's) urban social space and to compare how these processes differ across a variety of neoliberalization contexts.

Table 1. Summary of main case characteristics, CFC agendas, and varieties of neoliberalization

City	History of Child-centered planning	Variety of neoliberal urbanization
AMSTERDAM CFC agenda Focus on healthy living, physical activity, and obesity	**CHILD-CENTERED INFRASTRUCTURE:** Inclusion of residents' age-based spatial needs (e.g., in terms of housing, work/school and recreation) in the General Extension Plan (1934). Creation of numerous playgrounds (approx. 700) in the period 1947-1970, following Aldo van Eyck's simple and low-cost design. Lapse of attention to children's needs in mainstream planning since the 1970s (Daan et al., 2019; Draaisma, 2015; Kloosterman, 2015; Verstrate & Karsten, 2011)	**STATE/MUNICIPAL LED GENTRIFICATION** Housing and public space interventions justified from a **competitiveness perspective, seeking to attract more affluent residents, capital, and tourism in a context of sharp national debt reduction**, especially in the aftermath of the crisis of 2008.
	WELFARE INFRASTRUCTURE: Strong tradition of social housing and public space planning policy since post-war period. Regulatory structures included: Municipal ownership of land, detailed master land use plans, strong support of social housing provision, tight regulation of housing lease contracts, investment in quality public spaces (Hochstenbach, 2017; Kadi & Ronald, 2014; van Gent, 2013).	**HOUSING REFORMS:** Promotion of home ownership and cutback of social housing. Share of social housing in the city has decreased from 64% in 1995 to 46% in 2015, and below 30% (legal minimum) in some neighborhoods. Deregulations of the housing market include implementation of generous deductions of mortgage interest taxes for homeowners; decrease of financing opportunities of housing associations and high landlord levy for housing associations (up to four months of the associations' yearly rent incomes); liberalization of rental prices and introduction of flexible/temporary contracts (Savini et al., 2016; van der Veer & Schuiling, 2015; van Gent, 2013)
VIENNA CFC agenda Focus on basic welfare infrastructure, space provision and children's participation	**CHILD CENTRED INFRASTRUCTURE:** First widespread "Playground Emergency" plan in 1949: stipulating that every child in Vienna should live less than five minutes away from a playground Kunst am Bau program in 1950: extensive art program in public spaces aiming to combine modern sculpture with functionality. Numerous artists have designed iconic playgrounds created since the 1950s (Burkhalter, 2016; Perez-del-Pulgar, 2022b)	**JUGGLING BETWEEN RESISITING AND ENCOURAGING NEOLIBERAL URBANISATION** Since the 1990s, the municipality is juggling between resisting against a pressing neoliberal political environment and attracting headquarters of international companies, supranational organizations, international universities, abundant immigration, and higher income families to the city.
	WELFARE INFRASTRUCTURE: Unique municipal socialism originated during the interwar period[22] and continued developing after the Second World War, envisioning a modern, non-commodified, and emancipatory city. Regulatory structures included: provision of social housing, strong regulation of housing market and land uses, and socially-oriented urban renewal plans (Schwarz et al., 2019).	**HOUSING REFORMS:** A set of reforms are slowly deregulating the housing sector and reinforcing the rights of "native" Vienna residents. (Cucca, 2019; Kadi, 2015; Kadi & Verlic, 2019; Perez-del-Pulgar, 2022b)

[22] known as Red Vienna

BRISTOL CFC agenda focus on the provision of palliative nature spaces for the wellbeing of targeted groups of children	**CHILD CENTRED INFRASTRUCTURE:** Rich history of children play-space provision linked to the development of the Adventure Playground, motivated by ideals of self-determination and children's right to free play in the city, with strong potential to alleviate the traumatic experience of children during WWII. Many Adventure Playgrounds have opened since the 1950s, initially founded by local communities but increasingly directly run by the Bristol City Council. Have gained the reputation of being a pioneering and uniquely well-funded youth service in England **WELFARE INFRASTRUCTURE** Strong social housing support since 1890 until the sharp privatization and cutbacks of the 1970s	**AUSTERITY POLITICS** Political project of austerity and neoliberalization exacerbated since 2010 within a centralized system (national regulations are the main available mechanism to guide planning in a culture otherwise characterized by loose umbrella regulations of privately proposed development). New beneficial tax schemes for property investors. Cutbacks in public space and social services which has led to the NGO-ization of urban maintenance, social support services, and environmental stewardship, previously done by the public sector. "Rollout" neoliberalism (Brenner et al., 2010a; Peck et al., 2009) **HOUSING REFORMS:** Cutbacks in and selling off of social housing. Local authorities prohibited to borrow money to build social housing or invest in maintenance.

4.2.3. Data collection

The article draws on empirical research conducted in Amsterdam, Vienna and Bristol during April-July 2019, including a series of 46 semi-structured interviews (19 in Amsterdam, 12 in Vienna and 15 in Bristol) with key actors in urban planning and child-centered space and services planning, provision and use. These actors include city officials, private and public real estate developers, activists, charity/NGO workers, children's play workers and health professionals. Interviews lasted between 30 minutes and 1.5 hours and were fully transcribed verbatim. We designed a prepared semi-structured interview guide with open-ended questions to structure the interviews and to examine the priorities, goals, motivations strategies, timing, planning processes and political alliances underlying the creation of child friendly cities, spaces and programs; as well as interviewees' visions and rationale for what a child friendly city or space was, why it was important and for whom. Our focus was on adults' accounts and conceptions, and children's voices are not included in this article. All participants provided informed consent for participation and audio-recording of the interview.

Following a case-study approach, in addition to primary data, we collected relevant secondary data to complement our understanding of the background, CFC programs, and urban development changes for each case. We identified relevant data from reports, policy and city planning documents, newspaper articles, grey literature and academic articles in order to triangulate the accounts of interviewees, to identify information that was mentioned

superficially by the respondents, and to better understand the history of each city and the city planning rationales. Last, we kept a comprehensive record of fieldwork notes.

4.2.4. Data analysis

Using Nvivo software to organize and carry out the analysis, we developed a mixed coding approach that combines deductive thematic methods and inductive grounded theory coding techniques. For this approach, we defined two levels of coding. The main level involved deducing themes from a fixed coding scheme based on the main conceptual and analytical categories we sought to understand related to the relationship between CFC and urban restructuring. The categories for our main thematic coding level were a) the characteristics of CFC programs, b) the reorganization of (children's) urban spaces and c) subjectivation processes. The final most relevant sub-codes are listed in Table 2. Within these main themes, we also followed a grounded approach during fieldwork where we inductively reshaped data collection by iteratively using the insights of the analysis carried out after each interview to inform the following interview.

Table 2. Levels of coding.

Main level of coding **Thematic approach**	**Sub-level of coding** **Grounded approach**
Characteristics of CFC programs	Approaches
	Rationales
	Beneficiaries
(Children's) urban social spaces	Spatial practices
	Perceptions of space
	Spatial ideology (incl. social images, symbols, and aspirations associated to spaces)
	Rationale of planners, and conceptions of urban space
Subjectivation process	Created exclusions
	Power Relations
	Political Project inherent in spatial claims
	Psychosocial implications
	Ideology of Spatiality

	Object/Subject of Ethical superiority

4.3. The subjectivation of children's spaces in the (neoliberal) CFC

4.3.1 Amsterdam

In Amsterdam, we found that CFC agendas build play infrastructures to promote healthy lifestyles and physical activity among socially vulnerable children, however this occurs alongside the dismantling of social housing protection benefiting these same children. While it is tempting to see these as two distinct processes, the agendas are tightly interlocked. Even while housing restructuring creates greater vulnerabilities, CFC agendas justify addressing these vulnerabilities by disciplining the child and her/his family. This feedback engenders acceptance of permanent physical and social movement while also enabling the internalization of existing power structures as the result of an individual's level of mobility.

4.3.1.1. Weaving the "mobile" city into the urban agenda for children

Urban play spaces regained centrality in Amsterdam's planning practice with the comeback of families to the city in the 2000s (Urban Planning Department, personal communication 2019). The related initiatives are centered on human health and wellbeing, and in particular on *childhood overweight and obesity, which affects* 1 in 5 children and young people in the city, (City's Public Health Department, personal communication 2019). For example, the municipal plan *Amsterdam Approach to Healthy Weight* (*Amsterdamse Aanpak Gezond Gewicht-AAGG* (City of Amsterdam, 2017)) aims to address physical inactivity and poor eating habits among children in order to become *"the healthiest city for children"* by 2033 (City of Amsterdam, 2017). The plan puts forward an ambitious schoolgrounds regeneration strategy, the construction of new playgrounds, training programs for families and professionals, "action plans" for inactive youth, and interventions for neighborhoods with higher prevalence of overweight and obesity.

Most of the public space interventions of the AAGG plan overlap with The Moving City Plan (De Bewegende Stad) (City of Amsterdam, 2016), which extends the promotion of an active and healthy lifestyle via public space interventions to all Amsterdam residents. Launched in 2016, it conceives of a city in which movement and exercise are a natural part of everyday life. The plan advocates for including movement in the design of neighborhoods, parks, streets, and squares with the ambition "to move all Amsterdammers". For that purpose, it envisions plenty of space for cyclists and pedestrians, sports opportunities, and playgrounds around any corner. "The moving city is a playground" and "not idle" are the maxims of a city whose actual movements

and exercise are monitored in a Movement Atlas (Beweegatlas[23]). Nevertheless, the benefits and purpose of these play and transit spaces for children are based on vague assertions about wellbeing derived from a narrow vision of play – mostly understood as physical movement. A staff member reports (2019), "there is not even a vision about play (…) and there's actually not so much money going to play, most of the budget goes to sports."

4.3.1.2. Mobility as spatial ideology: Learning to be mobile through play, housing, and profession

Although the genuineness of the intent behind both plans to improve public health is widely recognized, some interviewees find the rationale and execution of these projects problematic. In the words of one person involved with Adventure Playgrounds, *"it's a full social system that is not supporting play"* (personal communication, 2019). This person points to an underlying intent within these plans to relate being overweight and obese primarily to a child's lifestyle, which implicitly individualizes the cause and responsibility of obesity. This individualized framing lends itself to the stigmatization of overweight/obese people as inactive, poorly educated, and lacking self-control. In contrast, people with healthy and "normal" weight are praised for being active, productive and disciplined (Laurian, 2006). A critique that emerged from the uncomfortableness some people feel about this approach is that, although childhood weight problems and obesity affect low-income populations and ethnic minorities more than other group (City of Amsterdam, 2017), the structural role of poverty in obesity remains unacknowledged. Furthermore, there is an implied ethical superiority of the healthy and mobile citizen which seems to be justifying changes in the public built environment of disadvantaged communities and the stigmatization of "immobile" racialized children.

Additionally, through particular CFC initiatives public agencies facilitate the monitorization, control and discipline of disadvantaged children's bodies to promote the acquisition of what is known as "doorstroming" -- a Dutch word for movement or flow. This doorstroming does not only refer to the use of public space but also to broader neoliberal transformations in Amsterdam, especially in regard to housing (Vereniging [Association] 2e Nassaustraat 8, personal communication 2019). Since the 1990s, the housing reform rationales prescribed *"that everyone ought to be flexible, in constant movement and development"* and that a person's housing career ought to be in flux along with one's professional and social status (Vereniging [Association] 2e Nassaustraat 8, personal communication 2019). These reforms have laid out a

[23]https://amsterdam.maps.arcgis.com/apps/MapSeries/index.html?appid=7600b9daf0aa4739b2e5e195beee5975

housing market characterized by a high turnover of temporal and increasingly unaffordable tenancies out of which the only exit seems to be home ownership (Hochstenbach, 2017; Kadi & Ronald, 2014; van Gent, 2013). Here, public and institutional support is, if at all, only offered as a temporary, initial phase in one's housing "career" and as a *"5 year chance to prove yourself, your worth to stay in the city, and if you don't succeed to make something out of yourself, you have to leave the town"* (BPW, personal communication 2019).

Although less so, we also encounter references to the spatial ideology of doorstroming in rationales justifying public space investment in child friendly infrastructure as a means of positioning Amsterdam as a global center of flows of high income and creative workers, tourists, and international company investments (Urban Planning Department, personal communication 2019). Some local activists regard this as Amsterdam's transformation into a *"a transit space"*, *"where everything and everyone is in transit"* with an institutional and physical architecture primarily supporting private accumulation. For example, one neighborhood association representative highlighted heavy support for *"international real estate investment funds or businesses linked to the touristic sector"* at the expense of people's ability to stay rooted in the city (Spokesperson Neighborhood association van der Pekbuurt, personal communication 2019).

4.3.1.3. "Who can afford to have a family under these conditions?". Playful hypermobility at the expense of social protection

While Amsterdam might be becoming more mobile and, in a way, more playful, several respondents regret that neoliberal policies are "*getting rid of the conditions that make it possible to raise a family (…) and actually challenging the reproduction of some groups in the city"* (BPW, personal communication 2019). The hyper mobile and playful city reflects a form of *"escapism that totally neglects the need of social protection*" (Spokesperson Neighbourhood association van der Pekbuurt, personal communication 2019). By constantly pushing mobility in the absence of a strong institutional support for rooting oneself in a home, the net effect is to expose children to greater insecurities and movement builds a familiarity with existing in these circumstances. Amsterdam was once the site of social architecture praised for its social, child- and family-friendly approach to public space and housing provision (See Table 1) but is rapidly eliminating affordable and stable housing solutions for large families. The eligibility criteria for social housing takes household income into account, rather than household size and thus strongly benefits single households and/or households with no dependent people (e.g., children) (Activist and Housing Specialist, Personal Communication 2019).

Mobility thus constitutes a mode of subjectivation for children and their families in Amsterdam that particularly affects working class, racialized minorities. Doorstroming produces subjects attracted by *"liberty loving, middle class aesthetics of freedom that flirts with the idea of adventure often portrayed in idyllic, green, clean, walkable, harmonious communities"* (BPW, personal communication 2019) and convinced that their identity, social mobility, and power depend on their individual ability to remain hyper-mobile. Low-income and ethnic minority residents mostly manage to stay put, but at a high cost for their self-worth and social identity, being increasingly stigmatized, controlled in regard to their destiny and health, and even held accountable for Amsterdam's housing affordability "crisis" due to their stagnation. In this context, (social) housing and models of play in public space have morphed from engendering a universal right to the benefits of the city into a mode for disciplining non-mobile people and territories into hypermobility. This situation affects more than the poorest residents to the extent that middle income families do not qualify for social housing but are unable to earn enough to access the private market.

In short, some see the political project inherent in the promotion of the ethical superiority of mobility as *"dismantling the social city"* (Spokesperson Neighbourhood association van der Pekbuurt, personal communication 2019) and increasingly producing what an activist called *"flexible precarious* residents being forced to move from one precarious home to another". The hyper-mobile, neoliberalized subjectivation creates a lot of insecurity *"for people who have already a lot of disadvantages in other spheres"* (BPW, personal communication 2019) and whose condition becomes rather characterized by displaceability (Desmond, 2016). The "flexible precarious" are "*sent away from their communities because they knew that they were not part of the community, only temporary (..), increasingly alienated from the land and their communities"* which hinders a common political identity and possible civic mobilization. Meanwhile, other agendas like Amsterdam model of a CFC indirectly reinforce this approach by conditioning children to expect constant mobility as the norm.

4.3.2. Vienna

Our analysis reveals that Vienna's CFC program is characterized by a persistent commitment to planning for and with children. In Vienna, there is attention paid to the structural inequities and barriers faced by vulnerable children and the provision of the basic infrastructure needed for their urban life, especially in terms of housing, public space, education, and health. While pressures are there to undo it, the commitment to its historic social planning model greatly contrasts with Amsterdam's model of urban neoliberalization.

4.3.2.1. A continuing legacy of small-scale and widespread, inclusive child friendly interventions

Since the 1990s child-friendly planning in Vienna has developed around three dimensions: (1) increased space provision; (2) participation / co-design; and (3) mainstreaming children's needs across all areas of planning. The goal of expanding space provision is rooted in a belief in the importance of urban public spaces for children as their first spaces "*to grasp both physically and conceptually things, plants, people and their environment."* These first experiences have long been acknowledged to have high relevance for children's physical, mental, and psychosocial health (Stadt Wien, 2016). Rather than large projects, small-scale and continuous interventions aimed at enabling a non-commodified, emancipatory, and participatory urban experience for children have characterized Vienna's approach to expanding the spaces of a CFC since the 1990s (Stadt Wien, 2020). A Municipal Department for Space Obtainment (Magistratsabteilung für Platzbeschaffung) was established in 1999 (Stadt Wien, 2002) in order to identify available outdoor spaces that could be redeveloped into play spaces and has built more than 100 places since its inception (Stadt Wien, 2016). Some recent examples include the conversion of parking spaces and once grey/traffic streets into play spaces and play streets (Wiener Wohnen, Personal Communication 2019). In addition to the pursuit of more child-friendly spaces, the municipality is committed to the maintenance and improvement of existing play spaces. In this line, the recent Children and Youth Strategy, launched in 2020 with an ambitious budget of 16.25 billion euros (Stadt Wien, 2020), plans to add fixtures, improve lighting, build new sports elements, and add affordable or even free activities and courses requested by children (Wiener Wohnen, Personal Communication 2019).

In addition to increased, space provision, the city also emphasizing participation and co-design as a route toward a more socially just CFC. Planning and design processes include the systematic observation of children's behavior in public space and the organization of participatory workshops with children and caregivers (Smarter Together, Personal Communication 2019) in order to understand what is needed and for residents to *"know that changes are for them"* (Smarter Together, personal communication 2019). Here, children are understood as social catalyzers of urban transformations *"because through the kids, you get to the parents and even to the grandparents, and so you can really reach out"* (Smarter Together, personal communication 2019). The most recent and large project of children's active participation in planning was carried out in 2019, with a large-scale participation process involving 22,500 children in about 1,300 workshops in order to run a "service check" of the city (e.g., what is working, what is not working, which improvements are suggested). The process touched upon a broad spectrum of issues, including nature and environment, community, connectedness, and

mobility (Stadt Wien, 2020). Vienna's CFC approach has also promoted the co-design of actual play spaces with children and caregivers. Since 1999, public agencies have organized city-wide competitions where different teams of young people are invited to propose designs for their surrounding free spaces (Stadt Wien, 2002). Furthermore, a funding scheme introduced in 2015 issues grants of up to 4,000€ to create free open green children's spaces (Smarter Together, personal communication 2019).

The CFC agenda in Vienna is also a platform for extending the needs of children into various domains. The most recent 2020 Children and Youth Strategy advances a paradigmatic change in child friendly planning, leaning towards the abandonment of the strong division between children and non-children urban spaces altogether. This tendency is partly reflected in Vienna's holistic understanding of what urban child spaces are, only a portion of which is the provision of public play spaces and facilities. For instance, the child and youth friendliness of housing has been included as an evaluation criterion through which developers are selected in tender calls for the allocation of land for housing, alongside social, planning, ecological and economic criteria. The Children and Youth Strategy also states an ambition to involve children in co-creating housing and educational buildings. Moreover, a pioneering -- although yet to be approved -- proposal of mainstreaming child and youth issues to all policies and regulations has been put forward (Smarter Together, personal communication 2019).

4.3.2.2. From a social infrastructure for children's care to the questioning of the emancipatory project

Within its holistic approach to the CFC, Vienna's Children and Youth Strategy also incorporates a targeted focus on children and young people at greater risk of experiencing exclusion and facing barriers to actual participation in urban life. Key structural issues identified for their wellbeing -- and especially vulnerable children and young people -- include access to safe and affordable homes, support for handling ruptures in children's educational trajectories, support for transitions out of care, the already mentioned affordability and/or free access of most activities, and strategies to confront ethnic-based discrimination (Stadt Wien 2020) (Caritas Wien, Personal Communication, 2019). The CFC agenda of Vienna therefore has a broad understanding of the urban infrastructures needed for children's care, health, wellbeing, and inclusion that includes the institutionalization of children's structural needs (e.g., play, food, housing, education) as universal rights – not as a form of charity or exceptional care (Caritas Wien, Personal Communication, 2019).

However, the pressing context of neoliberal urbanization has introduced some liberalizing/commodifying policies within the context of a municipal historical commitment to (public space and housing) affordability and decommodification (Schwarz et al., 2019). This mixture of neoliberal and counter-neoliberal tendencies coexist today within Vienna's polycentric and multi-layered institutional and policy architecture. To date, Vienna's housing and public-space affordability and decommodification is still relatively high, although some social organizations and nonprofits denounce insufficient levels of democratization and participation (Kadi et al., 2021) and recent nativist trends reveal a widening gap between the rights and entitlements of long-time residents and vulnerable newcomers (Caritas Wien, personal communication 2019).

4.3.2.3. Children practicing citizenship

All in all, far from aiming to create place-specific binding rules of spatial behavior, CFC approaches in Vienna seem to be driven by an understanding of urban space as a co-creation (and co-educator). The practice of being in contact with and shaping one's environment and the compositional materials within it is framed as a political process constituting subjectivity and children's sense of citizenship (Wiener Wohnen, personal communication, 2019). In this sense children are not only present and represented in urban space (i.e., provided with space to play) but also encouraged to reshape and co-design it as a practice of citizenship. To this end, the municipality offers real possibilities for *participation in urban planning processes* and for critically assessing how everyday spaces affect children and youth, how these spaces are structured, and how they also have a responsibility towards the creation of the surrounding environment.

The City of Vienna also has a longstanding support scheme for children and youth associations with the aim to "stimulate children's understanding of democracy, to learn how to decide collectively and to understand themselves as a group that has their own interests" (Stadt Wien, 2016). The understanding of children as political urban subjects in terms of their city-making capacity is furthermore promoted through a spatial education program called what creates space (was schafft Raum[24]) that is part of the curriculum of 10- 14-year-old children in Viennese secondary schools since 2008. This quite unique educational program includes modules about space perception (Me in Space), public space (Who Owns Public Space), and urban planning

(How does the City Work). It aims to strengthen the voice and participation of children by conveying knowledge about their surrounding built environment and encouraging them to reflect on their living spaces as social spaces.

In sum, rather than governing through place-based subjectivation wherein programs like CFC reflect larger agendas of neoliberalization, Vienna's CFC rationale and departure from extended neoliberalization trends in Europe aim to challenge children to understand and identify dominant spatial ideologies and subjectivation processes in place and to decolonize their subjectivity (Rolnik, 2017). That is, to truly appropriate space by rendering conscious how space is not something "natural", given, or unchangeable but rather "socially produced". In Vienna, the influence of "social structures, property relations political and administrative processes, planning and architecture, public opinions and the appropriation and use of spaces by people (including children)" (Stadt Wien, 2016) on the production of space is widely acknowledged.

4.3.3. Bristol

In the last part of our analysis, we found that Bristol's CFC agenda is characterized by a charity- and volunteer-based provision of nature-like spaces for the most disadvantaged children in a context of austerity and dismantlement of social and welfare structures. These spaces nevertheless can only be partial compensation for many vulnerable children's deprived conditions. Further, this approach necessarily separates spaces in a manner that risks stigmatization and marginalization of vulnerable populations into enclosed palliative play areas outside of what is considered normal. As well, there is a pragmatic tendency toward neglect of the socio-environmental determinants of children's physical and mental health. The disposition of these spaces fosters the acceptance and internalization of segregation, inequities, and existing power structures as the natural result of one's inability to be a completely autonomous, well-functioning, productive and mentally healthy individual.

4.3.3.1. From council-run child and youth infrastructure to a burden on volunteers and charities

Bristol is determined to be a green and child friendly city. Its green strategy – a robust cycling infrastructure, the lowest carbon footprint of any British city and over 400 parks and nature reserves (AUSTIN) – won the city the EU's European Green Capital Award in 2015. It is also the only core city in England to still have a commissioned, funded youth service (Playworker,

personal communication 2019). In 2015 the Bristol Child Friendly Group[25] was formed by three grassroots organizations – the Architecture Centre, Playing Out and Room 13 – with the support of the University of Bristol and the Bristol City Council. The Group's ambition is that *"all children have safe, independent mobility and access to the city of Bristol and its resources, including streets, communities, green space, the city center, play sports, arts and culture"*. Further, it seeks an approach where, *"all children feel heard and have a say in decision making on things that affect their lives"* and *"adults in positions of power make decisions with all children in mind"*[6]. Moreover, in 2018 a Children's Charter with ten pledges setting the rights and best interests of children as a priority for decision makers in Bristol was made public and included in the *One City Plan*, Bristol's local Plan since 2019 (Bristol City Council, 2019).

Some residents and play activists nevertheless disagree with Bristol's reputation as a green and child-friendly city and denounce the incoherence between the extensive discursive support for child-centered and green planning and the unprecedented neoliberalization-linked budget cuts in both domains (Playworker, Personal Communication, 2019). Their frustration arises from the fact that the highly praised greening and child-friendly efforts take place in the context of an increasingly market-oriented and austerity-driven regulatory planning and policy structure. At the national level, the dearth of support for child-centered planning accelerated with the abolition in 2010 of the National Play Strategy, leaving a void in national policy regarding child-centered planning.

As a result, local authorities' focus on children and young people have ceased to be compulsory. The abolition of the National Play Strategy has also meant serious cuts to play and youth services funding in England, which has dropped by 62% since 2010 (J. Wood et al., 2019). Since 2018, new cuts to play have been also implemented at the municipal level. Municipal childhood and youth services spending was cut by 30%, the provision of play for under 11s was completely eliminated, and youth work of the 11-19 age group was narrowed to target only those most in need (Playworker, personal communication 2019). These changes are manifest in the new municipal child and youth services model called Targeted Youth Services (TYS) introduced in 2018 which replaces the former Bristol Youth Links (BYL). Furthermore, the parks budget decreased 66% from 2013-2019, with parks expected to be self-sustaining after April 2019 (Matheney et al., 2022).

[25] http://bristolchildfriendlycity.blogspot.com/

Budget cuts have precipitated the outsourcing of many play and green spaces and services to local charities and friends of parks groups at the turn of the twenty-first century, creating "*quite a lot of tension because … it had been taken away from the community, because it was obviously council run, so, community felt like it was theirs"* (Playworker, personal communication 2019). Several playworkers warn that the future of play in Bristol is at risk. Many Adventure Playgrounds have closed because of the limited council funding they get and only one new Adventure Playground has been opened in the city in over 30 years (Playworker, personal communication 2019). While offering a chance for local self-government, the predominant political project of austerity localism (Featherstone et al., 2012) (i.e. delegation of the maintenance of Adventure Playgrounds and parks to charities and community groups) is associated with pushing on to volunteers the burden of child-safeguarding related responsibilities (Groundwork Charity, Personal Communication, 2019), pushing charities to *"fight over few and scarce pots of money,"* and discouraging partnerships between like-minded organizations (Off The Record (OTR), mental health social movement, personal communication 2019). Furthermore, in view of wealthier areas having more opportunities to undertake the level of volunteer work and stewardship required, wealthier areas have better play and green spaces than poorer neighborhoods, widening inequality within an already segregated city (Matheney et al., 2022).

Within the different strategies to keep children's access to play afloat within the political conjuncture of austerity localism (Featherstone et al., 2012) and British neoliberalism, securing grant and trust funding is essential (Playworker, personal communication 2019), especially so through the combination of environmental management, child and youth services, and health funds. Due to the new TYS model, most public and non-profit children's spaces and services are aimed at working with children age 11 and above and only on those children most in need, which has clear development and wellbeing impacts (Playworker, Personal Communication, 2019):*"Anyone who works with young people and children knows that the earlier you can intervene in the life of a young person, the better"* (Psychologist at Children and Adolescent Mental Health Service (CAMHS) Personal Communication 2019). The mandate to focus only on those children most in need is seen by many as hampering the opportunity of children who don't display any obvious need to have positive role models and interactions, restricting the chances of youth workers to spot children in need of more specific help (Playworker, Personal Communication, 2019) and acting as an access barrier for some groups "*that would just never do that* [sign up to these spaces and /or activities]*, (…) clearly there are groups that we don't see*

and that comes through. We have almost 70% women, and it's 60% white" (OTR, personal communication, 2019)

4.3.3.2. The ideology of Space: Separation, Fragmentation, and Alienation as a Form of Subjectivation

In Bristol, the child in need is conceived as a subject to be protected/supported in nature-like, safe, and therapeutic spaces (e.g., *"a space that is fenced off and where they [parents] know (…) they [children] will be fine"* (Playworker, Personal Communication, 2019). Moreover, current planning trends are pushing towards their separation from the broader public space/sphere into a more secluded area *"that feels like a place where you can interact with the outdoors and interact with yourself without being seen, or only being seen by the community around you"* (OTR, Personal Communication, 2019). Conversely, some children are also represented by state agencies as subjects to be removed from safe community spaces. As one person who works with children commented, "*they're just like… gangs of boys who go around terrorizing people (…) parents wouldn't want their kids to go and play in there by themselves because they think they're going to get bullied by older kids, they just don't think it's a safe place"* (Playworker, Personal Communication, 2019).

The propensity towards separation is also exposed in more abstract terms in the way that the need for these therapeutic spaces is often justified in terms of children's individual pathologies; disregarding the notion that these are frequently the consequence of children's deprived socio-ecological conditions. As one child psychologist commented, "*I am thinking there's a much bigger picture here (…) the environmental stuff but also the social stuff (…) has a massive impact on physical health (…) and mental health (…) in the UK"* (Psychologist at CAMHS, Personal Communication 2019). These conditions are not really targeted or integrated within the vision of the play/therapeutic spaces and activities. As a result, the social and ecological contexts of illbeing are erased and decontextualized from their social and political context through the individualization of symptoms. As the same psychologist reports: *"We just treat illness instead of preventing, we're kind of at the end of the river trying to build a dam or whatever and actually there's always a lot of talk about prevention and early intervention. But for some reason there's not the time or the money to do that"* (Psychologist at CAMHS, Personal Communication 2019).

The separation of children's conditions from their socio-environmental context is thus therapeutically limited and takes more of a palliative lens. These nature-play-support spaces can't compensate for deeper socio-ecological ills and can even lead to a potentially harmful

schism/alienation or sense of guilt and/or shame for children towards their contexts and families (OTR, personal communication 2019). *"We have (…) become quite frustrated by bringing (…) incredibly underprivileged young people into these settings and then sending them back to where they're from, without any follow up care, and no continued relationship with the outdoors and green space and actual world, and that, for me, just felt completely odd, and actually potentially more harmful than good"* (OTR, personal communication).

In sum, the landscape of play spaces created in Bristol reproduces a form of subjectivation that tends to separate actual socio-ecologically entangled dimensions – such as the city and the natural and child-centered play spaces, adults and children, healthy and sick/in need – in a way that forecloses addressing the socio-ecological roots of the issues. Moreover, the produced children's urban space spawns a distinct mode of subjectivation, based on a perspective by which the "normal" integrated subject is assumed to be fully autonomous and well-functioning with no need of social protection, and subjects in need of protection or care are regarded as a failure that justifies being cared for but also separated and excluded from the normally functioning society.

4.4. Discussion

In this paper, we have explored the extent to which and how different CFC agendas reorganize children's urban social spaces and how these space reorganizations differ across a variety of neoliberalization contexts, to uncover that CFC agendas play a crucial role in terms of place based subjectivation that in some cases is articulated in the benefit of the internalization of neoliberal modes of governance; that is, governmentality. Our three case studies of Amsterdam, Vienna, and Bristol depict non-linear, complex and context specific processes of co-constitution of CFC interventions, spatial ideologies and subjectivities articulated within different neoliberal urbanization processes influenced by local urban trajectories, cultural traditions, and politico-economic conjunctures. We argue that the spatial transformations carried out in the context of CFC agendas comply with a series of characteristics -including the propensity for consensus that they stir, their moral significance, its condition of everyday infrastructure and site of social and cultural reproduction – that conform them as relevant instruments of place-based subjectivation. Moreover, in cities undergoing strong neoliberal reorganizations -such as Bristol and Amsterdam- CFC agendas are instrumental for neoliberal urbanization processes in terms of governmentality.

In Amsterdam, a planning culture that increasingly fails to address the structural care needs of children and families has introduced a green and play-centered CFC agenda that successfully operates in favor of a restructuration of spatial practices, meanings, social hierarchies, affects and subjectivities that encourage and reward individual movement as a path to wellbeing and progress, while stigmatizing stability and immobility. We have furthermore exposed how these CFC interventions are compatible with an underlying spatial ideology also present in other policy spheres in Amsterdam's neoliberal urbanization process (e.g. housing and public space), supporting entities and people with a high capacity for movement (e.g., tourists, expats, goods and capital) while displacing those with lower capacity for movement or in need of social protection (e.g., households with dependent members, children or older people, people reliant on place for their social reproduction and social bonds, especially so among racialized groups).

In Vienna, we laid out how child-friendly planning, by focusing on the widespread provision of play paces, participation of children in the making of their everyday spaces and paying attention to structural factors affecting children's urban life, promotes a set of spatial practices, meaning, responsibilities, affects and subjectivities that supports the recognition of the child/citizen as producer of and produced by its surrounding environment. Vienna's CFC participatory and democracy-practicing interventions for children are however embedded within the city's overlapping and increasingly antagonistic policy layers and spatial ideologies, juggling resisting, and fostering neoliberalization. CFC programs seem to be amongst those layers promoting justice, inclusion, affordability, and decommodification but are nonetheless enmeshed in the co-production of a spatial ideology that also informs other regulatory spheres (e.g., housing, and public space) and supports Vienna as an emancipatory place for long-time residents, rather than for newcomers.

In Bristol, child-centered urban spaces are mostly directed at targeted groups – vulnerable, older children – and based on a palliative nature-health focus. In a similar vein to Amsterdam, we argue that Bristol's organization of child-friendly spaces is failing to address the structural causes of children's illbeing and care needs, rather serving to promote spatial practices, meanings, affects and subjectivities that favor the fragmentation, disconnection, and specialization of different urban domains. It also further individualizes care and development responsibility and marginalizes those in need of care. We have also exposed how these palliative and stigmatizing/separating place-based interventions justify, reinforce, and normalize the underlying spatial ideology informing local neoliberal austerity politics. On the one hand, the City of Bristol has extensively cut budget in social housing, green space, and public transport. On the other hand, rising levels of social and environmental inequities are being tackled through

poverty care/charity-like services for children and residents stigmatized as individually failed - either by themselves or by others.

Although often relegated to technical or universal design prescriptions, CFC interventions embody and reproduce power. Our analysis reveals that, far from being a standard/neutral urban infrastructure, CFC interventions can be explored from the vantage point of their role in social reproduction and/or transformation through children's socialization in specific environments and practices, involved in processes of place-based subjectivation and instrumental to neoliberal urbanization processes. Although no space imposes specific subjects or actions (Lefebvre, 1974; Löw, 2008) and subjectivation through CFC initiatives can always be contested, CFC initiatives can be interpreted as entry points into a condensed version of the dominant and desired societal values and principles. In our three case studies we found that the belief systems and structures by which urban children's spaces are sustained, spatial practices are fostered, and the rules through which children are supposed to govern themselves are often versions of the structures by which "adults" organize and sustain fundamental access to power, authority and resources in each of the cities (Hirschfeld, 2002).

Therefore, the different neoliberal urbanization contexts of our case studies did influence the modes of CFC place-based subjectivation. Subjectivation processes in Amsterdam and Bristol, where neoliberal governance is strongest, reinforce the reproduction of certain citizen/children's subjectivities more compliant with the demands of the neoliberal city. Although through different practices, both cities sustain practices and perspectives by which the "normal" integrated subjects are assumed to be fully autonomous and well-functioning with no need of social protection, and subjects in need of protection or care are regarded as a failure. Both in Amsterdam and in Bristol, CFC place-based subjectivation processes seem to go beyond the social and cultural reproduction of dominant worldviews and values and be a means of communicating and practicing membership rights and obligations and rules of inclusion/exclusion applicable in broader policy spheres. In Amsterdam and Bristol CFC programs are instrumental for governing through place based subjectivation or governmentality, a mode of governance by which self-governing individuals govern themselves in their articulation with their relation with the other (Brand, 2007; Foucault, 1980) and the *par excellence* form of neoliberal government rationality. In contrast, while CFC interventions in Vienna also reproduce a certain subjectivity, this subjectivity is not instrumentalized as a mode of governance. It is not used to communicate or put in practice the rights and rules of inclusion or exclusion from power and membership in the community.

In sum, place-based subjectivation is inherent to any place creation or planning and to everyday experiences (Brand, 2007; Brownlow, 2006; Gabriel, 2014; Gandy, 2004). The subject is not so much constituted by the norm -or by *"a matrix of power-discourse"*-but by the repeated exercise of the norm performed through space and time (Butler, 1990). In the case of planning for children the subjectivation process is especially relevant but paradoxically goes largely unnoticed for planners and users, which renders its role in subjectivation processes even more powerful. Therefore, we call for the politics of the production of everyday and everyday children's spaces to be unveiled as a relevant and prime site for the exercise of political power through subjectivation. Letting CFC initiatives remain unnoticed as functional or unimportant as "play" infrastructure increasingly implies letting it be incorporated and submissive to the demands of neoliberal governance as a governmentality mechanism.

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Chapter V. Discussion and conclusion

5.1 Key results and discussion

This thesis examines the social and political processes expressed in space through the green child-friendly city agenda by looking across three scales – the individual, the site, and the city. It examines the scale of the individual through the lens of a quantitative analysis of children's health outcomes. It examines the scale of the site through the lens of an observational study at two parks in the city of Barcelona. It examines the scale of the city through the lens of a comparative analysis of CFC policies in three cities. The purpose of the multi-scale approach is to reveal the layered manner in which seemingly apolitical dimensions of CFC interventions get folded into urbanization and, in turn, come to express deeply embedded political agendas and their broader equity and inclusion ramification. As a result of this process, the CFC serves as a vehicle for simultaneously shaping the meaning of wellbeing and childhood even as it shapes cities.

Indeed, at each scale, the role and effect of the CFC agenda is quite different, but also inter-related. Positive health outcomes for children associated with CFC interventions demonstrate an unevenness that is reflected in the planning and design of parks in neighborhoods with different socio-economic profiles. Meanwhile, this social divide in the effects of CFC is glossed over when these agendas get linked with larger citywide pushes for economic competitiveness and neoliberal growth initiatives. In all, the rollout of CFC agendas across three scales demonstrates a tendency toward reinforcing class divides expressed through the ways that children engage the city and its public/green spaces and fueling growth agendas that serve to expand underlying vulnerabilities for lower income and otherwise marginalized residents.

5.1.1 Results of individual studies

The results of the environmental epidemiological study (Chapter II) confirm the benefits of outdoor play space exposure for children's health, probably thanks to the type of activities that outdoor play spaces offer for children (e.g., physical activity, participation, interaction, socialization). Children's residential proximity to overall and to specifically green outdoor play spaces are, in both cases, consistently associated with lower prevalence of disorders of psychological development and overall mental and behavioral disorders. These findings are consistent with those expressed in the literature and, when left at this generalized level, affirm the efficacy of CFC arguments as they stand.

However, this cross-sectional analysis also indicates that these associations are not equal across area-level socio-economic characteristics, with residential proximity to the selected CFC amenities having a protective role for children's mental and behavioral health in low socio-economic status areas but not for those children living in higher socio-economic areas. This difference in play space-health associations may be reflecting spatially bounded class-based differences in the use and meaning of children's play spaces influenced by cultural, social and historical perspectives and ideologies of outdoor recreation as well as material socio-economic factors. In the lowest socio-economic areas, municipal outdoor play spaces might be mitigating the negative influences of other aspects of the children's environment (e.g., poor housing, overcrowded schools), and are likely the main opportunity to access urban outdoors and play for the children living in these areas. Such findings would confirm recent studies conducted mostly among adults about the health benefits of green space for lower-income residents (Wolch et al., 2014). Meanwhile, child-friendly outdoor spaces in higher socio-economic areas might not be the primary outdoor play space opportunity for children with more access to second homes and fee-based after school activities. In short, there is on overall positive health benefit for CFC amenities, but there is also a social cleavage expressed in the way this benefit is distributed.

Although methodologically very different, the qualitative study in Chapter III zooms into two parks in Barcelona to reveal the processes that produce relational wellbeing and shed light onto the possible pathways through which the different health and wellbeing benefits arise from similar CFC infrastructure in different contexts. The results from my ethnographic and archival analysis in two parks in Barcelona (Chapter III) show that health and wellbeing are not static outcomes that follow a standard and codified use of CFC infrastructure. Rather than the material, technical and design aspects of green CFC infrastructures, the production of relational wellbeing in the park examples studied here seems to strongly derive from the inseparable conditions at the intersection of socio-material structure of the surrounding neighborhood and the residents'/children's uses of the green CFC infrastructure.

As well, the differentiated planning processes, visions and urban development goals for each park seem to direct and reflect the socio-material structure of the neighborhood in a way that either promotes or undermines uses that generate relational wellbeing. My findings also reveal the impact of different cultures of parenting in terms of time management and perceptions of safety and risk on park and public space use and relational wellbeing, pointing again to spatially

bounded class, ethnicity, and gender-based differences in the use and meaning of children's play spaces in a gentrifying versus a working-class neighborhood. The child-friendliness of an infrastructure, the everyday practices that define a place, and even individual health and wellbeing are recast here as embedded within the socio-nature of the city. That is, these observed characteristics are all highly relational phenomena based on dynamic interactions between physical structures, people and environments that articulate (or not) an improved form of health and wellbeing. This second study begins to reveal the ways that the social cleavage in health benefits expressed at the individual scale of the first study unfold as a result of site-level expressions of local culture and understandings of childhood. On the other hand, this park comparison confirms the positive social role and health benefits offered by parks in working-class neighborhoods, and, more broadly, the importance in terms of equity for urban planners to prioritize park space in working-class areas.

The results of the comparative case study analysis of different international CFC agendas in Bristol, Amsterdam, and Vienna (Chapter IV) introduces a third scale at which the social cleavages embedded in the CFC agenda get expressed and, ultimately, reinforced through a wide array of intersecting policy decisions. This study expands on the understanding of child-friendly spaces as socio-natures by unpacking the relevant role of child-friendly planning agendas on social reproduction and the formation of people as subjects. In short, this study reveals the ways in which the processes that are seen at the individual and site scales are embedded in city-level policymaking that extends beyond the boundaries of the stated CFC goals.

This comparative case study demonstrates that CFC interventions display a series of common characteristics – including the propensity for consensus that they stir, their implied moral significance, their assumed role in everyday infrastructure, and their importance as sites of social and cultural reproduction. These common characteristics ascribe to them an elevated, yet largely unacknowledged, role in terms of place-based subjectivation and social internalization of existing power structures. In cities with a more advanced degree of neoliberalization, the subjectivation processes at work in child-centered places seem to more heavily reinforce the reproduction of certain citizens'/children's subjectivities, especially working-class families and their children, as compliant with the demands of the neoliberal city. In this way, the CFC agenda is instrumentalized for the purpose of neoliberal governmentality and the normalization of the rights and rules of inclusion and exclusion in the specific neoliberal formation. This is the upper scale effect that, in the end, suffuses down with an impact that is visible at the site and individual scales.

5.1.2 Cross study results and contributions

When considered all together, my studies reveal the ways that the three scales of analysis shape and reinforce one another, and it is particularly this set of interactions that redirects the understanding of CFCs toward a different theoretical frame than is typical. The view of CFCs across the three scales demonstrates the intersection of social and political conditions that cause CFCs to take one path and not another, with certain implications for the common understanding of children's wellbeing and the role of city spaces. This deeply embedded view reflects an understanding of CFCs as expressive of the formation of socio-natures in cities. In short, the parts that come together within the CFC agenda – the child, children's play structures, and natural spaces in the city – are not distinct, but rather are comprised of a co-dependent set of meanings that lead to conflicting understandings of wellbeing.

Meanwhile, in reflecting on the ways that these studies demonstrate how wellbeing is viewed, this dissertation adds to a deeper association between a child's place in the city and health. It draws out the interwoven nature of wellbeing and emphasizes its relational aspect. This points toward a different ontological starting point than is normal in the CFC conversation. As well, it brings the role of children front and center in conversations about environmental justice. It demonstrates that the benefits received by children operate in multiple and sometimes conflicting ways, forcing environmental justice scholarship and activism to address a complicated CFC paradox. Finally, this dissertation expands the body of thought on the effects of neoliberalization of cities and uneven growth.

5.1.2.1 Urban political ecology and children's socio-natures

My overall dissertation results point towards the importance of paying attention to the political ecology of place in analyzing CFC agendas and interventions meant to contribute to environmental, health, and wellbeing outcomes. I have put forward a novel analysis of child friendly infrastructure as embedded in the process of forming socio-natures consisting of political, social, and economic dynamics in which certain physical environmental conditions beneficial for health and wellbeing can arise or not for some groups defined not only in terms of their age (i.e., their condition of being a child) but also their race, gender, ethnicity, class, and mental and physical ability. The view from the perspective of individual outcomes on health, site-based formations of wellbeing, and city-based governance supports the turn toward a multi-faceted socio-natures framing of CFCs.

The socio-natures framework shifts away from seeing urban environments; social characteristics and markers (such as age, race, gender, and class); children's subjectivities; and children's practices and uses of space as separate, static entities that correlate with children's health and wellbeing in a somehow unidirectional way. It rather focuses on an inter-related and multi-faceted process of production of space. In this process, children's bodies, health, and wellbeing, as well as the materialities of CFCs and the health and wellbeing of other human and non-human bodies and entities come into being through a metabolic dialectical relation in the context of planetary urbanization. It is not so much that these things are simply interconnected, but rather that they are an expression of the same thing – the same underlying dynamic that brings about the formation of socio-natures. CFCs, in this view, are no longer seen as a set of individual interventions measured against a single effect as a justification. Rather the CFC is a wholly embedded and intertwined strand within the larger formation of socio-natures. That strand does not have a singular effect nor is it wholly independent from the other strands in this broad system of socio-spatial development.

This broader and more theoretically informed framing of the CFC allows for a new theoretical and ethical imagining for children and their encounters with other beings, places, and natures. This new imaginary allows for children's place in the city to be seen as socio-materially co-constituted and interrelated in a way that escapes technical/solutionist approaches to the CFC (e.g., a notion that greening/parks will solve all problems in a universal fashion). Children co-constitute sustainable/child-friendly socio-natures through immersion in these socio-natures and the development of personal bonds of love, respect, or hatred towards these socio-natures. Children are also co-produced as subjects by these socio-natures and positioned as politically powerful or marginal, as healthy or unhealthy, and/or as experiencing wellbeing or not (or anything in-between these extremes), amongst others. Analyzed from this point of view, sustainable CFC infrastructures are far from being a standard and/or neutral urban intervention for the benefit of all.

Approaching these infrastructures as embodying and reproducing power, and from the vantage point of their role in social reproduction and/or transformation through children's socialization and subjectivation in specific environments and practices, offers insights into two important characteristics of CFC agendas and programs. First, this approach exposes the ways in which the actual child-friendliness of a socio nature and children's health and wellbeing are made/unmade. It demonstrates that child-friendliness is not universal, but rather planning processes and visions, urban development goals, and neighborhood socio-material structures direct how these spaces are lived by children (i.e., used, perceived, and co-produced) (Chapter

III). Second, this approach emphasizes the political potential of viewing CFC plans as entry points into a condensed expression of dominant and desired societal values, principles and power hierarchies. The belief system and structures by which urban children's spaces are sustained, spatial practices are fostered, and the rules through which children are supposed to govern their engagement with CFC spaces are often projected versions of the structures by which adults organize and sustain fundamental access to power, authority, and resources (Chapter IV). As such, organizing for change within these arenas can have wider systemic effect.

5.1.2.2 Children's place in the city, wellbeing, and health

Second, my dissertation results confirm the widely held assumption that greater outdoor and green child centered urban spaces are associated with overall health and wellbeing benefits. Nevertheless, results also reveal inequalities in this association indicating that the availability of outdoor play spaces is a necessary but not a sufficient condition for health and wellbeing outcomes (Chapter II). This necessary but not sufficient status derives from the fact that the CFC agenda provides different types of benefits to different classes of children. In short, while there may be more direct health benefits for lower income or marginalized children, the benefits for higher income families are likely more indirect and related to a more diffuse push to discipline the space of the city and thus make it more culturally expressive of middle- and upper-class values. My results thus add some novel contributions and contextualization to the public health literature on green space and health (Chawla, 2015; Krishnamurthy, 2019).

When further delving into the potential barriers to the association between children's play spaces and health, the qualitative conditions of the outdoor play spaces and the differential uses and degrees of children's participation on the basis of race, ethnicity or class prove to be important facilitators and barriers of actual receipt of benefit from these spaces (Chapter II and III). Furthermore, some hidden and dissimulated socio-material processes that are not immediately apparent characteristics of the CFC infrastructure - such as the neighborhood socio-material conditions enabling connectivity, independent walking, exposure to social difference or intergenerational exchange (Chapter III and IV); the political processes of space production (Chapter III); and the creation of full social systems supporting reproduction, care and playfulness through transversal policies in housing, health, planning and education (Chapter III and IV) - prove to also be very important novel factors that I reveal in my study and which supporting or undermining the ability of CFC amenities to produce children's wellbeing and equity. Thus, while the first chapter provides some nuance to the common narrative of CFC

interventions, it is the subsequent studies that demonstrate the vast social processes below the surface that are shaped and shaping the CFC link with wellbeing.

In addition to acknowledging the importance of socio-material barriers/facilitators to the actual use and benefits of existing outdoor play spaces and expanding the range of urban conditions that are important for children's wellbeing beyond green and playful infrastructure to include elements such as connectivity and independent walking, my results reveal the utility of framing children's health and wellbeing in ontologically different ways from an exposure-outcome rationale (Smith & Reid, 2017). Instead of conceiving health and wellbeing as powered by external factors (e.g., exposure to nature or play amenities) some sources of health and wellbeing seem to be rather driven from within or emerging from the child. For example, wellbeing is shaped by the sense of knowledge and confidence in a given social and material environment, the degree of creativity and challenge of the urban equipment that a child brings, the level of autonomy the child feels, the independent exploration and management of risks that a child expresses, and the awareness of their own subjectivity that a child has (Chapter III and IV).

From this perspective, the relational ontology of these CFC outdoor play spaces and of health and wellbeing as socio-natures comes again to the fore. CFC spaces, housing, environmental conditions and social relations can be conceived of as a source and resource of children's health and wellbeing. These factors, in turn, stem from a set of political and social processes that generate a medium in which relations of wellbeing (including the child's relation to a place) arise or not. In sum, this study points towards the importance of reconceptualizing pathways of wellbeing and health beyond questions of spatial distribution of natural areas and offers new perspectives for the development of future guidelines.

5.1.2.3 CFC and urban environmental justice

This dissertation also contributes to the environmental justice literature. My results point to a modification of the association between residential proximity to outdoor play spaces and mental and behavioral health (Chapter II) and wellbeing (Chapter III) by area-level socio demographic class, race and ethnic characteristics. This difference is not straight forward in terms of equity, since more deprived communities seem to be benefiting more from the proximity to these spaces than more privileged populations. This result is consistent with literature suggesting class-, ethnicity- and race-based differences in cultures of parenting, time management and perceptions of safety might be modifying children's actual uses of similar play spaces (Chapter

II and III) and that low-income residents are particularly positively impacted by having access to green space. This finding points toward the need to recognize these different perceptions and uses for equity purposes (Anguelovski, 2013; Anguelovski, Connolly, & Brand, 2018; Gascon et al., 2016; Kabisch & Haase, 2014).

These results are also consistent with more materialist understandings suggesting that outdoor play spaces may be the primary source of access to play for children living in deprived neighborhoods and that these spaces might mitigate the negative influences of other deteriorated aspects of the physical environment such as poor housing, deteriorated neighborhoods and overcrowded schools. For higher income residents, these spaces are not compensating for any material deprivation and are moreover not the primary source of access to play, nature or socialization. These different material needs impinge upon the fact that deprived neighborhoods need outdoor play/child-friendly spaces the most and maximize their benefits more (Cole et al., 2019; Lee & Maheswaran, 2011). This observation should feed into equitable CFC planning, which should be based on providing for the different needs of each neighborhood and move away from merely distributive equality goals.

My results also show the importance for equity concerns of accounting for the *justice* of the social and political processes of production of child-friendly socio-natures and the community's involvement/participation for wellbeing outcomes. For instance, the greater relations of wellbeing that we observe in the green play space in the more deprived neighborhood of Nou Barris in Chapter III cannot be detached from the long historic working-class community mobilization prior to obtaining these parks and play spaces, and how that involvement co-produces the type of bonds that children and the wider community have with the place, which in turn augment the communities' and children's sense of belonging, attachment, identity and pride of the local community and self-narratives. Political and social processes of CFC space production have been observed to either strengthen the socio-material capital of the place and to generate greater relations of wellbeing in just planning processes or to erode these very socio-material neighborhood structures, and exacerbate unwanted effects – such as gentrification, displacement and loss of attachment to place – of the expected restorative CFC initiatives in planning processes, dismissing procedural and recognition justice (Chapter III and IV).

It is here, in the potential link between CFC spaces and an underlying push to discipline urban space toward norms aligned with middle- and upper-class culture, that the biggest challenge for environmental justice activism arises. It is important to note that the greater use of parks and

free play as well as the associated health benefits belongs to a child-friendly imaginary prescription stemming from privilege (e.g., academia, environmentalism, alternative education paradigms, etc.). As a consequence, CFC spaces, like processes of green gentrification, may introduce a paradox wherein the very push to revive the direct benefits associated with children's play spaces in lower income and marginalized neighborhoods may be undermining the more fundamental security of residents in those neighborhoods by fueling pressures for gentrification and displacement. These processes should be further examined in future studies. With effects understood as multiple and co-occurring across several scales at once, this internal paradox becomes central to environmental justice concerns and to the mobilization of environmental justice activists.

As well, the higher degree of outdoor and free play that I report as beneficial might be experienced as a scarcity of opportunities to engage in commercial, indoor, after school activities by children and families in deprived neighborhoods. The archival and background research undertaken during this dissertation point at the relevance of reclaiming alternative visions and imaginaries of children's needs and of what renders a city more child friendly beyond essentialized post political assumptions of child-nature connections. Some previous and/or marginal ideals such as the need to stimulate children's creativity, encourage their autonomous right to appropriation and sabotage of the city, have been largely dismissed by the current new corpus of scientific production, but have proven to be important for wellbeing and equity outcomes throughout the different studies of this dissertation.

5.1.2.4 CFC, neoliberalism, and urban unequal development

In addition to the mostly horizontal relational engagement between structures involved in the production of child friendly socio-natures, spaces, and places, my dissertation also engages with the vertical relations between political economy structures and processes situated at different scales/levels and their articulation within the CFC agendas. In particular, I engage with how CFC agendas are articulated within capitalist state power, its current reorganization through planetary urbanization processes, and neoliberal urbanization dynamics characterized by the intensification of market rule, commodification, and (private) accumulation through (public) dispossession in cities (Brenner et al., 2010b). This is a novel approach, given that despite an increasing ubiquity of CFC plans, children-centered transformations have not been a major analytic theme compared to other economic spatial and welfare aspects of the restructuration of cities in the context of neoliberal urbanization.

Results in this dissertation show how sustainable CFC agendas and space transformation processes are often embedded in broader economic agendas of urban transformation designed to extract value, control space, and/or legitimize speculative neoliberal urban development (such as the example of Poblenou, Barcelona in Chapter III and Amsterdam and Bristol in Chapter IV). I analyzed examples where the embedding of CFC transformations within processes of intensification of market rule and commodification, accumulation by dispossession and/or governance through subjectivation (i.e., governmentality) erodes the restorative ambitions of these projects and leads to unwanted/perverse effects of these agendas, such as contribution to gentrification and displacement.

This process then generates a concomitant erosion of the local socio-material conditions, reproduction of power hierarchies and exclusions, and/or the facilitation of governmentality (Chapter III and IV). Children's wellbeing in large cities can be also subsumed into market commodities and be distributed according to market logics of supply and demand, available for those able to transform their need into market products and able pay. This commodification can prevent disempowered groups from transforming their needs into claims for urban transformation because those needs are often not compatible with the private accumulation of capital. The CFC agendas analyzed here ensure that such preservation measures are in place.

As a result, in some cases, these multiscale articulations of CFC agendas with neoliberal urbanization can lead to the production of sustainable CFC spaces of privilege, exclusion and control, which is the other side of the environmental justice coin (Argüelles, 2021). Examples include the case of Poblenou in Barcelona (Chapter III) where CFC infrastructure creation was embedded within a large city-scale redevelopment strategy that socially, physically, productively and functionally transformed the neighborhood and swept away a large percentage of residents through concomitant gentrification and displacement dynamics and alteration of the sense of community. Also, Amsterdam and Bristol (Chapter IV) include CFC agendas that seem to be reinforcing the reproduction of certain citizen/children's subjectivities compliant with the demands of the neoliberal city that also work towards the exclusion/marginalization (from power and their right to the city) of children and residents who do not comply with an often commodified and/or normative standard of nature and childhood (e.g. the unwanted/unchild-like other who can or does not adhere to a standard praxis and subjectivity), reproduce social hierarchies and generate CFC cities with narrow wellbeing benefits and possibilities to raise a family only for an exclusive number and type of gentrifiers, more mobile and resource-rich residents.

5.2 Limits and strengths of research

The objective and strength of this dissertation was to engage with the question of CFC agendas and its equity from different vantage points with a multi-method approach- epidemiological cross-sectional study, archival analysis, ethnographic nonparticipant observation, and comparative multiple case study-, using multiple types of data-qualitative and quantitative; historical, reported and measured-, across multiple-sites-Barcelona, Amsterdam, Vienna, and Bristol-, and offering multiple theoretical contributions useful to engage with a variety of theoretical perspectives and to tackle practical challenges. This strength has the reverse face of limiting my ability to deeply engage with the mobilized theoretical, ethical, and ontological frameworks.

The strongest limitation of this dissertation is the focus on adult's accounts and conceptions of children's socio-natures and the lack of engagement with children's lived experiences and representations of their socio-natures, health, and wellbeing outcomes. Finally, given the differences between contemporary Global North and Global South experiences and construction of childhoods, my results are not transferable to the urbanization on children in the Global South.

5.3 Implications for urban policy and planning

Sustainable green and playful child friendly urban amenities are important to increase children's health and wellbeing in cities. As necessary as the implementation of new material child friendly, sustainable and play amenities are, they're nevertheless not sufficient to address existing social, environmental and health inequities among urban children.

CFC interventions have been critiqued for being enclosed and monotonous or standardized spaces unable to solve some children's real barriers to wellbeing in cities. Our results point towards an urgency to change the solutionist understanding that child-friendly, playful, and green amenities are the full answer for the question of how to solve the problem of exclusion of children in cities. Rather, this dissertation points at the need for urban planners to pay attention to a broader set of infrastructures that sustain children's wellbeing and care in cities, beyond – although also including – child friendly ad hoc spaces of play. From a practical planning perspective, the suggestion is towards the reformulation of the city as a collection of resources supporting not only children but the broader communities' needs of care, education, health, autonomy, joy, and play, emanating/emerging and available at their most immediate surroundings (e.g., neighborhood's). Some of the structures enabling children's wellbeing

beyond ad hoc play infrastructures include community spaces, affordable housing, access to healthcare, public schools, walkable streets, transport, culture and/or social capital amongst others. The equitable distribution and access to these structures is as important as the one of green and outdoor play space for children. Also, the prevention of its deterioration (e.g., through displacement or unaffordability) in the context of neoliberal urbanization, dispossession and exclusion is a fundamental part of child-friendly urban policy (Oscilowicz et al., 2021) to ensure benefits for all of these CFC improvements.

The processes of production of these child-friendly and care structures need to integrate and recognize the needs of the social community as well as promote participation in the planning processes, visions, and urban development goals of child friendly and care structures. First, because it enables the identification and recognition of the different needs that might not be envisaged by planners and essentialized/universal prescriptions of child friendliness. Second, due to the transformative process that resident centered, and co-driven processes of regeneration imply for both the space and people's (and children's) attachment, bonding, and respect for these structures. Cultivating children and youth participation as part of these procedural recommendations, through their involvement in cocreation processes and the funding and support to youth services and associations is fundamental.

Finally, taking seriously/uncovering importance of children's everyday spaces in their process of subjectivation. Planning and urban policy will have an impact on shaping childhood and the future environment future adults will have to face. It is important to take control of these processes in a just and democratic manner rather than letting it follow market forces.

More concrete suggestions for policy and planning include:

- Recognize CFC planning as a non-isolated intervention from other urban resources and care infrastructures
- Require local planning agencies to evaluate existing CFC resources (depending on the context, e.g., schools, after school programmers, public libraries housing, youth associations, transport, commerce) prior to the development of CFC agendas.
- Continue and ideally increase, funding of existing care infrastructures that children benefit form at different levels of government (municipal, state/provincial, and national government).
- Evaluate transversally child friendliness of other urban infrastructures (e.g., housing, transport, public space)

- Consider historical and ongoing contexts of injustice, marginality and/or neglect to understand the different uses, preferences, knowledges and needs of socially vulnerable residents
- Implement participatory planning and research practices and innovative methods that include on the ground available community resources and actors (e.g., community mapping, neighborhood photovoice and exploratory walks.)
- Require local planning agencies to evaluate the articulation of the CFC programmed with neoliberal urbanization and the possible neighborhood gentrification, unaffordability and displacement pressures and outcomes prior to the development of CFC agendas. Implement mitigation policies (Oscilowicz et al., 2021) to prevent school dropout, and housing instability, amongst others.

5.4 References

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Since the early 2000s, families with children are increasingly following broader trends toward “return” to the city together with investment capital and higher income residents. Almost half of the world's children now live in urban areas, yet research continues to identify cities as noxious environments for children in many aspects. Cities tend to lack access to beneficial socio-environmental conditions and present greater exposure to environmental harms, factors that have been shown to negatively affect human health, especially during the first years of human life during childhood.

In this context, cities in the Global North have increasingly embraced a set of urban policies and spatial interventions aimed at improving wellbeing and making child and family friendly urban cores under the loose umbrella of sustainable Child Friendly Cities (CFC). Nevertheless, these programs and urban interventions operate within a broader context of neoliberal urbanization that exacerbate processes of gentrification, commodification, displacement, environmental privilege, or inequitable exposure to environmental issues or amenities on the basis of social privilege.

This thesis attempts to explore these tensions – between unequal and neoliberalized urban environments as socio-environmental threats and beneficial spaces of wellbeing for children – by addressing two broad questions: To what extent and how are CFC initiatives reorganizing urban environments, and with which impacts on children’s health and wellbeing? What are the potential inequities that have emerged or become consolidated in the distribution of these benefits/impacts in the context of neoliberal urbanization?

Results show that the implementation of new material child friendly, sustainable and play amenities is a necessary although not sufficient condition to address social, environmental and health inequities among urban children. Rather this dissertation points at the need to pay attention to a broader set of infrastructures that sustain children’s wellbeing and care in cities, beyond -although also including - child friendly ad hoc spaces of play. I have put forward an understanding of the CFCs expressive of the formation of socio-natures in cities, where the parts that come together within the CFC agenda – the child, children’s play structures, and natural spaces in the city – are not distinct, but rather comprised of a co-dependent set of meanings that can lead to health and wellbeing outcomes or not, for some groups. On the basis of these findings, several implications for urban/landscape planning, management and decision-making are drawn, including the prioritization for equity concerns of accounting for the justice of the social and political processes of production of child friendly socio natures and the prevention-through policy making of unexpected outcomes that might limit the benefit of these agendas for some groups.

Carmen Pérez del Pulgar. July 2021